Dear SIU friends and Associates,

this year the SIU wanted to take another step forward in terms of scientific quality by collecting and publishing the works that will be presented at the next Riccione 2018 convention in a supplement of European Urology, the world’s leading journal for urological discipline. This is an important innovation as your papers will be indexed on the bibliometric portals and will reach the entire international scientific community. In the face of this, we asked you a little effort such as sending your writings in English but I think it was worth it. Personally, I am sure that this collection will meet your favor and will remain a useful and qualified tool for scientific consultation. Of course, I would like to thank all the reviewers we have been involved in the evaluation process and who have done their job flawlessly. Of the 679 contributions sent by all of you, 287 posters and 56 videos were selected, with an acceptance rate of 50.3%. The review was carried out with precise scientific rigor as each abstract was evaluated anonymously by three different reviewers in the topic and in the few cases of evaluative disagreement a super-review was carried out entrusted to the Scientific Committee. As you will see by browsing the magazine many topics have attracted a great interest and among these: prostate cancer in its many and different aspects, the kidney cancer, bladder cancer, andrology, lithiasis, functional urology and disorders of the lower urinary tract. Moreover, this year we will also have a session of “historical” works that puts us in line with all the most important global urological societies. In thanking the entire Scientific Committee for the diligence and enthusiasm with which we have worked, I hope that the scientific part of our Congress will be pleasing to you and I am sure that your participation will make the highest national urological conference more qualified.

Therefore, we wish you a good read of this collection of abstracts.

Prof. Giuseppe Morgia
Chairman Scientific Office SIU
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ASSOCIATION BETWEEN RS6152 POLYMORPHISM IN THE ANDROGEN RECEPTOR GENE AND DISEASE AGGRESSIVENESS IN A PROSPECTIVE COHORT OF PROSTATE CANCER PATIENTS UNDERGOING RADICAL PROSTATECTOMY

LOCAL DIVERSITY OF MTOR PATHWAY MARKERS’ OF TISSUE EXPRESSION IN PROSTATE CANCER AND IMPLICATIONS OF A PROGNOSTIC ROLE

DEREGULATION OF MICRORNAS MEDIATED CONTROL OF CARNITINE CYCLE IN PROSTATE CANCER: MOLECULAR BASIS AND PATHOPHYSIOLOGICAL CONSEQUENCES

SINGLE NUCLEOTIDE POLYMORPHISMS AND RISK OF PROSTATE CANCER: DEVELOPMENT AND VALIDATION OF A NOVEL GENETIC RISK SCORE FOR INDIVIDUALIZED SCREENING AND DIAGNOSTIC PROGRAMMES

SECRETED MIR-210-3P AS NON-INVASIVE BIOMARKER IN CLEAR CELL RENAL CELL CARCINOMA

ANNEXIN A3 MODULATES THE ADIPOCYTE-LIKE PHENOTYPE OF CLEAR CELL RENAL CELL CARCINOMA (CCRCC) CELLS

RELATIONSHIP BETWEEN CELLULAR AND EXOSOMAL MIRNAS TARGETING NOD-LIKE RECEPTORS IN BLADDER CANCER

VASCULAR HURST INDEX IN NON-TUMORAL BIOPSY CORES AS POTENTIAL HISTOPATHOLOGICAL PARAMETER TO SELECT PATIENTS WITH HIDDEN PROSTATE CANCER
ASSOCIATION BETWEEN RS6152 POLYMORPHISM IN THE ANDROGEN RECEPTOR GENE AND DISEASE AGGRESSIVENESS IN A PROSPECTIVE COHORT OF PROSTATE CANCER PATIENTS UNDERGOING RADICAL PROSTATECTOMY

V. Cucchiara, V. Mirone, D. Lazarevic, D. Cittaro, G. Tonon, M. Zoccolillo, M. Bianchi, R. Montironi, G. Gandaglia, N. Fossati, S. Shariat, F. Montorsi, A. Briganti (Napoli)

Aim of the study
Although single nucleotide polymorphisms (SNPs) have been shown to be associated with the risk of prostate cancer (PCa), scarce data is available on to the association between SNPs and the risk of adverse pathologic features. The aim of this study was to identify a group of SNPs associated with an increased risk of adverse PCa in a large, prospective cohort of patients undergoing radical prostatectomy (RP) at a single center.

Materials and methods
Overall, 247 consecutive patients with localized PCa treated with RP and extended pelvic lymph node dissection (ePLND) at a single tertiary referral center were evaluated. After IRB approval, whole blood genomic DNA (gDNA) was extracted from all these subjects and amplified using Haloplex custom designed-gene panels covering the exons of 78 genes and 128 SNPs in intergenic regions previously reported to be associated with PCa. Of more than 2,000 variants evaluated, 26 SNPs resulted to be significantly linked to PCa in a larger country specific population study were analyzed. Fluidigm Access Array System (Fluidigm, San Francisco, CA, USA) was used to simultaneously amplify target regions associated with PCa. High-throughput sequencing was performed using the Illumina MiSeq platform. Pathologic specimens were evaluated by a high-volume dedicated uro-pathologist. A comprehensive approach was used to test in univariable analyses all available SNPs associated with an increased risk of pathological grade group 4-5, pT3b/4 disease and lymph node invasion (LNI). Multivariable logistic regression analyses tested the association between the identified SNPs and adverse RP features after adjusting for pre-operative features.

Results
Of all patients, 53 (21.5%), 32 (13%) and 28 (11.3%) patients had pathologic grade group 4-5, LNI and pT3b/4 disease, respectively. At univariable analysis, the genotype A of the androgen receptor (AR) gene rs6152, which was present in 45 (18.2%) patients, was the only significantly associated with an increased risk of pathologic grade group 4-5 and pT3b/4 disease (all p<0.05). Of note, 15 (33.3%) vs. 38 (18.8%) patients with the genotype A vs. G had pathologic grade group 4-5 disease (p=0.02). Similarly, 9 (20%) vs. 19 (9.4%) patients with the genotype A vs. G had pT3b/4 disease (p=0.04). At multivariable analysis, the genotype A of rs6152 was significantly associated with an increased risk of pathologic grade group 4-5 (OR: 1.99; 95% CI: 1.03-4.31) and pT3b/4 (OR: 2.66; 95%CI: 1.04-5.82) disease after adjusting for confounders.

Discussion
Using a large and comprehensive approach, we showed that rs6152A was a predictor of adverse pathological features after RP such as pathologic grade group 4-5 and pT3b/4 PCa. Although our results need to be externally validated, this data further emphasizes the pivotal role of AR in PCa development and progression.
LOCAL DIVERSITY OF MTOR PATHWAY MARKERS’ OF TISSUE EXPRESSION IN PROSTATE CANCER AND IMPLICATIONS OF A PROGNOSTIC ROLE


Aim of the study
The mammalian target of rapamycin (mTOR) pathway is known to play an important role in oncology. However, its role in prostate cancer (PCa) has not been fully understood. The aim of the study was to evaluate the expression of mTOR, phosphorylated-mTOR (p-mTOR) and Eukaryotic translation initiation factor 4E-binding protein 1 (4E-BP1) in patients with PCa using tissue microarray (TMA) technique and to assess their correlation with clinico-pathological parameters and outcome.

Materials and methods
Tissue samples from 115 consecutive patients who underwent radical prostatectomy were constructed to a TMA. In every case four localisations were included: A) from the tumour center, B) malignant border of the tumour, C) tumour adjacent benign tissue and D) tumour-distant benign prostatic tissue. Expression scores were stratified according to their respective median immune reactive score 0-12 into ‘weak’ (< median) and ‘strong’ (≥ median). A meta-analysis of studies from Medline, Scopus and Web of knowledge were retrieved to investigate the association between biochemical recurrence and mTOR pathways immunostaining.

Results
All 115 samples showed specific staining for mTOR, p-mTOR and 4E-BP1. Expression scores of mTOR, in A, B, C and D were 9.1, 8.8, 5.0 and 6.8 (p<0.01), p-mTOR scores were 7.4, 7.2, 2.0, 4.6 (p<0.01) while 4E-BP1 scores were 8.0, 7.6, 2.6 and 3.1 (p<0.01), respectively. We observed lower p-mTOR scores in A samples (6.3 and 7.9; p=0.01) in locally advanced vs. organ confined PCa. Overall, 523 studies were identified from the databases and relevant references and 4 studies were added to our cohort for the meta-analysis. We found that ‘strong’ staining of p-mTOR was associated with lower risk of biochemical recurrence (risk ratio [RR]= 0.57; p=0.002) while no association for mTOR (RR= 0.70; p=0.13) or 4E-BP1 (RR= 0.86; p=0.53) was found (Figure 1).

Discussion
All 3 markers showed local gradients of expression in PCa tissue. Moreover, expression characteristics suggest disorders in the mTOR system. In particular p-mTOR was associated with more aggressive PCa and could be clinically useful as a prognostic marker for BCR.
DEREGULATION OF MICRORNAS MEDIATED CONTROL OF CARNITINE CYCLE IN PROSTATE CANCER: MOLECULAR BASIS AND PATHOPHYSIOLOGICAL CONSEQUENCES

A. Gentilucci, A. Valentino, A. Calarco, M. Maggi, S. Salciccia, G. Peluso, A. Sciarra (Roma)

Aim of the study
Cancer cells reprogram their metabolism to maintain both viability and uncontrolled proliferation. Although an interplay between the genetic, epigenetic and metabolic rewiring in cancer is beginning to emerge, it remains unclear how this metabolic plasticity occurs. Here, we report that in prostate cancer cells (PCCs) microRNAs (miRNAs) greatly contribute to deregulation of mitochondrial fatty acid (FA) oxidation via carnitine system modulation. The normal prostate cells have a truncated Krebs cycle where the neo-synthesized citrate is a secretory product rather than an intermediate of metabolism, thus the ATP production derives via aerobic glycolysis, with less dependence on aerobic oxidation.

Materials and methods
We included 30 patients with organ-confined disease (pT2 N0 M0) and Gleason score >6 (3+3), who underwent a radical retropubic prostatectomy. The freshly collected tissues were formalin-fixed-paraffin-embedded and reviewed by an expert pathologist with the primary goal of determining the densest region of the tumor. Tumor sections cut at 5 microns were lightly stained with hematoxylin and eosin before microdissection with a laser capture microdissection microscope (Arcturus Laser Capture Microdissection, Applied Biosystems). RNA extraction was performed using the Qiagen AllPrep DNA/RNA FFPE Kit (Qiagen). We used human prostate adenocarcinoma cell lines (PC3 and LNCaP). Cells were grown with an approximate population doubling time of 31 h for PC3 and 38 h for LNCaP and used within 2-4 months.

Results
An increase in oxidative phosphorylation is a requirement for the progression of the prostate tumor, thus a continuous supply of acetyl-CoA is required to ensure citrate oxidation via the Krebs cycle. As PCCs exhibit a low rate of glycolysis, FAO serves as the main source of acetyl-CoA and ATP. We provide evidence that the downregulation of hsa-miR-124-3p, hsa-miR-129-5p and hsa-miR-378 induced an increase in both expression and activity of CPT1A, CACT and CrAT in malignant prostate cells. The analysis of human prostate cancer and prostate control specimens confirmed the aberrant expression of miR-124-3p, miR-129-5p and miR-378 in primary tumors. Forced expression of the miRNAs affected tumorigenic properties (proliferation, migration and invasion) in PC3 and LNCaP cells regardless of their hormone sensitivity. CPT1A, CACT and CrAT overexpression allow PCCs to be more prone on FA utilization than normal prostate cells. Finally, the simultaneous increase of CPT1A, CACT and CrAT is fundamental for PCCs to sustain FA oxidation in the presence of heavy lipid load on prostate cancer mitochondria. Indeed, the downregulation of only one of these proteins reduces PCCs metabolic flexibility with the accumulation of FA-intermediate metabolites in the mitochondria.

Discussion
Our data implicate carnitine cycle as a primary regulator of adaptive metabolic reprogramming in PCCs and suggest new potential druggable pathways for prevention and treatment of prostate cancer.
SINGLE NUCLEOTIDE POLYMORPHISMS AND RISK OF PROSTATE CANCER: DEVELOPMENT AND VALIDATION OF A NOVEL GENETIC RISK SCORE FOR INDIVIDUALIZED SCREENING AND DIAGNOSTIC PROGRAMMES

V. Cucchiara, V. Mirone, D. Lazarevic, D. Cittaro, G. Tonon, M. Zoccolillo, M. Bianchi, G. Gandaglia, N. Fossati, S. Shariat, F. Montorsi, A. Briganti (Napoli)

Aim of the study
Genome-wide association studies have characterized more than 100 common SNPs associated with prostate cancer (PCA) that can explain approximately one third of the genetic susceptibility. These common variants confer only a relatively small risk of PCA although they revealed a stronger association when used in combination. We aimed at discovering and validating a SNPs signature able to identify individuals at higher risk of PCA in an unscreened patient population.

Materials and methods
After IRB approval, whole blood genomic DNA (gDNA) was extracted from 354 PCA patients with localized PCA treated with radical prostatectomy (cases) and from 267 healthy individuals with no family history of PCA (controls). Haloplex custom designed-gene panels covering the exons of 78 genes and 128 SNPs were initially used to identify population-specific PCA risk polymorphisms in 98 cases and 91 controls. Of more than 2,000 variants evaluated, 26 SNPs (p<0.05) were further investigated in a subsequent validation cohort of 256 PCA patients and 176 controls. In the validation study, gene enriched library was prepared by using Fluidigm Access Array System and loaded on Illumina MiSeq. Genotype frequencies were tested by using Cochran-Armitage test. Wilcoxon-Mann-Whitney test was used to analyse the cumulative association of SNPs sets with PCA (p<0.05) and PCA risk was estimated by logistic regression. Individual weighted genetic risk scores (wGRSs) were calculated based on the natural logarithm of the OR of the selected polymorphisms. The AUC was used to assess whether the wGRS in addition to pre-diagnostic PSA improved PCA prediction.

Results
Of the 26 genotyped SNPs evaluated in the validation study, we identified 7 variants (rs7141529, rs117879878, rs34764062, rs1419133, rs2227983, rs5919432, and rs6152) significantly more frequent in cases versus controls (all p<0.001) with ORs ranging from 1.51 to 3.08 per risk allele. The wGRS was significantly higher in patients as compared to controls, even after age-matching (p<0.001). Moreover, the addition of cumulative risk alleles to the model containing PSA levels significantly improved (p=0.004) the predictive value in discriminating individuals with PCA and without cancer (AUC increased from 0.584 to 0.711, respectively; p<0.001). When considering disease characteristics, variant rs5919432 (locus Xq12, androgen receptor-gene) was associated with a higher preoperative PSA with a mean difference between patients and controls of 1.3 ± 0.22 ng/mL (p=0.005).

Discussion
Our study defines a population-specific set of SNPs associated with PCA. Use of genetic markers might provide an opportunity to identify men at highest risk of PCA. Incorporation of such a genetic signature of PCA risk into clinical practice may offer improvements in patient selection for PCA screening and decision making.
SECRETED MIR-210-3P AS NON-INVASIVE BIOMARKER IN CLEAR CELL RENAL CELL CARCINOMA


Aim of the study
The most common subtype of renal cell carcinoma (RCC) is clear cell RCC (ccRCC). It accounts for 70-80% of all renal malignancies representing the third most common urological cancer after prostate and bladder cancer. The identification of non-invasive biomarkers for the diagnosis and responsiveness to therapy of ccRCC may represent a relevant step-forward in ccRCC management. The aim of this study is to evaluate whether specific miRNAs deregulated in ccRCC tissues present altered levels also in urine specimens.

Materials and methods
This study includes two independent cohorts of ccRCC patients (totally 38 patients) who underwent surgery between March 2015 and March 2017. Urine specimens were collected at the time of surgery from all the patients; for 6 of the ccRCC patients urine was collected also during follow-up (with 15 months as median of time from surgery). Patients included in the study were not treated with any neo-adjuvant therapy before surgery. The surgery procedures performed as curative treatment for these patients were: Laparoscopic Radical Right or Left Nephrectomy in 20 cases (52.63%), Laparoscopic Partial Right or Left Nephrectomy in 17 cases (44.73%) and Open Radical Right Nephrectomy in only 1 case (2.63%). Twenty-five patients were male (65.8%) and 13 patients were female (34.2%) with a median age of 64.5 years old (range 36-84). All the cases presented a clear cell histotype of RCC at the histological examination and according to Fuhrman’s grade classification, 19 cases (50%) were G2 grade, 13 cases (34.21%) were G3 grade, 5 cases (13.16%) were G4 grade and only 1 case (2.63%) was G1 grade. Urine samples were also collected from two groups of healthy donors of 4 and 6 individuals with characteristics comparable to the ccRCC patients included in the study (median age: 60.5; males: 60% and females: 40%).

Results
We first assessed that miR-21-5p, miR-210-3p and miR-221-3p resulted upregulated in ccRCC fresh frozen tissues compared to matched normal counterparts. Next, we evidenced that miR-210-3p resulted significantly up-regulated in 38 urine specimens collected from two independent cohorts of ccRCC patients at the time of surgery compared to healthy donors samples. Our data evidenced that miR-210-3p resulted the most significantly up-regulated miRNA in ccRCC patients cohort (p-value =0.0149) Of note, miR-210-3p levels resulted significantly reduced in follow-up samples.

Discussion
In conclusion, this study evidences a number of miRNAs, which are altered in ccRCC tissues and urine specimens, emerging as putative non-invasive biomarkers for ccRCC management. Further investigation including larger cohorts of patients will allow evaluating the associations existing between miRNAs levels and insurgence of metastasis, evidencing the strength of these biomarkers in the monitoring of tumor progression in ccRCC.
ANNEXIN A3 MODULATES THE ADIPOCYTE-LIKE PHENOTYPE OF CLEAR CELL RENAL CELL CARCINOMA (CCRCC) CELLS

C. Bianchi, S. Bombelli, S. De Marco, B. Torsello, N. Zucchini, P. Viganò, G. Strada, R. Perego (Monza)

Aim of the study
The “clear cell” morphology of ccRCC cells resembles adipocyte features and results from neutral lipid accumulation. The molecular mechanism behind this morphology has yet to be clarify and may be an important component of renal carcinogenesis. Otherwise, ccRCC cells show a gene expression signature consistent with adipogenesis and can also undergo adipogenic transdifferentiation. An important role as a negative regulator for adipocyte differentiation has been recently described for Annexin A3 (AnxA3). AnxA3 is a Ca2+-dependent phospholipid-binding protein upregulated in ovarian, gastric and lung cancers and downregulated in prostate cancer and in renal cell carcinoma where we evidenced also a specific pattern of two isoforms of 36 and 33 kDa originating by an alternative splicing event. Based on these findings, in this study we have investigated the involvement of AnxA3 isoforms in the lipid storage responsible of the “clear cell” adipocyte-like morphology of ccRCC cells.

Materials and methods
Primary cell cultures from tumor and matched normal renal cortex samples characterized by FACS. HK-2 (human proximal tubular), A498 and Caki1 (ccRCC) cell lines were also used. Adipogenic medium contained 0.1 uM dexamethasone, 10 ug/ml insulin, 100 uM indomethacin and 500 uM IBMX. Intracellular lipid storage evaluated by Oil Red “O” staining or FACS and immunofluorescence analysis after Bodipy staining. AnxA3 isoform and PLIN2 expression evaluated by western blot and immunofluorescence analysis; cell viability evaluated by Annexin V/PI FACS analysis. AnxA3 gene silencing performed by siRNA.

Results
In ccRCC primary cultures the expression of the lipid droplet protein PLIN2, a marker of lipid storage, was significantly upregulated with respect to normal cortex, and the 36/33 kDa AnxA3 isoform ratio negatively correlated with PLIN2 expression. Even in cell lines the increase of lipid storage matched with the decrease of 36/33 kDa ratio. Caki1, with a low 36/33 kDa ratio, and A498 and HK2 cells, with a high 36/33 kDa ratio, were treated for 8 days with adipogenic medium, known to induce adipocyte differentiation. Adipogenic treatment affected only HK2 tubular cell viability, whereas in viable ccRCC Caki1 cells, but not in A498, induced an increase of lipid storage. Of note, in Caki1 cells this increase matched with a further decrement of 36 kDa isoform and 36/33 kDa ratio.

Discussion
We evidenced an involvement of AnxA3 in the modulation of lipid storage that characterizes the adipocyte-like phenotype of ccRCC cells. In particular, our data seem to evidence for 36 kDa AnxA3 isoform a role of negative regulator of lipid accumulation. The 36 kDa AnxA3 silencing performed in A498 ccRCC cells might confirm this hypothesis. These data may help to shed light on the complex molecular mechanisms involved in metabolic reprogramming of ccRCC cells which comprehension may lead to identify new therapeutic targets for this cancer.
RELATIONSHIP BETWEEN CELLULAR AND EXOSOMAL MiRNAS TARGETING NOD-LIKE RECEPTORS IN BLADDER CANCER

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Aim of the study
Exosomes are membrane vesicles secreted by both cancerous and normal cells which play important roles during intercellular communications and oncogenic transformation. Many reports highlighted the role of exosomal microRNAs (miRNAs) as pro-tumorigenic mediators during carcinogenesis. For this reason, exosomal microRNAs could be used as diagnostic and prognostic biomarker for bladder cancer. The modulation of expression levels of miRNAs targeting some NOD-like receptors (NLRs), in particular miR-223-3p, miR-141-3p, miR-19a-3p, in the urine sediment of patient with bladder cancer, bladder inflammation and healthy controls was demonstrated. The aim of this study was to characterize urinary exosomal miRNAs (miR-223-3p, miR-141-3p, miR-19a-3p) in bladder cancer and then to compare them with those from bladder inflammation and healthy control. Different expression profile of miRNAs could improve the current understanding of their role in bladder tumorigenesis and unravel their potential use as biomarkers for bladder cancer.

Materials and methods
46 subjects affected by bladder cancer, 28 healthy controls and 31 subjects with histologically confirmed bladder inflammation were prospectively enrolled recruited. Total RNA was extracted from urine sediment and resulting cDNA was used for amplification by real-time polymerase chain reaction. MiRNA expression levels (miR-223-3p, miR-141-3p, miR-19a-3p) were evaluated and compared among selected groups. We also evaluated the miRNAs in the soluble fraction of the bladder cancer patient cohort, stratified according to European Organization for Research and Treatment of Cancer risk criteria in high risk and low risk of recurrence and progression. Exosomes precipitation and isolation were performed; statistical analysis was conducted comparing exosomal miRNA expression levels with their cellular counterpart.

Results
The up-regulation of exosomal miR-141-3p and miR-19a-3p was found when compared with their levels in urine sediment. Linear regression analysis showed also a significant negative correlation for miR223-3p and miR19a-3p between exosomal compartment and urine sediment. Moreover, exosomal miRNAs increased in low risk compared to high risk patients, which was opposite to that observed for urine sediment.

Discussion
Our study provides a characterization of selected inflammasome-related miRNAs in urine exosomes from bladder cancer patients in comparison with their cellular counterparts. Although a direct relationship cannot be deduced from our data, our work demonstrates an inverse correlation between exo-miRNA and urine sediment-miRNA suggesting its involvement in bladder cancer.
VASCULAR HURST INDEX IN NON-TUMORAL BIOPSY CORES AS POTENTIAL HISTOPATHOLOGICAL PARAMETER TO SELECT PATIENTS WITH HIDDEN PROSTATE CANCER

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Aim of the study
Prostate cancer is the second most prevalent cancer in men globally. It is now accepted that angiogenesis is a complex phenomenon accompanying the development, progression, and metastasis of tumors of unrelated histological origin. Here we introduce the Huurst index to investigate the two-dimensional (2-D) geometrical complexity of the tumor vascular network in biopsy specimens to comprehend whether non-tumoral biopsy cores might be helpful to select patients with hidden prostate cancer.

Materials and methods
1984 biopsy cores sampled from a total of 316 patients were analyzed. Patients were categorized in two main groups: a) Prostate Cancer Group, which includes 140 patients with first positive biopsies for prostate cancer and 60 patients negative for prostate cancer at first biopsy and positive at re-biopsy, and b) Control Group, which includes 60 patients negative for prostate cancer at the first, second and third biopsy, and 56 patients with benign prostatic hyperplasia (BPH) following transurethral resection of the prostate (TURP). Two-micrometer thick sections were cut and processed for immunohistochemistry with primary antibodies raised against CD34 (Dako, Milan, Italy). This was followed by 30 min incubation with the Envision system (Dako). 3,3’-Diaminobenzidine tetrahydrochloride was used as a chromogen to yield brown reaction products. The histological sections were digitized using a computer-aided image analysis system that automatically selected the immunopositive vessels on the basis of RGB color segmentation and calculated the Hurst index by applying the formula: \( H = E + 1 - D \), where the Euclidean dimension \( E \) is equal to 1 and \( D \) represents the 2-D vascular surface fractal dimension. All of the data were analyzed using Statistica software (StatSoft, Inc., Tulsa, OK, USA) and GraphPad Prism 5 (San Diego, California, USA). P-values of \( \leq 0.05 \) were considered to be statistically significant.

Results
A low Hurst index values in negative core biopsies suggest a higher probability of hidden prostate cancer. We found that Hurst index values in the non-tumoral biopsy below 0.20 suggest that the risk to have hiding prostate cancer is high. In contrast, Hurst indexes in the non-tumoral biopsy upper than 0.35 suggests that the risk to have misunderstood and contemporary prostate cancer is low.

Discussion
This study first shows that vascular Hurst index in non-tumoral biopsies might represent a low-cost adjunctive histopathological predictive value of prostate cancer. The proposed computer-aided analysis is cheap and might be introduced in combination with actual histopathological procedures to support the clinical practice. In addition, the present study first introduces the concept that also the non-tumoral biopsy tissue might have an informative content on the presence of a contemporary cancer.
TESTICULAR AND PENILE CANCER

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TESTIS SPARING SURGERY: RESULTS OF A LARGE MULTICENTRIC RETROSPECTIVE STUDY


Aim of the study
Radical Orchiectomy (RO) represents the standard treatment for patients (pts) with suspicious testicular masses and normal contralateral testis. Because a considerable amount of small testicular masses (STM) are benign lesions, this practice exposes to a substantial risk of overtreatment with possible medical-legal consequences. The aim of this study is to report results of testis sparing surgery (TSS) in the treatment of STM (< 2cm) and to identify an updated treatment strategy.

Materials and methods
We retrospectively reviewed clinical history of pts treated with TSS for STM < 2cm in five Italian tertiary referral centres. Demographics, pathological features and postoperative follow-up (FU) data were recorded and analysed.

Results
Between Jan 2009 and Jan 2017, 147 pts have undergone TSS for STM < 2 cm at diagnostic evaluation. Mean pts age was 33 (28-41) years. All diagnoses of STM were based on ultrasonographic evaluation (US), performed for pain in 25 pts, testicular mass in 20, varicocele in 15, infertility in 45 and other reasons in 42. No pts had elevated serum tumour markers. In all cases diagnosis of benign or malignant nature was achieved with frozen section examination (FSE) followed by definitive histology. Pts with benign lesions at FSE underwent TSS. Pts with malignant lesions at FSE underwent immediate RO. No grade II or higher complications according to the Clavien-Dindo classification were reported. 21 pts (14,3%) harboured malignant tumours while 126 (85,7%) benign lesions. In only two cases FSE was not confirmed by definitive pathological examination (leydigioma at FSE and mixed stromal tumour and seminoma at final pathology). FU has been scheduled according to EAU guidelines. Median FU of pts with malignant lesion was (24 months). No tumour recurrences or diffusion were reported. ROC analysis demonstrated that benign conditions were present in 92.6% of STM < 1cm and in 73,1% of STM from 1 to 2 cm (p<0,001). Clinical and pathological features are reported in table 1.

Discussion
TSS for STM is a safe and feasible procedure. It allowed preservation of testis in the majority of pts and therefore should be considered the procedure of choice, particularly in nodules < 1cm. In pts with malignancies, during follow-up no recurrences or tumour spreading were observed when RO was preceded by TSS. At the best of our knowledge this is the largest cohort of pts and the biggest series of leydigioma treated with TSS. Guidelines on STM management should change accordingly.
ORGAN-SPARING SURGERY IN TESTICULAR SEX CORD-STROMAL TUMORS: RESULTS OF A LITTLE SERIES

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Aim of the study
We present a small series of patients with testicular sex-cord stromal tumors (TSCST), with the intent to evaluate the possibility to standardize the surgical treatment.

Materials and methods
Between 2005 and 2016 a TSCST was diagnosed in 11 patients at our department. The mean age was 46.8 years (14-83). Alpha-FP, HCG and LDH were assessed in all patients. During the operation frozen sections were request in order to choose the surgical strategy. A testis sparing surgery (TSS) was performed always in case of TSCST. A thoracic-abdominal computed tomography (CT) was performed after the surgery. The follow up was scheduled according with the EAU guide-lines for testicular tumors.

Results
Alpha-FP, HCG and LDH were negative in all patients. The frozen sections showed a TSCST in 10 patients which were treated with TSS. In 1 patient was performed an orchietomy by seminom in the frozen section but the definitive histology showed a TSCST. The mean tumor size was 11 mm (7-40). The definitive histology showed no angioinvasion, severe nuclear atypia, margin infiltration, necrosis or high mitoses-index and the CT was negative in all cases. The mean follow up was 43.8 months (10-108) and all patients remained free from disease.

Discussion
TSCST represent 3-5% of all testicular tumors. A malignant behavior is reported in about 10% of cases. Because of his low incidence their management remain controversial. The guide-lines recommend an organ-sparing procedure in every small ultrasound-detected, non palpable intraparenchimal lesion to obtain a histological diagnosis and, in case of malignancy, to perform a delayed orchietomy but they don’t give a cut-off for the tumor size. The potential malignancy may be a reason to perform an orchietomy and TSS remains an option. Our small prospective series shows that TSS could be safely performed by TSCST in frozen sections. By one or more pathologic risk factors in the definitive histology a radical surgery should always be considered. Although the good prognosis of these tumors we point out the need of a regular follow up.
TESTICULAR TUMORECTOMY: NODULES ARE NOT ALL THE SAME...


Aim of the study
Organ sparing surgery is nowadays widely employed in urology and can also be applied in small testicular nodules. The common use of scrotal ultrasounds, particularly in infertility, has increased the finding of small (below 15 mm) intratesticular hypoechoic masses with equivocal interpretation. Recent experience shows that these small nodules are often benign. Therefore, in these instances, an organ sparing surgery is mandatory, while radical orchiectomy is still the standard of care for malignant lesions with contralateral healthy testis. The video shows two apparently similar nodules detected by scrotal ultrasounds in two patients, who had different destinies after frozen section examination. In these two patients, the use of second line imaging investigations (CEUS, MR, Elastosonography), somehow anticipated the final diagnosis.

Materials and methods
Between 2001 and 2017, 163 patients with testicular masses were observed at our Urology department. 107 of these, underwent immediate radical orchiectomy while 56 (age 9-60 yrs, mean 30 yrs), object of the study, with nodules between 3 and 15 mm, and negative tumor markers, underwent testicular tumorectomy and frozen section histologic examination followed by orchiectomy only in case of malignancy. Many of these patients had received CEUS (Contrast Enhanced US), testicular RM, strain ratio elastography before surgery, and intraoperative US for nodule localization. The surgical steps and tricks of the procedure are showed in detail in the video.

Results
After frozen sections a malignant lesion was diagnosed in 11 patients (19,6%) and a benign one in 45 (80,4%). The most frequent benign lesion was Leydigioma (32 pts: 57,1%). In two patients (3,6%) the initial frozen section diagnosis of benign lesion was not confirmed at definitive histology (seminomas), and both patients, initially treated with organ sparing surgery, underwent subsequent radical orchiectomy. 38 pts were followed-up (2-60 months), and only one patient with a diagnosis of hyaline sclerosis at tumorectomy developed a seminoma 5 years later. All the others treated with tumorectomy showed no signs of mass recurrence.

Discussion
Indiscriminate radical orchiectomy for small testicular nodules is no longer acceptable. A gradual approach which includes preoperative second line imaging investigations and a stepwise surgical strategy employing tumorectomy and frozen section histologic examination should be warranted in these patients to avoid an unnecessary orchiectomy for a benign condition.
V2

FEASIBILITY OF A NOVEL PORT PLACEMENT TECHNIQUE FOR ROBOTIC RETROPERITONEAL SALVAGE LYMPH NODE DISSECTION FOR TESTICULAR CANCER


Aim of the study
Post-orchiectomy chemotherapy (ChT) represents the standard of care for advanced testicular cancer characterized by retroperitoneal lymph nodes involvement. However, patients with residual nodal disease ≥ 1 cm after ChT should be submitted to post-chemotherapy retroperitoneal lymph node dissection (PC-RPLND). We assessed the feasibility of robotic PC-RPLND (R-PC-RPLND) in patients with residual retroperitoneal masses.

Materials and methods
Four patients with a residual retroperitoneal mass after ChT were submitted to R-PC-RPLND at our Institution. Pre- and postoperative contrast-enhanced CT scan and serum markers were evaluated to confirm the effectiveness of the surgery. The whole procedure was performed in lithotomic position, with 24 degrees of Trendelemburg. A total of 5 ports were used, 3 for the robotic arms, 1 for the camera and 1 for the bedside assistant. Port positioning was the same for both sides of retroperitoneal lymphadenectomy (i.e. paraortic vs. paracaval template lymphadenectomy). Robotic arms were equipped with a monopolar scissor, a bipolar robotic instrument and a robotic grasper. A nerve sparing approach was performed to preserve ejaculation, avoiding diathermy near nerves. Finally, in all cases the dissection included the complete removal of the ipsilateral spermatic cord.

Results
All procedures were performed by a single surgeon highly experienced in robotic surgery (over 1000 cases). Median (IQR) operative time was 288.5 (247.5;320.5) minutes, while median console time was 238.5 (212-259) minutes. No intraoperative or post-operative complications were recorded. Abdominal drain was removed on third postoperative day (POD) in three patients, and on seventh for the remaining one and no cases of chylorrhea were described. Median length of stay was 5 (4.75-5) days. Median number of lymph nodes removed was 13.5 (9.5-21). At final pathology 3 patients had lymph node invasion, and one patient only necrosis. Median follow up time was 2 (0-4.5) months. All patients were disease free at follow up and no alterations to sexual functions were reported.

Discussion
In a high volume robotic centre, R-PC-RPLND is a safe and effective procedure that allows a significant reduction of perioperative morbidity compared to conventional surgery. Long-term follow up is needed to assess the oncological outcomes of the procedure.
TOTAL PENECTOMY, A COMPROMISE FOR LIFE: RESULTS FROM THE PECAD STUDY


Aim of the study
The use of organ sparing strategies to treat penile cancer is on rise. However radical penectomy still represent up to 15-20% of local treatments in penile cancer patients. We aim to evaluate the 1- and 5- year overall mortality (OM) free survival and disease free survival (DFS) in this setting of patients.

Materials and methods
Within a multi-institutional database including 14 centers from 5 different countries data about penile cancer patients treated with radical penectomy were extracted. Main clinical and pathological characteristics of interest were age, circumcision status, co-morbidities (diabetes, hypertension, cardiovascular disease, dyslipidemia, obesity), T-stage, N-stage, M-stage, grade, surgical margins, present of palpable lymph-nodes and use of chemotherapy and radiotherapy. Kaplan Mayer methods was used to estimate 1- and 5- year overall mortality (OM) free survival and disease free survival (DFS).

Results
We retrospectively reviewed the clinical notes of all patients with penile cancer (PC) that underwent surgical treatment in 12 European and American Centers from 2010 to 2016 (Penile Cancer ADherence study, PECAD Study). The median age was 64 (IQR 76-54) years and the median follow up was 13.1 months (IQR 7.6-24.9). 31 (50,8%) patients were circumcised at the time of diagnosis, while we found 6 (9,8%) diabetics, 17 (27,8%) hypertensives, 6 (9,8%) cardiac patients, 3 (4,9%) patients with dyslipidemia and 7 (11,5%) obese. In 32 (52,5%) men the glans was affected, in 1 (1,6%) foreskin and in 28 (45,9%) both. For T-stage 37 (60,7%) was pT3/pT4 compared to 24 (39,3%) pT1 / pT2; analyzing N-stage and M-stage we found 31 (50,8%) pN1-3 and 5 (8,2%) M1. 52 (85%) had a high grade (G2-G3) with 6 positive surgical margins. Vascular and lymph vascular invasion were present in 21 (34.4%) and 23 (37.7%), respectively, while 34 (55,7%) had a clinical node-positive illness. Lymphadenectomy was performed in 44 (72,1%) cases. Eleven (18%) experienced a local recurrence of disease versus nine (14,8%) who showed a systemic recurrence. Finally we reported the data concerning chemo and radiotherapy that were taken in thirteen (21.3%) and seven (11.5%) patients respectively. 1- and 5- year OM free survival rates were respectively 77.0 and 63.6%. Moreover, 1- and 5- year DFS rates were respectively 59.9 and 38.3%.

Discussion
These findings of our multi-institutional experience confirm the poor prognosis and the aggressive pattern of this cancer in line with the data currently in the literature. Our data have shown that at 5 years, more than a third of patients do not survive and more than 60% report a disease recurrence, despite radical treatment and lymphadenectomy approach (that was carried out in more than 70% of patients).
SURGICAL TREATMENT OF PENILE CANCER


Aim of the study
Penile cancer (PC) is an uncommon malignant tumor, with an overall incidence of around 1/100,000 males in Europe and the USA. The incidence of penile cancer increases with age, with a peak in the sixth decade but it does occur in younger men. The aims of the treatment of the primary tumour are complete tumour removal with as much organ preservation as possible, without compromising oncological control. Local treatment modalities for localised PC include excisional surgery, external beam radiotherapy (EBRT), brachytherapy and laser ablation. However, treatment choice depends on tumour size, histology, stage and grade, localisation (especially relative to the meatus) and patient preference. Glansectomy with distal corporectomy and reconstruction or partial amputation with reconstruction are recommended for disease invading the corpora cavernosa and/or urethra (T3). We report two cases of patients undergoing partial penectomy and total penectomy with perineal urrthrostomy. Year of production: 2018.

Materials and methods
The first patient (61 years) came to our attention with a hard, swelling and necrotic lesion involving the glans and the distal portion of the penis, in association with bilateral lymphadenopathy. Ultrasonographic and magnetic resonance investigations confirmed the invasion of the right corpus cavernosum. The patient underwent partial penectomy and bilateral lymphadenectomy. The second patient (75 years) presented with a big necrotic lesion involving the glans and the foreskin, that appeared fused together. Ultrasonographic and magnetic resonance imaging confirmed the invasion of the glans, with dubious involmnet of corpora cavernosa. Total penectomy, bilateral orchidectomy and perineal urethrostomy was performed, in association with fine needle aspiration cytology to the lymphnodes.

Results
In the first case histopathological diagnosis was squamous cell carcinoma involving the glans, the corpus spongiosum and urethra. Marginal involving of the corpora cavernosa. Lymphnodes resulted free from desease. (TNM Classification: pG2.C2.T3.N0.Pn1). The histopathological diagnosis in the second case was squamous cell carcinoma with verrucoid aspects involving the glans and the corpus spongiosum, with corpora cavernosa and urethral margin free from desease (TNM Classification: pG2.C2.T2.R0.Nx).

Discussion
As PC can be a morbid and disfiguring ailment, every effort must be made to preserve penile length and functionality, while attaining adequate cancer control. Although maximal penile preservation would be ideal, proper cancer control remains the primary goal of treatment and therefore must be pursued in the management plan for each individual patient with adapted techniques to minimize recurrence and improve functional outcomes.
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A PROSPECTIVE RANDOMIZED STUDY COMPARING MRI-BASED AND STANDARD PATHWAY FOR PROSTATE CANCER DIAGNOSIS: THREE YEARS FOLLOW UP


**Aim of the study**
Multiparametric MRI allows clinicians to diagnose lesions suspicious for prostate cancer (PCa) and to perform MRI/TRUS fusion software-based targeted biopsies (FB). Even if the use of MRI is already recommended by the guidelines, its use in the setting of biopsy-naïve patients is probably the most promising. The aim of this randomized, prospective, two-arm, study was to evaluate after a three years experience the efficacy of a pathway based on MRI and FB, compared to the standard diagnostic pathway, in biopsy-naïve patients with a suspicious PCa.

**Materials and methods**
After the approval of the local Ethics Committee, all naïve patients with elevated PSA (<15 ng/ml), negative DRE, <75 years were randomized into 2 groups using a 1:1 computer-generated random allocation: Arm A (MRI-based) and arm B (standard). The MRI study consisted of T2-weighted, diffusion-weighted and dynamic contrast-enhanced imaging; all lesions were classified according to PIRADS system. The patients were then biopsied as follows:

- Arm A with positive mp-MRI (PIRADS score ≥3): FB using the Biojet® system (D&K Technologies), sampling at least 3 cores for a maximum of 3 suspected lesions;
- Arm A with negative mp-MRI (PIRADS score <3) and Arm B: transrectal 12 samples TRUS-guided systematic biopsy (SB). PCa were considered clinically significant (CS) according to START consortium definition (for FB) and Epstein criteria (for SB).

**Results**
During the period 09/2014 – 09/2017, 432 patients were enrolled. Median age was 68 (IQR 57-69) years, mean PSA was 6,83 (+/- 3,31) ng/ml. The patients’ demographics were comparable in both arms. Table 1 reports the main study results at 3 years follow-up.

**Discussion**
The overall and CS PCa detection rate in Arm A were significantly higher than in Arm B. In patients with a positive MRI submitted to FB, results further improved. In patients with a negative MRI submitted to SB, the probability to find a CS PC was minimal. The diagnostic pathway based on MRI and FB seemed to be more effective and safer than the standard, at 3 years follow up.
ASSESSING THE IMPACT OF RADIOLOGIST EXPERTISE ON THE MISDIAGNOSIS OF CLINICALLY SIGNIFICANT PROSTATE CANCER AMONG MEN RECEIVING MULTI-PARAMETRIC MRI


Aim of the study
Previous studies recognized a radiological learning curve in the interpretation of multi-parametric MRI (mp-MRI) of the prostate. However, none of these studies assessed the role of radiologist expertise on the reduction of both mpMRI false positive and false negative findings (radiological misdiagnosis). We hypothesized that experience in mpMRI interpretation is a major determinant of misdiagnosis of clinically significant prostate cancer using a large single-radiologist series.

Materials and methods
Patients submitted to 1.5 mpMRI study using an endorectal coil and a subsequent targeted fusion biopsy between 2013 and 2016 at a single tertiary referral centre were assessed. Patients with a focal area of the prostate identified as PIRADS 3 v.2 at mpMRI were excluded. All mpMRI were analyzed by a single expert radiologist and all biopsies were performed by a single expert urologist. This resulted in a final cohort of 180 consecutive assessable patients. The study outcome was radiological misdiagnosis, defined as false negative (PIRADS 2 and Gleason score ≥7 at mpMRI-targeted biopsy) or false positive (PIRADS 4 or 5 and negative mpMRI-targeted biopsy or Gleason score=6 at mpMRI-targeted biopsy). Radiologist expertise was coded as progressive number of mpMRI analyzed by the physician. Multivariable logistic regression analyses (MVA) were used to assess the association between radiologist expertise with the study outcome. Covariates consisted of age at mpMRI, PSA (ng/ml) and prostate volume (ml). Lowess smoother weighted function was used to graphical assess the effect of radiologist expertise on the probability to radiological misdiagnosis, after accounting for all confounders.

Results
Overall, the rate of radiological misdiagnosis was 36 (20%). Specifically, the rate of false positive and false negative was 30 (16%) and 6 (3%), respectively. At MVA, radiologist expertise was the only independent predictor of radiological misdiagnosis (OR: 0.9, p=0.01). A progressive decrease of the probability of radiological misdiagnosis with the increasing number of mpMRI analyzed was observed, after accounting for all confounders. The rate of radiological misdiagnosis moved linearly from 35% at the initial cases to almost 10% after 180 mpMRI analyzed.

Discussion
We provided evidence that mpMRI interpretation is not devoid of misdiagnosis also in expert hands, with an overall rate of roughly 20%. Although radiologist expertise was significantly related to the reduction of misdiagnosis, the curve representing the relationship between radiologist expertise and radiological misdiagnosis did not reach a plateau even after 180 procedures. These findings suggest that prostate mpMRI interpretation is under continuous improvement and radiological expertise is needed to optimize prostate cancer diagnosis.
HOW GOOD IS INTER-READER AGREEMENT OF PROSTATE IMAGING REPORTING AND DATA SYSTEM VERSION 2 IN DETECTING PROSTATE CANCER WITH MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING? A PROSPECTIVE MULTI-READER STUDY WITH WHOLE-MOUNT SECTIONS AS THE REFERENCE STANDARD

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Aim of the study
Little data is available on the inter-reader variability of Prostate Imaging Reporting and Data System version 2 (PI-RADS v2) on multiparametric magnetic resonance imaging (mpMRI) in detecting prostate cancer (PCa) using final pathology after radical prostatectomy (RP). In this study, we evaluated the inter-reader agreement of PI-RADS v2 in detecting overall PCa and clinically significant PCa with whole-mount sections as the reference standard.

Materials and methods
Between May 2016 and February 2017 we prospectively enrolled consecutive patients with PCa who underwent 3.0 T mpMRI before RP. Three radiologists with 8, 6 and 2 years of experience in prostate mpMRI who were blinded to clinical data and final histology independently analyzed mpMRI images, scoring all imaging findings in accordance with PI-RADS v2. Whole-mount pathology was the reference standard, and clinically significant PCa was defined as diameter ≥1 cm (as surrogate for volume ≥0.5 cc) or International Society of Urological Pathology (ISUP) grade ≥2 or extraprostatic extension/seminal vesicle invasion. On a per-lesion basis, we calculated overall and pairwise inter-reader agreement in assigning PI-RADS v2 categories, detecting overall PCa and clinically significant PCa according to PI-RADS v2 thresholds of ≥3 and ≥4, and detecting non-organ-confined disease (NOC). Inter-reader agreement was assessed with Cohen’s weighted-kappa coefficient.

Results
We included 48 patients with a total of 71 cancers on final pathology after RP. Median PSA level was 7.2 ng/ml, median tumour diameter was 1.5 cm, median ISUP grade was 1, and NOC was detected in 20/71 (28%) cases. Overall, there was moderate agreement in assigning PI-RADS v2 categories to overall PCa (k=0.53) and clinically significant PCa (k=0.47). Using PI-RADS v2 threshold ≥4 for clinically significant PCa agreement was higher than using PI-RADS v2 threshold ≥3 (k=0.63 vs. 0.57). Inter-reader agreement was higher between more experienced readers, with the most experienced one achieving the highest cancer detection rate (0.73 for clinically significant PCa using threshold ≥4). There was substantial agreement in assessing NOC (k=0.72), with NOC detection rate ranging 0.55-0.70.

Discussion
We found moderate to substantial agreement in assigning PI-RADS v2 categories and evaluating the spectrum of cancers found on whole-mount sections, with PI-RADS v2 threshold ≥4 as the most reproducible cut-off to detect clinically significant PCa. Increasing readers’ experience resulted in higher inter-reader agreement and cancer detection rate.
PROPOSAL OF A NOVEL RISK SCORE TO IDENTIFY BIOPSY NAÏVE MEN WITH ELEVATED PSA WHO SHOULD BE CONSIDERED FOR A MULTIPARAMETRIC MRI


Aim of the study
Multi-parametric MRI (mpMRI) has been proposed as a triage test to identify men with elevated PSA who should be considered for first prostate biopsy. Nonetheless, the use of mpMRI in all men with elevated PSA would result into substantial costs for any healthcare system. As such, we aimed at developing a model to assist physicians in the identification of biopsy naïve men who would should be considered for mpMRI.

Materials and methods
Overall, 553 biopsy naïve men who underwent a 1.5T endo-rectal coil mpMRI of the prostate for elevated PSA levels at a single center between 2012 and 2017 were identified. All patients had PSA levels ≤10 ng/ml and a negative digital rectal exploration. All images were reviewed by two high-volume dedicated uro-radiologists. A positive mpMRI was defined as a PIRADS ≥3 lesion. Multivariable logistic regression analyses assessed the association between clinical variables (age, prostate volume and PSA at mpMRI) and a suspicious lesion at mpMRI. The regression coefficients were used to generate a risk-score predicting a PIRADS ≥3 at mpMRI. The discrimination accuracy of the model was quantified using the ROC-derived area under the curve (AUC). The extent of over- or underestimation of the actual vs. risk-score-predicted mpMRI-positivity rates was explored using a calibration plot. Finally, a decision-curve analysis (DCA) was used to determine the clinical net-bene.

Results
Overall, 210 (38%) men had a PIRADS 3 or higher at mpMRI. The PIRADS was 3, 4 and 5 in 86 (15.6%), 80 (14.5%) and 44 (8.0%) men. Of these, 34, 52 and 68% had a diagnosis of PCa at prostate biopsy. At multivariable analyses, age (Odds ratio [OR]: 1.06; 95%CI: 1.04-1.09), PSA (OR: 1.13; 95%CI: 1.07-1.20) and prostate volume (OR: 0.98; 95%CI: 0.97-0.98) were associated with the probability of a PIRADS ≥3 at mpMRI (all p<0.001). The model depicted excellent calibration at internal validation with an AUC of 78%. The DCA demonstrated that the novel risk score would improve clinical risk prediction against threshold probabilities between 15 and 80% risk. Omitting an mpMRI in men with a risk ≤25% would have spared 139 (25.1%) procedures at the risk of missing 21 (15.1%), 6 (4.3%) and 1 (0.7%) men with PIRADS 3, 4 and 5, respectively. Similarly, overall and clinically significant prostate cancer (defined as Gleason score ≥7) would have been missed in 15 and 5% patients with a PIRADS 3-5 lesion below the 25% cut-off.

Discussion
Identification of men more likely to have a PIRADS 3-5 at mpMRI would allow for optimizing the use of imaging in men with PSA levels ≤10 ng/ml prior to first biopsy. Considering mpMRI only in men with a probability of a PIRADS ≥3 lesion >25% would allow for sparing more than 25% of the procedures at the risk of missing only 5% of PIRADS 4-5 and 5% of clinically significant PCa.
A NOVEL PROPOSAL FOR A 3 TESLA MRI FUSION BIOPSY-BASED MODEL TO PREDICT THE RISK OF CLINICALLY SIGNIFICANT PROSTATE CANCER AT RADICAL PROSTATECTOMY

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Aim of the study
MRI-US fusion prostate biopsy (MRI-TBx) has been described as a better detector of clinically significant prostate cancer (csPCa). An accurate assessment of tumor pathology assists in counselling patients with prostate cancer (PCa) for further treatment. Therefore, the aims of the study were: to compare trans-rectal 3 Tesla MRI-TBx to systematic random trans-rectal ultrasound guided prostate biopsy (TRUS-Bx) and to combined biopsy in terms of accuracy with respect to final histopathology at radical prostatectomy (RP); to develop a predictive model for csPCa risk at radical prostatectomy.

Materials and methods
A cohort of 160 patients, who underwent 3 Tesla MRI, MRI-TBx and following RP between 01/2010 to 4/2017, was retrospectively reviewed. Patients harboring suspicious lesions on multiparametric MRI underwent MRI-TBx (median 6.63 cores per lesion) using a commercially available fusion biopsy system (UroNav, InVivo Corp, Gainesville, FL, USA) followed by a TRUS-Bx (median 12 cores). csPCa was defined as Gleason score ≥4+3. Data was analyzed regarding cancer detection rates and concordance of histopathological results in MRI-TBx, TRUS-Bx and RP pathology specimen. A predictive model for the risk of csPCa at radical prostatectomy was then developed.

Results
Median age was 65.38 (61.03; 69.21) and median PSA level was 6.8 (5.3; 11.8) ng/mL. PCa detection rate was 90.6% (145/160) for MRI-TBx cores and 75.6% (121/160) in TRUS-Bx cores (p<0.001). Radical prostatectomy revealed 59 csPCa as defined above; csPCa detection rate for was 61.01% (36/59) for MRI-TBx and 44.06% (26/59) for TRUS-Bx (p 0.064). MRI-TBx alone would have missed 9.4% (15/160) of all PCa and only 4.3% (7/160) csPCa. TRUS-Bx alone would have missed 24.4% (39/160) of all PCa and 16.3% (26/160) of csPCa. As compared to the whole-gland specimen as the gold standard, AUC for MRI-TBx, TRUS-Bx and combined biopsy were 0.752, 0.711 and .797 respectively, though no statistically significant difference was found as compared to MRI-TBx. A multivariable logistic regression model was then developed to predict the risk of csPCa at radical prostatectomy. Combined Gleason Score (OR 15.36, p <.0001), index lesion/prostate volume ratio (OR 0.458, p 0.0405) and worst PIRADS at MRI (OR 2.06, p 0.004) were included in the final model. The predictive accuracy for the final model was 0.819.

Discussion
MRI-TBx is associated with a higher overall PCa detection rate, though csPCa detection rate is not significantly different. No statistically significant difference in the concordance between MRI-TBx, TRUS-Bx and combined biopsy was found, though combined approach held the higher AUC. Last, a 3 Tesla MRI-based model to predict the risk of csPCa at radical prostatectomy was developed.
MULTIPARAMETRIC MRI INCREASES CLINICALLY SIGNIFICANT PROSTATE CANCER DETECTION RELATIVE TO STANDARD CLINICAL PREDICTORS: RESULTS OF A RISK ADAPTED ANALYSIS IN A NON-SCREENED POPULATION


Aim of the study
Several studies observed that mpMRI combined with standard clinical data improved the prediction of clinically significant prostate cancer (csPCa). However, all these studies relied on risk models developed on mpMRI screened populations and none assessed whether the improvement in the csPCa prediction is maintained through different risk groups. Therefore, we assessed the role of mpMRI in csPCa prediction when added to a model created on non-screened population and the relationship between mpMRI and presence of csPCa in different risk groups.

Materials and methods
We relied on a population of 665 patients (development cohort) who underwent TRUS-guided prostate systematic biopsy for a suspicion of PCa between 2011 and 2016. All patients were either biopsy naïve or received a previous negative biopsy. Within the development cohort we developed a multivariable logistic regression (MVA) model (Model 1) predicting csPCa (defined as Gleason at biopsy ≥7) using standard clinical predictors (age, PSA, DRE and prostate volume). External validation was performed into 437 patients who underwent mpMRI of the prostate with subsequent targeted and concomitant systematic biopsy at a single tertiary referral centre between 2013 and 2017. All these patients underwent 1.5 T mpMRI study using an endorectal coil. An advanced model (Model 2) was developed on the validation cohort adding mpMRI PIRADS score v.2 (<4 vs. >=4) to Model 1. The predictive accuracies (PA) of the two models were compared using the AUC in validation cohort. Decision curve analyses were performed to compare the net benefit. Finally, multivariable-derived coefficients of the Model 1 were used to develop a risk-calculator that allowed us to identify three risk groups in the validation cohort: low- (<50%), intermediate- (50-70%) and high- (>70%) risk to harbour csPCa. Within these risk groups we assessed the relationship between mpMRI and the presence of csPCa relying on a MVA after accounting for confounders.

Results
Overall, 76 and 51% patients had csPCa in the development and validation cohort, respectively. All variables included in Model 1 were independent predictors of csPCa (all p≤0.001). In Model 2, age, PSA, prostate volume and PI- RADS ≥4, were independent predictors of csPCa (all p≤0.003). The PA of Model 1 and 2 in the validation cohort was 76 and 82%, respectively. Model 2 showed higher net benefit. At MVA performed in each risk group, mpMRI showed the lowest OR (2.9) and the weakest correlation with presence of csPCa in high-risk patients when compared to low- (OR: 7.3) and intermediate-risk groups (OR: 4.2).

Discussion
mpMRI outperformed csPCa diagnostic accuracy when added to other clinical predictors available. The benefit of mpMRI was highest in the low and intermediate risk groups while decreased in men with high risk of csPCa.
COMPARISON BETWEEN THE DIAGNOSTIC ACCURACY OF HIGH RESOLUTION MICRO-ULTRASOUND VERSUS MULTIPARAMETRIC MRI IN THE DETECTION OF PROSTATE CANCER: PRELIMINARY RESULTS FROM A SINGLE-INSTITUTIONAL ONGOING PROSPECTIVE TRIAL


Aim of the study
In recent years, mpMRI and MRI/ultrasound (US) fusion biopsies have been increasingly adopted as an alternative to random US-guided biopsies in patients with suspected PCa. The widespread use of this diagnostic strategy has been limited by cost-effectiveness, workflow considerations and the suspect that mpMRI may miss a significant proportion of PCa. Micro-ultrasound is a new real-time US-based imaging modality with resolution down to 70 microns. We compared the diagnostic accuracy of micro-US and mpMRI within a prospectively collected cohort of patients with suspected PCa.

Materials and methods
Data on 60 consecutive patients who were scheduled for a MRI/US fusion biopsy due to the presence of at least one suspicious (PIRADS ≥3 lesion) at mpMRI were prospectively collected. Prior to MRI/US fusion biopsy, all patients were imaged with the ExactVu 29 MHz micro-US system and eventually subjected to micro-US targeted biopsies by a urologist blinded to mpMRI results. The PRI-MUS (prostate risk identification using micro-ultrasound) protocol was used to locate targets (defined as a PRI-MUS score ≥3 lesion) on micro-ultrasound. For the scope of the study, besides micro-ultrasound and MRI fusion biopsies, all patients also received random biopsy (mean 7.2 cores). The overall presence of PCa and the presence of clinically significant PCa (defined as a Gleason score ≥7 PCa; csPCa) was assessed. Concordance rate between mpMRI and micro-US findings and biopsy results were determined.

Results
Median patient age was 64 years (range 46-78) and median total PSA was 7.0 ng/mL (range 0.65-20). The majority of patients (n=35, 58.3%) have already undergone ≥1 previous prostate biopsy. Overall, 17 (28.3%) had a PIRADS 3 lesion at mpMRI, while 28 (46.7%) and 9 (15.0%) had PIRADS 4 and 5 lesions, respectively. No PI-RADS score was given in the remaining 6 cases. PCa and csPCa detection rate were respectively 53.3% (n=32) and 30.0% (n=18). Micro-US did not identify any suspicious lesion in 13 (21.7%) patients. Of these, 6 patients were confirmed as having a negative histology at biopsy, while 6 individuals harboured csPCa. In those patients where a micro-US lesion was detected, the concordance rate between micro-US and mpMRI was fairly good (37 out of 59 lesions; 62.7%). Only 7/22 discordant lesions were positive for csPCa and in 5/7 micro-US for a separate lesion of csPCa in the same subject. Relative to mpMRI and systematic biopsy, the sensitivity and negative predictive value of micro-US in detecting csPCa were 83% and 80% respectively, while its specificity was 28.6%. The sensitivity of mpMRI relative to micro-US and systematic biopsy was similar at 85%.

Discussion
According to our preliminary experience, micro-US appears to be a valuable tool that may provide additional information regarding the presence or absence of csPCa in patients with suspected PCa according to mpMRI. Future studies comparing the diagnostic accuracy of micro-US and mpMRI may help to further refine our ability to detect csPCa.
PROSPECTIVE VALIDATION OF PROSTATE IMAGING REPORTING AND DATA SYSTEM VERSION 2 ON MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING IN DETECTING CLINICALLY SIGNIFICANT PROSTATE CANCER WITH PATHOLOGY AFTER RADICAL PROSTATECTOMY AS THE REFERENCE STANDARD

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Aim of the study
Few studies have validated the Prostate Imaging Reporting and Data System version 2 (PI-RADS v2) on multiparametric magnetic resonance imaging (mpMRI) as a tool to detect clinically significant prostate cancer (PCa). In this study, we assessed the accuracy of PI-RADS v2 in detecting clinically significant (PCa) on mpMRI using whole-mount sections after radical prostatectomy (RP) as the reference standard.

Materials and methods
Between May 2016 and February 2017, consecutive patients who underwent 3.0 Tesla mpMRI before RP were prospectively enrolled. This was set as a multi-reader study. For the purpose of this analysis, two radiologists with 8 and 6 years of experience in prostate mpMRI, who were blinded to final pathology, independently mapped and scored all imaging findings according to PI-RADS v2 recommendations. One experienced uropathologist mapped all cancers detected on whole-mount sections using the PI-RADS v2 sector scheme. Clinically significant PCa was defined as diameter ≥1 cm (as surrogate for volume ≥0.5 cc) or International Society of Urological Pathology grade ≥2 or extraprostatic extension/seminal vesicle invasion. Per-lesion and per-patient analyses were run. Primary outcome was sensitivity and false discovery rate (FDR) in detecting clinically significant PCa using PI-RADS v2 ≥3 and ≥4 score as thresholds. Secondary outcome was inter-reader agreement assessed with Cohen’s weighted-kappa coefficient.

Results
Fourty-eight patients were included with 71 cancers on whole-mount sections. On the per-lesion analysis, sensitivity and FDR at the PI-RADS v2 threshold score ≥3 were 0.75 and 0.17 for Reader 1, and 0.67 and 0.13 for Reader 2, respectively. At the PI-RADS v2 threshold score ≥4, sensitivity was slightly lower, and FDR nearly halved for both readers. On the per-patient analysis, sensitivity for clinically significant PCa at the PI-RADS v2 threshold score ≥3 was 0.85 for Reader 1, and 0.78 for Reader 2. At the PI-RADS v2 threshold score ≥4, sensitivity was slightly lower for both readers. Inter-reader agreement was substantial (k 0.72 and 0.65 for PI-RADS v2 threshold score ≥3 and ≥4, respectively).

Discussion
In our prospective study with pathology after RP as reference standard, PI-RADS v2 on 3.0 Tesla mpMRI showed good sensitivity in detecting clinically significant PCa with substantial agreement between two experienced readers. PI-RADS ≥4 threshold had lower FDR.
INDEX AND NOT-INDEX LESIONS IDENTIFIED IN THE PATHOLOGICAL SECTIONS AND IN MULTIPARAMETRIC MRI


Aim of the study
Our objective is to evaluate the reliability of multiparametric MRI (mpRMI) in the identification of prostate cancer (PCa) foci through the comparison with pathological report of different lesions using maps.

Materials and methods
We evaluated 23 patients underwent radical prostatectomy in a single urological department. All specimens have been reviewed by one dedicated uropathologist. All mpMRI (1.5 T, 32 channels external coil) have been evaluated by one dedicated radiologist. Two maps of cancer lesions have been created, based respectively on pathological sections and mpMRI findings. It was describes any features of different cancer lesions. Volume and Prostate cancer grade group (GG) have been evaluated for each neoplastic focus.

Results
In 23 radical prostatectomies were found 45 neoplastic foci: 23 index lesions and 22 satellite lesions. 8 patients (34.7%) had monofocal tumor, 15 patients (65.3%) had multifocal tumor. GG1 was in 24 cases (53.3%), GG2 in 12 (26.7%), GG3 in 4 (8.9%), GG4 in 1 (2.2%) and GG5 in 5 (8.9%). 3 foci resulted with extra-prostatic extension (EPE). mpMRI found 46 areas (3 Pi-rads 3, 29 Pi-rads 4 and 14 Pi-rads 5). mpMRI identified 32 (71.1%) of 45 neoplastic foci, including 21 index lesions (91.1%) of 23 totals. 13 tumoral foci (28.9%) were not individuated, including 11 (84.6%) clinically insignificant tumor (GG1, intracapsular, volume <0.5 cc) and 2 (15.4%) index lesions (1 GG4 and 1 GG5); no EPE was identified in these cases. 14 false positives were identified at mpMRI and resulted inflammation in 10 cases (71.4%) and cysts in 4 cases (28.6%) at the revision of dedicated uropathologist; these areas were located in the transitional zone in 11 cases (78.6%).

Discussion
In our experience, mpRMI can individuate 71.1% of all cancer foci and the 91.1% of index lesions. Cancer lesions not individuated were clinically insignificant in 84.6%. 78.6% of false positives were located in transitional zone.
DIAGNOSTIC ACCURACY OF THREE TESLA BIPARAMETRIC MAGNETIC RESONANCE IMAGING OF THE PROSTATE, PROSTATE SPECIFIC ANTIGEN DENSITY AND THEIR COMBINATION FOR THE DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER: RESULTS FROM A RETROSPECTIVE STUDY

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Aim of the study
We aimed to compare the diagnostic accuracy of three Tesla Biparametric Magnetic Resonance Imaging (bpMRI) of the prostate, Prostate Specific Antigen Density (PSA-D) and their combination for the detection of clinically significant Prostate Cancer (PCa).

Materials and methods
We performed a retrospective study. Patients with clinical suspicion of PCa and PSA value between 2.5 and 10 ng/dL who underwent three Tesla bpMRI and subsequent prostate biopsy in a single institution were included into the study. Patients with history of previous prostate biopsy were excluded. PSA-D value was calculated based on prostate volume obtained during bpMRI. PCa lesions with an International Society of Urological Pathology (ISUP) score = or > 3 were considered clinically significant PCa. Sensitivity and specificity in detecting clinically significant PCa were determined for bpMRI, PSA-D, and their combination. Receiver operating characteristic (ROC) curves were calculated. A p < 0.05 was considered statistically significant.

Results
A total of 114 patients who underwent bpMRI and prostate biopsy between January 2015 and September 2017 were included into the study. bpMRI imaging consisted of T2-weighted imaging and diffusion weighted imaging acquisitions (b-values 0, 400, 1500) and was evaluated with a Likert score based on PI-RADS v2. All patients received 16-core transrectal prostate biopsy by a single operator. The sensitivity of bpMRI ad PSA-D in detecting clinically significant PCa was 93% and 77%, respectively (p< 0.005). ROC curves analysis showed that area under the curve (AUC) of bpMRI, PSA-D and combination was 0.87, 0.79 and 0.91, respectively (Figure 1). Based on the results of ROC curves, combination showed no significant improvement versus bpMRI alone.

Discussion
bpMRI has a greater sensitivity and similar specificity compared to the PSA-D in the detection of clinically significant PCa. bpMRI combined with PSA-D does not provide superior results compared to bpMRI alone. Our analysis suggests a possible independent role for bpMRI in the detection of clinically significant PCa.


Aim of the study
The ability to identify clinical significant prostate cancer (csPCa) has dramatically improved with the introduction of multiparametric magnetic resonance imaging (mpMRI). Given the growing interest towards targeted biopsy and focal therapy, improving our knowledge on the relationship between mpMRI parameters and the ability to predict csPCa multifocality, is mandatory. The aim of the present study was to assess whether PI-RADS score of the index lesion (IL) may predict multifocal csPCa undetected by mpMRI.

Materials and methods
We identified 343 patients submitted to mpMRI of the prostate with subsequent biopsy between 2014 and 2017 at a single tertiary care referral centre. Lesions with a PIRADS score v. 2 ≥ 2 detected at mpMRI were targeted with a cognitive or a fusion approach (mpMRI-Bx). Moreover, each patient was submitted to a random, extended biopsy (TRUS-Bx) during the same session. csPCa outside the IL was defined as disease detected at TRUS-Bx with a Gleason Score (GS) ≥3+4 and equal or greater than the GS of the IL. The extent of csPCa detected at target and random cores were reported and stratified according to GS and PI-RADS score of the IL. The probability to diagnose csPCa outside the IL according to PI-RADS score was also assessed with multivariable logistic regression analyses (MVA), after accounting for age at biopsy, PSA, prostate volume, previous biopsy (none vs. negative), number of random cores taken at TRUS-Bx and volume of the IL. The multivariable relationship between PI-RADS score and presence of csPCa outside the mpMRI detected IL was graphically plotted, after accounting for the same confounders included into the logistic model.

Results
The detection rate of csPCa outside the IL was 30%. The detection rate of csPCa at TRUS-Bx was 8% in PI-RADS 2, 15% in PI-RADS 3, 36% in PI-RADS 4 and 58% in PI-RADS 5 lesions (p=0.03). Overall, the median length of csPCa found at TRUS-Bx and thus missed at mpMRI was 2.6 mm. However, it significantly increased with increasing PIRADS score of the IL, being 1.8, 2.3, 2.8 and 3.8 mm in PI-RADS 2, 3, 4 and 5, respectively (p=0.03). At MVA, PI-RADS 4 (OR: 7.6; p=0.01) and 5 (OR: 17.3; p<0.001) were independent predictors of the presence of csPCa outside the IL. A progressive increase in the probability to diagnose csPCa outside the IL detected at mpMRI with increasing PI-RADS scores was observed, ranging from 20% for PI-RADS 2 to almost 80% for PI-RADS 5 lesions.

Discussion
Overall, the accuracy of mpMRI in identifying multifocal csPCa is poor, missing low volume csPCa in roughly 30% of patients. Moreover, the rate and the extent of csPCa undetected by mpMRI significantly increased with increasing PI-RADS score of the IL, which can be thus considered a proxy of tumor multi-focality. These results should be considered when targeted biopsy and focal approaches are considered.
68Ga-PSMA PET/CT for primary diagnosis of prostate cancer in men with contraindications to or negative MRI: A prospective observational study


Aim of the study
68Ga-PSMA-PET/CT might represent the most appealing alternative to multiparametric MRI (mpMRI) for the identification and risk stratification of prostate cancer (PCa). We investigate the accuracy of 68Ga-PSMA-PET/CT for diagnosis of PCa in men with persistently elevated PSA and negative or contraindications to mpMRI, after previous negative biopsy.

Materials and methods
The study was a prospective observational analysis. Men with persistently elevated PSA suspected for PCa, with or without previous atypical small acinar proliferation (ASAP) and/or high grade prostatic intraepithelial neoplasia (PIN), and negative digital rectal examination (DRE), after at least one negative biopsy, were enrolled. The cohort comprised patient with either a negative mpMRI (PIRADS v2 ≤ 2) or with absolute or relative contraindications to mpMRI. All patients underwent whole body 68Ga-PSMA PET/CT and when focal uptake of 68Ga-PSMA was superior to the background activity they were selected for target biopsy. The primary endpoint of the study was to evaluate the diagnostic performance of 68Ga-PSMA-PET/CT in determining the presence of PCa. The secondary endpoint was to determine the optimal cut-off values of 68Ga-PSMA uptake for the identification of clinically significant PCa (Gleason score ≥7).

Results
Out of 610 consecutive patients enrolled in our institutional ongoing clinical study, 45 patients (mean age 63 yrs SD 6.97) were referred to 68Ga-PSMA-PET/CT. The mean value of PSA was 10.46 ng/ml and PHI: 43.02. The median number of previous negative biopsy was 1 (range 1-3). Twenty-five subjects (55.5%) were considered having a positive PET and underwent software assisted fusion target biopsy. The overall regions of interest (ROIs) were 34 and the median number of ROIs was 1 (1-3). The overall PCa detection rate (DR) was 44% (11/25). The total number of target cores was 90 and the total number of positive core was 25 (25.5%). The uptake values of ROIs detected on 68Ga-PSMA PET were as follows: median SUVmax 5.34 (range 2.25-30.41), median background SUV 2.69 (range 1.61-3.62), and SUVratio to background 1.99 (range 1.06-14.42). Compared to pathology examination, the mean and median uptake values on 68Ga-PSMA PET (i.e. SUVmax or SUVratio) resulted significantly higher in case of GS ≥7 vs. GS 6 or benign lesions (p<0.001). On ROC (Receiver operating characteristics) analysis, a SUVmax of 5.4 and a SUVratio of 2 could discriminated clinically relevant PCa with an overall sensitivity of 100%, specificity of 76% and 88%, respectively.

Discussion
Our findings support the potential use of 68Ga-PSMA-PET/CT for primary detection of PCa in a specific subset of men. Its capacity to detect clinically relevant PCa in patients with negative or contraindications to mpMRI could offer a further imaging landscape in this selected population.
MINIMALLY INVASIVE RECONSTRUCTIVE SURGERY

V4 ROBOT-ASSISTED VESICAL FISTULA REPAIR: A MULTISTITUTIONAL EXPERIENCE
V5 ROBOT ASSISTED URETEROPLASTY IN RETROCAVAL URETER
V6 LAPAROSCOPIC REPAIR OF WIDE DEFECT OF RIGHT URETER WITH APPENDIX INTERPOSITION
V7 LAPAROSCOPIC EXTRAVESICAL URETERAL REIMPLANTATION WITH THE LUAA TECHNIQUE IN AN ADULT PATIENT
V8 LAPAROSCOPIC PARTIAL BLADDER CYSTECTOMY FOR A BLADDER LEIOMYOMA
V9 ROBOT-ASSISTED KIDNEY TRANSPLANTATION IN A PATIENT PREVIOUSLY TREATED WITH ROBOTIC RADICAL PROSTATECTOMY
V10 ROBOTIC TREATMENT OF UROLOGICAL ENDOMETRIOSIS
V11 DEEP INFILTRATIVE ENDOMETRIOSIS WITH UROGENITAL AND DIGESTIVE TRACT INVOLVEMENT: A CHALLENGE FOR THE UROLOGIST IN LAPAROSCOPY
V12 AN UNUSUAL TREATMENT OF PELVIC ABSCESS AFTER SACROCOLPOPEXY
V4

ROBOT-ASSISTED VESICAL FISTULA REPAIR: A MULTI-INSTITUTIONAL EXPERIENCE


Aim of the study
Aim of the study was to report a multiinstitutional experience on robot-assisted vesical fistula (VF) repair after radical surgery for gynecologic or urologic malignancies without omental flap interposition.

Materials and methods
Seven patients with VF were selected, 6 diagnosed after previous open surgery for gynecologic malignancies, 1 after a robot-assisted prostatectomy followed by radiation therapy. The robotic approach was proposed after an adequate oncologic follow-up and conservative management failures. A bivalve 2-layer suturing technique was carried out without tissue interpositions; in most of the case in fact omentum was not available due to previous surgeries including hysterectomy, ovaryectomy, omentectomy and citoreductive peritoneomectomy.

Results
Six women and one man were enrolled. Median (IQR) age was 58 years (55-61) bearing long-lasting VF. Median fistula diameter was 6 mm (3.5-7). Fistula site was mainly retro-trigonal and identified during a preliminary cystoscopy. The median overall and console operatory time were 270 min (242-315) and 130 min (120-174), respectively. Blood loss was 45 ml (32.5-50) and no intraoperative complication were reported. Median length of stay was 7 days (6-7.8), and only one Clavien IIIa complication due a fluid collection drainage was reported.

Discussion
All the procedures resulted in an optimal urine drainage. The result was achieved thanks to a high quality of dissection and suture. Our approach allowed the successful completion of the procedure even without omentum or other tissue flap or graft interposition.
Aim of the study
The objective of the study is to evaluate the feasibility of robot assisted ureteroplasty for right retrocaval ureter.

Materials and methods
A 33-year-old woman presented to our department with right renal colic. Abdominal CT scan showed right hydronephrosis and RCU. Retrograde pyelography with CT scan images showed S-shaped ureter with medially and dorsal deviation to the inferior vena cava (IVC). A mercaptoacetyltriglycine (MAG)-3 diuretic renal scan revealed delayed drainage from the right kidney while the renal function was preserved (eGFR 85ml/min/1.73mg, 56 % right kidney and 44% left kidney). A right percutaneous nephrostomy tube was placed. The patient underwent a robot-assisted ureteropyeloplasty with transposition and preservation of the retrocaval segment. The procedure was perform with a four-arm da Vinci Xi system (Intuitive Surgical Inc, Sunnyvale, CA, USA). After bowel mobilization the distal ureter was identified laterally to the IVC at the cross with right iliac common artery. Than it was cranially mobilized and followed with care taken to preserve periureteral blood supply, until the cross with the IVC where it passed behind the vena cava to bring on the contralateral side. The right renal pelvis and proximal ureter were than identified and isolated. The proximal ureter was cut at the lateral border to the IVC and the distal ureter segment was transpose anterior to the IVC after its isolation from retrocaval space. The ureter was spatulated and a ureteropyeloplasty according Anderson-Hynes technique. A double J stent was placed.

Results
Overall operative time (OT) was 90 min. The time of the anastomosis was 10 minutes. Estimated blood loss (EBL) was absent. No intraoperative or postoperative complications was record. Patient was discharge after 3 days. The double J stent has been kept in place 2 months. A CT scan performed 1 month after double J stent removal showed a regular urographic phase with a significant reduction of hydronephrosis and regular contrast medium elimination.

Discussion
RCU repair using robotic approach is a feseable and safe procedure that guaranted good results with minimally invasive approach. Adequate preoperative management is mandatory to plan the procedure. Large series studies are necessary to confirm these data.
LAPAROSCOPIC REPAIR OF WIDE DEFECT OF RIGHT URETER WITH APPENDIX INTERPOSITION


Aim of the study
Although different surgical approaches have been proposed for the treatment of ureteral defects, renal autotransplantation or ureteral replacement with an intestinal segment are the only treatment modalities in case of a large ureteral defect. Here we report a case of laparoscopic repair of large right ureter defect with interposition of appendix.

Materials and methods
The operation was performed on a 35-year-old patient without significant comorbidities. The patient, who had a nephrostomy, presented a large defect of the proximal portion of the right ureter caused by a dehiscence of a previous pyeloplasty performed in another hospital. The patients had a good renal function, therefore a laparoscopic repair has been proposed with the interposition of the appendix to restore the continuity of the right urinary tract. Detachment of the right colon and lysis of the adhesions in the lumbar fossa. Preparation of the lower pole of the right kidney with identification of the gonadal vein. Lysis of adhesions at the renal level. Careful mobilization of the gonadal vein. Detection of the ureter and its mobilization. Excision of the fibrotic extremity and subsequent spatulation on the antimesenteric side. Identification and opening of the renal pelvis. Mobilization of the appendix respecting the integrity of its meso. Detachment of the appendix from the caecum and spatulation of its extremity. Tobacco-pouch suture of the caecum. Configuration of the appendix in the isoperistaltic way and spatulation of the other extremity. Partial anastomosis between the ureter and the appendix. Insertion of a ureteral stent over a guidewire. Anastomosis between the appendix and the renal pelvis. Completion of anastomosis between the ureter and the appendix. Retroperitoneisation of the neo-ureter. Insertion of peritoneal drainage 18 Ch.

Results

Discussion
This case highlights the feasibility of using the appendix to restore ureteral continuity. The laparoscopic approach made it possible to reduce the invasiveness of the procedure.
V7

LAPAROSCOPIC EXTRAVESICAL URETERAL REIMPLANTATION WITH THE LUAA TECHNIQUE IN AN ADULT PATIENT

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Aim of the study
In the Sixties Lich and Gregoir described the extravesical ureteral reimplantation (UR) by open approach. Various authors described laparoscopic and robotic Lich-Gregoir UR to correct vesicoureteral reflux (VUR). Recently Gundeti et al (Eur Urol 2016;70:818-823) published their modifications of the robot-assisted technique in a pediatric population (LUAA Technique). The adult urologist is more confident in performing UR for ureteral damages while VUR is usually treated by pediatric urologists. Objective of this video is to describe the feasibility of the LUAA technique laparoscopically and in a non-pediatric urology department.

Materials and methods
A 40 years old female was admitted to our hospital due to severe left pyelonephritis. She referred familiarity for VUR and history of recurring UTIs. CT scan confirmed a left pyelonephritis in a low volume kidney with multiple scars, while a voiding cystourethrography revealed a first grade left reflux. Renal scintigraphy demonstrated a left split renal function of 24 ml/min (23%). Two months later we performed a laparoscopic left UR using the LUAA technique. The peculiarities of this technique are the length of the submucosal detrusor tunnel (L), the use of a U stitch (U), an apical stay stitch (A), and the incorporation of the ureteral adventitia (A) during detrusorraphy. Compared to a female pediatric patient the anatomy of the pelvis was slightly different requiring different surgical details. The first 10 mm trocar was placed in the umbilicus with an open technique. Four 5 mm ports were positioned in an inverted fan configuration. After opening the peritoneum the ureter was dissected through the broad ligament. The left uterine artery was spared and the dissection reached the ureterovesical junction. The detrusorotomy was performed until the mucosa, for a length of 5 cm. U stitch was placed in order to advance the ureter by taking the detrusor at 5 o’clock, followed by ureteral adventitia, and then detrusor at 7 o’clock. A stay stitch was placed at the apex of the detrusorotomy through the ureteral adventitia to align the ureter within the tunnel and to prevent its slippage. The detrusorraphy is performed using a running stitch that starts at the distal aspect of the detrusorotomy and incorporates the ureteral adventitia in alternated throw.

Results
We registered no perioperative complications. The operative time was 180 minutes. Blood losses were negligible. On the second postoperative day (POD) the Foley catheter has been removed, and in third POD the patient was discharged. A cystourethrography performed at 3 months after surgery did not show VUR. The serum creatinine decreased from 1.1 to 0.8 mg/dl and the patient did not report relapses or UTIs 12 months after surgery.

Discussion
Laparoscopic Lich-Gregoir UR with the LUAA modifications is effective and feasible even in adult patients, with lower costs than robotic surgery.
LAPAROSCOPIC PARTIAL BLADDER CYSTECTOMY FOR A BLADDER LEIOMYOMA

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Aim of the study
To demonstrate the feasibility of the laparoscopic transperitoneal partial cystectomy for large bladder leiomyoma.

Materials and methods
A 36-year-old woman with an intramural bladder mass and a story of uterine leiomyoma was referred from her gynecologist to our department. Pre-operative MRI was performed and showed at the left wall a 3 cm well differentiated mass without evidence of extravesical invasion, metastasis, or any lymphadenopathy. The cystoscopy relieved a protruding mass lesion at the bladder left wall. We decided to perform laparoscopic transperitoneal resection of the mass. Perioperative outcomes included operative time (OP time), catheterization time (CV time), hospitalization time, and postoperative hemoglobin level (Post-op Hb). Post-operative complications were recorded. The patient received antibiotic and thromboembolic profilaxis. The procedure was performed under general anesthesia.

Results
The mass was totally exited and sent to pathological department. The operative time was 180 min and the estimated loss of hemoglobin was unmeasurable. Time of hospitalization was 5 days. Drainage was removed after 24 hours and catheter was removed after 7 days. The urethral catheter was removed after 20 days. Leiomyoma was confirmed at histologic examination. At 6th month follow-up, the patient had no urinary symptoms or recurrence.

Discussion
Although bladder leiomyoma represents a rare bladder disease, the prognosis is very optimistic. In literature about 250 cases have been described and according to its location different approaches have been used. Commonly the treatments of choice are transurethral resection or open cystostomy. In our era of minimally invasive surgeries, laparoscopic and robotic extramucosal excision, are a reasonable alternative. To our knowledge, only six cases have been resected laparoscopically and no injury to the bladder have been reported. Laparoscopic partial cystectomy represents a safe and feasibility technique, in terms of post-operative outcomes.
ROBOT-ASSISTED KIDNEY TRANSPLANTATION IN A PATIENT PREVIOUSLY TREATED WITH ROBOTIC RADICAL PROSTATECTOMY

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Aim of the study
Kidney transplantation (KT) is the preferred treatment for patients with end-stage renal disease (ESRD). In order to reduce the morbidity of the open surgery, a robotic assisted approach has been recently introduced. The robotic surgery allows the performance of KT under optimal operative conditions while maintaining the safety and the functional results of the open approach. The aim of this report was to review and describe a robot assisted kidney transplantation (RAKT) in a recipient who previously underwent robotic assisted laparoscopic prostatectomy (RALP).

Materials and methods
We present the case of a RAKT from a living donor (patient’s wife) in a patient affected by ESRD due to polycystic kidney disease with a past surgical history of RALP for adenocarcinoma, Gleason score 3+4, Stage pT2c.

Results
The surgery started with the dissection of the external iliac vessels and the creation of a retroperitoneal pouch. Dissection of the bladder was then performed. At this point a 7 cm peri-umbilical incision was performed followed by the placement of a Gel Point (Applied Medical) port. The kidney was at this point wrapped in a jacket filled with crashed ice and introduced intraperitoneally via the Gel Point trocar. Anastomosis of the renal vein and artery was carried out successfully and an optimal reperfusion was achieved. At this time the ureter was anastomosed to the bladder with a Lich-Gregoir technique. Console surgical time was 260 min with 40 min for vascular suture. The kidney started to produce urine intraoperatively. The patient presented an uneventful recovery with serum creatinine of 1.5 mg/dl on postoperative day 7. No surgical complications were recorded.

Discussion
RAKT is a feasible technique also in patients previously treated with RALP. The advantages of technique are related to the quality of the vascular anastomosis and the low complication rate.
Aim of the study
Endometriosis involves urinary tract in up to 12% of the cases. Bladder and ureters are the most common urinary sites involved. Aim of the study is to present the surgical technique and the postoperative outcomes in women treated with robotic excision of endometriosis of the urinary tract.

Materials and methods
We prospectively recorded the clinical data of women consecutively treated with robotic excision for complex endometriosis involving urinary tract in our center since 2012. All the patients received a preoperative multidisciplinary evaluation with the general surgeon, the gynecologist and the urologist for the often concomitant involvement of the bowel and the genital system. Patients were treated with the 4S and Si Da Vinci surgical system, (Intuitive Surgical, Sunnyvale, CA, USA) in a three-arm configuration. Patients characteristics, surgical treatment and outcomes and follow-up were evaluated.

Results
A total of 26 patients were treated with robotic excision of endometriosis of the urinary tract. Patient’s characteristics are reassumed in Table 1. Urinary endometriosis involved the ureter in 17 (73.1%) patients, the bladder in 13 (50%) and both in 4 (19.2%) patients. Overall, 4 (15.4%) patients were treated with ureteral lysis, 14 (53.8%) with ureteral reimplantation and 4 (15.4%) with ureteral termino-terminal anastomosis, 9 (34.6%) with partial cystectomy, 4 (15.4%) with removal of bladder endometrial node without opening the mucosa layer. Concomitant involvement of bowel was registered in 7 (26.9%) patients (2 treated with sigma resection, 1 with rectal resection, 3 with appendectomy, 1 with ileo-cecal resection). Concomitant involvement of genital system was registered in 16 (61.5%) patients (3 treated with hysteroansnessiectomy, 2 with hysterectomy, 11 with oophorectomy). No intraoperative complication was registered. Overall, 5 (19.2%) patients experienced surgical postoperative complications (3 were Clavien 1, 2 were Clavien 2 and 1 was Clavien 3). At a median follow-up of 26.0 (IQR 18-48) months, 2 (7.7%) had recurrence: one patient was treated with oophorectomy for an ovarian recurrence, one patient started hormonal treatment for a pelvic multinodal recurrent disease.

Discussion
The Robotic Excision of Endometriosis of the Urinary Tract seems a feasible and safe treatment with a limited rate of surgical complications even in cases of multiorgan disease. Further analysis with assessment of postoperative quality of life, and sexual and urinary health are needed.
DEEP INFILTRATIVE ENDOMETRIOSIS WITH UROGENITAL AND DIGESTIVE TRACT INVOLVEMENT: A CHALLENGE FOR THE UROLOGIST IN LAPAROSCOPY

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Aim of the study
Deep infiltrative endometriosis represents the most severe form of disease and is present in 1% of women of reproductive age. Absolute indications of surgery include failure of medical therapy, intestinal obstruction and hydroureteronephrosis. Laparoscopy is approach of choice, provided that the procedure is performed by experienced surgeons. The scope of the video is to demonstrate a multidisciplinary laparoscopic approach for a patient affected by massive deep endometriosis with urogenital and digestive tract involvement.

Materials and methods
26 year old woman, smoker, BMI 19.3, treated in 2015 for urosepsis. Confirmation by CT scan of left hydroureteronephrosis with ureteral stenosis at uterine fundus height. An abdominal MRI demonstrated a fusiform stricture of the pelvic ureter in absence of ab extrinsic compressive causes. Renal scintigraphy: left kidney contribution 42%. In 2015, a left retrograde pyelography and positioning of ureteral stent were performed with evidence of a stenotic and tortuous tract of the pelvic ureter. The stent was removed after 12 days due to intolerance. The patient was lost at the follow-up. Two years later due to a left flank pain a renal scintigraphy (12% left kidney function) and an abdominal MRI (voluminous endometriosis involving the left appendage, the left ureter and the sigma rectum with posterior fixation of the uterus) were performed. A multidisciplinary discussion of the case with Gynecologists and General Surgeons was carried out for indications of endometriotic lump exeresis, left ureteral reimplantation, eventual sigma resection and temporary ileostomy.

Results
Surgical Phase: laparoscopic transperitoneal approach in supine decubitus; 10 mm optics at the level of the umbilicus; insertion of other 5 trocars, one left pararectal (5 mm), one suprapubic (5 mm) and 3 to the right side (two 5 mm in size and one 10 mm); identification of the left ureter at the level of iliac vessels; left ovariosalpingectomy; isolation of the endometriotic nodule at the rectovaginal septum; section of the ureter embedded within the endometriotic nodule and adherent to the rectum; removal of ureteral stent; resection of sigmoid-rectum; removal of the specimen through the vagina; terminoterminal anastomosis between sigma and rectum; isolation of the left ureter up to above the iliac vessels; mobilization of the left bladder wall; bladder distension; transposition of the ureter over the round ligament; section of the detrusor for a distance of about 4 cm; ureterocystoneostomy according to Lich Gregoir; ileostomy. Operation time was 540 mins. Blood loss was 120 cc. Hospital stay: 15 days. Ureteral stent was removed after 21 days. Ileostomy closure after 33 days. At 6 months follow-up renal scintigraphy: 24% left kidney function, no bowel disorders.

Discussion
Massive pelvic endometriosis is a disabling benign disease that needs to be best addressed by a multidisciplinary team. The laparoscopic surgical approach remains a challenge even for experienced surgeons.
AN UNUSUAL TREATMENT OF PELVIC ABSCESS AFTER SACROCOLPOPEXY

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Aim of the study
Prosthetic pelvic floor surgery has become increasingly common in the last two decades. However, several postoperative complications have been described including mesh erosion or extrusion and infections. In this video we report a case of mesh-related complications treated with transvaginal bipolar plasmakinetic resection (BPR).

Materials and methods
A 62-year old woman presented to our outpatient clinic with dyspareunia and foul-smelling vaginal discharge lasting for three months. She underwent laparoscopic supra-cervical hysterectomy and sacrocolpopexy for pelvic organ prolapse (POP) in 2009. Vaginal examination showed 1.5 cm mesh exposure (ME) in the posterior vaginal wall and a tender and painful swelling above the anterior vaginal compartment. Abdominal and transvaginal ultrasound revealed a dishomogeneous fluid collection with multiple septa, behind the posterior bladder wall. Unenhanced computed tomography confirmed an expansive tubular fluid lesion (maximum diameter 77 mm) extending from cervical stump to the promontory. Pre-operative urethrocystoscopy showed no urethral nor bladder mesh erosion and vaginoscopy confirmed the presence of vaginal ME. Transvaginal BPR of both exposed mesh and pelvic collection was performed with the aid of abdominal ultrasound. Resection was performed using the Gyrus Bipolar PlasmaKinetic Tissue Management System (Gyrus Medical Ltd, Cardiff, UK) with a continuous flow 27-Ch resectoscope and a U-shaped cutting loop (70 W cutting / 80 W coagulation settings).

Results
Surgical time was 80 min and no intraoperative complications occurred. On the fourth post-operative day, transvaginal and abdominal US showed no residual pelvic collections and the patient was discharged home. At 30-day follow-up, the patient denied any symptoms and pelvic examination showed vaginal re-epithelialization. Magnetic resonance imaging revealed a complete resolution of the pelvic fluid collection. At 3-month the patient recovered sexual function and had no recurrence of POP, ME or infections at 6-month follow-up.

Discussion
Transvaginal BPR seems to be an effective and alternative approach for treating both vaginal mesh exposure and pelvic abscess following sacrocolpopexy, preserving anatomical result and restoring effective sexual function.
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LOW DOSE CT SCAN IN STONE DETECTION FOR STONE TREATMENT FOLLOW UP: IS THERE A RELATION BETWEEN STONE COMPOSITION AND RADIATION DELIVERY?

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Aim of the study
Introduction: Non Contrast CT scan is becoming the standard imaging modality in urinary stone disease. Radiation dose remains an issue, especially for those patients who may need to undergo several CT scans for this indication during their lifetimes. Low-dose (LD) and ultra-low-dose protocols (ULD) exist, but there are few data on the relation between the minimum radiation dose capable of detecting stone fragments and stone composition.

Materials and methods
Materials and Methods: 7 different kinds of human kidney stone were selected (apatite, brushite, cystine, struvite, uricite, weddelite and whewellite). Fragments of 1-2-4 and 7 mm were obtained for each stone. 4 fragments of the same material were placed in a porcine kidney. The kidney was then scanned in a CT scan at 140-70-30-15 and 7 mAs. CT scans were repeated for each type of stone. Images were reviewed by 2 radiologists with the intent of identifying the stone composition and providing information on its position, dimensions and on HU. Radiation doses were calculated using the dose-length product (DLP) parameter, which is calculated by multiplying the volumetric CT dose index (CTDIvol – the exposure per slice) by the scan length. The units of DLP are mGy·cm.

Results
Results: All types of stone were visible at all settings. Only the 1-mm uric-acid fragment was not detected by both radiologists at 7 and 15 mAs. DLP decreased with the reduction in mAs. In terms of HU a statistically significant difference was observed between calcium-based and non-calcium-based stones. Stone dimensions and HU were not affected by the reductions in mAs.

Discussion
Conclusion: Low-dose and ultra-low-dose algorithms for CT are currently available, efficacious, and underutilized. Based on our study and with acknowledgment of its in vitro limitation, we can affirm that in the case of uric acid stones, the CT scan setting should be ≥30 mAs. For the other most common stones, including whewellite, weddelite, apatite, brushite, struvite, and cystine stone fragments could be reliably detected with ULDCT, even at small sizes and at 7 mAs, dramatically reducing the DLP and mSv in vivo.
COMPARISON OF URINARY STONE COMPOSITION USING CHEMICAL ANALYSIS VS DUAL ENERGY COMPUTERIZED TOMOGRAPHY (DECT) EX VIVO: A PRELIMINARY STUDY


Aim of the study
The chemical composition of urinary stones is conventionally estimated through the detection of Hounsfield Units (HU) at CT. However, HUs are not univocal and different chemical compositions are possible (especially from 400 to 800 HU). The aim of the study is to assess whether the DECT is adequate in characterizing stones composition.

Materials and methods
From 2009 to 2017, we collected stone fragments from patients who underwent endourological stone removal. These fragments were analysed by infrared spectrometry (FT-IR, Fourier Transform Infrared Spectroscopy, Nicolet iS5) and examined with two different DECT devices: Aquilion ONE 320 slice (Toshiba Medical Systems Corporations; using 80-135 kV and 100-135 kV) and SOMATOM Definition 64 slice (Siemens Medical Solutions, using 80 and 140kV). The images were processed on colour-coded monitors and specific colours were assigned to the chemical compositions [uric acid, calcium-oxalate (CaOx) monohydrate, mixed calcium-based composition and cystine]. The mixed calcium-based composition included fragments composed by: mixed CaOx mono-/di-hydrate, CaOx+calcium phosphate, CaOx monohydrate + ammonium urate, and carbonate apatite phosphate. Descriptive statistic was used to depict the findings.

Results
Overall, 62 stone fragments were collected from 46 patients. Chemical analysis showed the following fragments composition: 16 CaOx monohydrate (25.8 %), 24 mixed calcium-based composition (38.7 %), 14 cystine (22.6 %) and 8 uric acid (12.9 %). Because the density was not measurable for fragments <2 mm, three fragments were excluded from further analysis. The median density was: 1026 HU (IQR: 866-1365) for CaOx monohydrate, 923 HU (IQR: 798-1403) for mixed calcium-based composition, 527 HU (IQR: 351-557) for UA and 679 HU (IQR: 632-797) for cystine.

The detection of UA stone fragments was 100% accurate using SOMATOM Definition or Aquilion (at 80-135 kV or 100-135kV). A 100% accuracy was reported for Ca-based stone fragments using SOMATOM Definition or Aquilion at 80-135 kV. Using Aquilon at 100-135 kV, the accuracy for Ca-based stone fragments declined to 84.2%. Using Aquilon, the accuracy for cystine was 76.9% at 80-135 kV but it dropped to 7.7% at 100-135 kV.

Discussion
For 2 mm or larger stone fragments, DECT can distinguish chemical compositions of stones fragments. Its accuracy is optimal for UA and calcium-based compositions but there is still room for improvement in detection of cystine stones. The present study is an exploratory ex vivo evaluation of DECT potential. Clinical studies are certainly required to investigate the reliability of DECT in vivo and its potential in clinical practice (e.g. individualizing treatment).
HOUNSFIELD DENSITY FOR DISCRIMINATION OF PURE AND MIXED CALCIUM OXALATE MONO- AND DIHYDRATE STONES: PRELIMINARY RESULTS


Aim of the study
Computed Tomography (CT) represents the gold standard to diagnose urinary stones. However, there is no proven method to differentiate between calcium oxalate mono- (CaOxMH) and di- hydrate (CaOxDH) stones. The aim of this study is to evaluate the predictive value of Hounsfield (HU) parameters on CT for the discrimination between CaOxMH and CaOxDH.

Materials and methods
A total of 107 patients submitted to percutaneous or endoscopic lithotripsy were retrospectively analyzed from November 2010 to April 2017. Inclusion criteria were: I-II) the availability of a pre-operative CT-scan and the stone biochemical analysis, III) a maximum stone diameter > 4 mm, IV) a calcium oxalate stone component > 50%. Group A (CaOxMH) and B (CaOxDH) included 81 and 26 patients, respectively. Pure stones were considered for calcium oxalate stone component > 75% (group A: 59 vs group B: 18). All images were reviewed by a single urologist, blinded to the composition of the calculi. Stone volume, HU mean value (HUM), core (HUC), periphery (HUP) HU and their absolute difference (deltaHU) were evaluated. HU density (HUD) was defined as the ratio between mean HU and the stone’s largest diameter. Demographics and clinical data were evaluated using descriptive statistics. Receiver Operating Characteristic (ROC) curves were calculated to test the predictive power of HU parameters to differentiate the two groups. Statistical significance was assumed for p < 0,05.

Results
Demographic, clinical and stone data of the two groups are reported in table 1. CaOxMH stones resulted significantly hyperdense than CaOxDH for HUD (mean ± SD 86,7 ± 36,1 vs 64,2 ± 27,4; p=0,004) and HUC (p=0,03). HUD best differentiated the two groups (cut-off 70 HU/mm; specificity 62%, sensitivity 65%). The AUC of HUD was 0,66. In case of HUD > 70 HU/mm probability of CaOxDH was three folds higher.
Comparing the pure stones of the two groups, the accuracy of HUD improved (86,8 ± 34,8 vs 62,4 ± 27, p=0,008; specificity 64%, sensitivity 72%) at the same cut-off.

Discussion
At present, urinary stones cannot be precisely differentiated prior to endosurgery or SWL. We found that HUD is the best variable to distinguish the composition of either mixed or pure calcium oxalate stones. These findings can help the clinician to select the best candidates for SWL and could potentially drive the patient life style.
MULTICENTRE EXTERNAL VALIDATION OF THE IMAMURA NOMOGRAM FOR THE PREDICTION OF SUCCESS AFTER SEMI-RIGID URETEROLITHOTRIPSY

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Aim of the study
Recently the Japanese group of Imamura et al developed the first clinical nomogram for the preoperative prediction of the stone-free rate in patients with ureteral stones undergoing laser semi-rigid ureterolithotripsy. Aim of our study was to externally validate Imamura nomogram for the prediction of the stone-free rate in patients undergoing ureterolithotripsy (ULT) in two centers.

Materials and methods
From January 2014 onwards, 359 patients undergoing semi-rigid Ho:YAG laser ureterolithotripsy for ureteral stones were prospectively enrolled in two centers. Patients were preoperatively evaluated with accurate clinical history, urinalysis, renal function, Body Mass Index (BMI). KUB and/or non-contrast CT were used to define number, location and length of the stones and eventually the presence of hydronephrosis. The parameters evaluated in Imamura nomogram are: pyuria, length, location and number of stones. Treatment efficacy was evaluated by a KUB and/or CT 3 months after ULT, and stone-free was defined as no fragments detected. Calibration and discrimination of the nomogram were assessed using calibration plots and ROC analysis.

Results
Median age was 54 years (IQR:44/65), median BMI 23.4 kg/m2 (IQR:22/28), median length of the stone was 8 mm (IQR:6/11). 272/359 (71%) patients presented hydronephrosis, pyuria on urinalysis was detected in 46/360 (2.1%). 232/359 (65%) patients were stone free at 3 months. Calibration plots showed an overall overestimation of the stone free rate by the nomogram. On ROC analysis, Imamura nomogram presented an AUC of 0.71 (95% CI 0.65-0.76 p=0.000) for the prediction of the stone-free rate in patients treated with ULT.

Discussion
In our experience the Imamura nomogram represents a valid tool to preoperatively discuss with the patient the outcome of laser ureterolithotripsy. Implementation of the Imamura nomogram in clinical practice will define its role in counselling patients with ureteral stones.
THE IMPACT OF SURGICAL EXPERIENCE ON RADIATION EXPOSURE DURING RETROGRADE INTRARENAL SURGERY - FINDINGS FROM A CROSS SECTIONAL STUDY


Aim of the study
Fluoroscopic guidance is routinely used during retrograde intrarenal surgery (RIRS). Many efforts have been made to recognize the radiation risk and minimize exposure of patients and surgeons during endourological procedures. However, radiation exposure (RE) during RIRS has been poorly investigated. We aimed to assess the impact of surgical experience on fluoroscopy time and RE during RIRS.

Materials and methods
We collected data from 60 patients who underwent RIRS for renal stones. Twenty-eight (46.6%) procedures were performed by a senior surgeon (expertise of >100 RIRS) (group A), while 32 (53.4%) were performed by two junior residents (expertise of <15 RIRS) (group B). The surgical technique was standardized for all surgeons (junior residents had learned RIRS procedure from the expert mentor at the beginning of their learning curve). Stone size, location and Hounsfield units (HU) were investigated. Fluoroscopy screening time (FT) and effective doses of surgeons and patients were recorded. Surgeons wore one dosimeter placed on the chest inside the lead apron, one on the front and one dosimeter on both hands. Descriptive statistics and regression models tested the association between clinical variables and FT and RE.

Results
Mean (SD) age was 54.0 (13.0) years and mean stone size was 12.0 (6.5) mm. Overall, stones were located in the upper pole, mid pole, lower pole and in the renal pelvis in 5 (8.3%), 18 (30.0%), 17 (28.3%) and 20 (33.3%) cases, respectively. Groups did not differ in terms of preoperative characteristics. Overall FT [2.9 (1.6) min vs. 3.1 (1.7) min for Group A and B; p=0.46] and patients’ effective dose [2.2 (1.2) mS vs. 2.6 (1.3) mS for Group A and B; p=0.33] did not differ among groups. The cumulative radiation dose was 5 microSv for the chest, 45 microSv for the front, 1390 microSv for the right hand and 1280 microSv for the left hand in group A. Group B had similar results, showing a cumulative radiation dose of 5 microSv for the chest, 20 microSv for the front and 870 microSv and 950 microSv for the right and left hand. A statistically significant association was found between BMI (all p<0.003), stone burden (all p<0.04) and operative time (all p<0.04) with both FT and patients’ effective dose. FT and effective dose were higher in cases where a DJ stent was inserted (all p<0.04). Linear MVA revealed that longer operative time (all p<0.02) and DJ placement (all p<0.02) were the only independent predictors of increased FT and effective dose, after accounting for BMI, stone burden, surgical experience and HU.

Discussion
We found that higher BMI, longer operative time, higher stone burden and DJ placement were associated with increased FT and patients’ effective dose during RIRS. Interestingly, the surgical experience has a limited impact on FT and RE. The standardization of the surgical technique at the beginning of the learning curve of young surgeons may represent the key factor in reducing RE during RIRS.
SIMULTANEOUS BILATERAL ENDOSCOPIC SURGERY (SBES): A NEW STANDARD IN CASE OF BILATERAL UPPER TRACT STONES

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Aim of the study
The incidence of bilateral and multiple renal stones is increasing. To date, some sparse data on simultaneous bilateral stone surgery are available in literature showing good outcomes in terms of both effectiveness and safety. The aim of this study is to describe our series of patients with bilateral renal stones who underwent simultaneous bilateral endoscopic surgery (SBES) reporting its effectiveness and safety.

Materials and methods
A prospective analysis of 27 consecutive patients who underwent simultaneous flexible ureteroscopy (fURS) in one side and percutaneous nephrolithotomy (PCNL) in the other side for bilateral renal stones at our institution between June 2017 and January 2018, was performed.

Results
All the procedures were carried out until the end in both sides without encountering any complications intraoperatively. The mean stone size was 18.1±9.6 and 20.1±10.8 for the right and left side respectively. The mean operative time was 79.4±25.2. No statistical significant changes in creatinine levels were assessed postoperatively. No postoperative major complications were experienced (Clavien I 7.4%; Clavien II 11.1%). Abdominal CT scan at 1-month postoperatively demonstrated SFR of 74% in both sides. Demographic and stone characteristics are reported in Table 1 and the outcomes are shown in Table 2.

Discussion
SBES is a safe and effective procedure for the treatment of bilateral renal stones. Further randomised studies with larger population are needed to confirm these initial favorable outcomes of SBES as an alternative to staged surgeries in patients with bilateral renal stones.
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DOES THE WORKING CHANNEL POSITION HAVE A ROLE ON THE EFFICACY OF HO:YAG LASER LITHOTRIPSY? RESULTS FROM A LABORATORY TEST

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Aim of the study
The role of the position of the working channel when performing flexible ureteroscopy and Ho:YAG laser lithotripsy has never been investigated. We compared the effect of two different working channel position (3 o’clock and 9 o’clock) in terms of laser fiber ability to be in contact with stone surface according to various scenario in an ex-vivo study using the K-Box.

Materials and methods
We compared two different flexible ureteroscopes (f-URSs), whose characteristics in terms of size, angle of tip deflection and manoeuvrability have been previously demonstrated to be comparable: Flex-X2 (Karl Storz, working channel at 9 o’clock position) and Flex-XC (Karl Storz, working channel at 3 o’clock position). Using a bench-training model for flexible ureteroscopy (K-Box, Porge’s-Coloplast), we tried to access three cavities placed on the left and their three counterparts placed on the right side, which can be approximately considered as renal calyces coming from the right and the left kidney, respectively. Each cavity contained 1 cm stone. A 200 um Ho:YAG laser fiber (Lumenis) was used in each case. Once the f-URS entered the calyx of interest, we measured the proportion of stone surface sighted and targeted by the laser fiber tip once inserted into the working channel (STL – stone Surface Targeted by the Laser fiber tip). An expert endourologist (LV) performed every procedure. SSLs obtained with the two different f-URSs were measured with NIH ImageJ software and descriptively compared.

Results
Overall, the two f-URSs have been compared in six cavities (three per side). Both f-URSs were able to similarly access and visualize the stones independently from the side. When considering cavities on the left side of the K-Box (right kidney), SSLs obtained with Flex-XC (mean [SD] pixel = 0.92 [0.07]) were consistently superior to those obtained with Flex-X2 (0.20 [0.26]) (Fig. 1,3). Conversely, flex-X2 was able to depict higher SSLs when accessing left kidney calices compared to Flex-XC (0.76 [0.17] vs 0.15 [0.17]) (Fig.2,4). In one case, Flex-X2 was not able to target a right kidney stone (Fig. 5) and Flex-XC was not able to target a left kidney stone (Fig. 6) (both SSL=0).

Discussion
Kidney side should be considered when choosing the f-URS for the treatment of caliceal stones. When approaching left kidney stones, f-URS with 9 o’clock working channel might provide a more thorough stone targeting, whereas f-URS with 3 o’clock working channel should perform better on right kidney stones.
Aim of the study
Flexible Ureterorenoscopy (fURS) is one of the best solutions for treatment of renal calculi less than 2 cm and for upper tract urinary cancer (UTUC) conservative treatment. An adequate quality of vision is mandatory to help surgeon having better outcomes. Beside multi-use fURS, seven disposable devices have been developed up to date. The most comparable disposable fURS in terms of sizes, shape, manipulation and view to the common used multiple-use fURS, remains LithoVue from Boston Scientific. No studies have been done, to our knowledge, about what fURS on the market has the best quality of vision.

Materials and methods
Seven different fURS were used to compare the image quality (Lithovue, OlympusV, OlympusV2, Storz FlexXC - in White Light and in ClaraChroma mode -, Wolf Cobra Vision, Olympus P6 and Storz Flex X2). Two standardized grids to evaluate contrast and image definition and 3 stones of different composition were filmed in four standardized different scenarios. These videos were shown to 103 subjects (51 urologists and 53 non-urologist) that had to evaluate image quality with a rating scale from 1(very bad) to 5(very good).

Results
No difference in terms of scores was observed for sex of the participants. Digital scopes were rated better than fiber optics scopes. Overall, Flex XCWhiteLight and XCClaraChroma image quality resulted steadily better than other fURS (p < 0,0001). Olympus V generally provided a vision better than Lithovue. Cobra Vision and Olympus V2 had superimposable values which were significantly lower than Lithovue’s ones. Olympus P6 and Storz X2 offered a low quality of vision compared to the others. In the medium simulating bleeding, Olympus V and V2 significantly improved their scores of 12% and 8,1%, unlike to the rest of scopes.

Discussion
All scopes analyzed are used commonly in many centers, and each of these scopes has their own pros and cons. Aim of the study was to give a general idea of the image quality. Digital scopes have a better image quality than fiber optic ones, including the disposable scope tested. The best image quality was provided by Storz digital scopes, being Clara Chroma the favourite Spies Mode, according to literature.
RIRS PERFORMED IN SITU FOR LOWER POLE RENAL STONES: CAN WE ACHIEVE A GOOD OUTCOME?


Aim of the study
Endourology is considered the best treatment of stones located in the lower pole. When performing RIRS (retrograde intrarenal surgery) dislocation of the stone is usually suggested. The main reason of that is the high risk of ureteroscope damaging due the extreme and prolonged flexion. Little is known about efficacy of lower pole stones if treated in situ. Objective of this study was to evaluate the efficacy of RIRS with lithotripsy performed in situ in case of favorable anatomy with low risk of instrument damaging.

Materials and methods
RIRS performed in a single Center from 2013 to 2017 were retrospectively analyzed. Single stones <= 15 mm in the lower pole were selected. All the patients underwent a pre-operative CT scan or intraoperative pyelogram to study the anatomy of the lower calices. During this period we had decided to dislocate stones to the upper pole before lithotripsy only when the caliceal anatomy didn’t allow an easy and safe access to the stone. In all the other cases stones were treated in situ. RIRS was considered successful in case of stone free or CIRF (residual fragments ≤ 4 mm). Patients were followed one month after surgery by CT scan (if stone > 1 cm) or US. We created two groups of patients: in group A stones were treated in situ, in group B stones were dislocated before lithotripsy. Success rate and operative time were evaluated as primary outcomes. T-student, Mann-Whitney and Chi square tests were used for statistical analysis (SOFA system).

Results
Complete data were available for 93 patients. All the patients underwent laser lithotripsy using Sphinx Jr 30W Holmium laser system. Pre-operative stent was in situ in 44/93 cases (47.3%). Stones were treated in situ in 61 cases (group A) and after dislocation in 32 (group B). Overall success rate was 80.6% (75/93): stone free 72% (67/93) and CIRF 8.6% (8/93). Group A and B were comparable for age (53.7 ± 13.3 vs 56.0 ± 14.2, p= 0.46), stone size (9.5 ± 2.9 vs 9.9 ± 2.6, p=0.49), Hunsfield unit (793 ± 262 vs 801 ± 252, p=0.82) and preoperative stenting (54% vs 34%, p=0.8). Operative time was similar between two groups whereas success rate was significantly higher in group A. Considering a subanalysis on stones ≤ 10 mm, this difference was reduced but still significant.

Discussion
RIRS performed in situ for lower pole renal stones have a low success rate, even if the caliceal anatomy allows an easy access to the stone. Success rate is low for smaller stones as well. Considering the high risk of instrument rupture, the poor outcome and absence of a shorter operative time, to perform RIRS in situ for lower pole renal stones should always be avoided.
A SECOND IPSILATERAL DOUBLE-J STENT REPRESENTS A TEMPORARY THERAPEUTIC OPTION IN THE MANAGEMENT OF ENCRUSTED URINARY STENTS

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Aim of the study
Encrustation is a typical complication in the long-term use of double-J (D-J) ureteral stent. Still now its management remains a challenging task for urologists. Depending on size of stone, site of encrustations and renal function, various urological approaches, such as extracorporeal shock waves lithotripsy (ESWL), retrograde ureteroscopy (URS) and percutaneous nephrolithotripsy (PCNL), have been applied. We report a single-center experience in the management of complicated encrusted ureteral D-J stent.

Materials and methods
This single-center, retrospective observational study was based on data obtained from medical records in the last 10 years at our institution. We selected 11 patients managed for hydronephrosis due to encrusted ureteral D-J stent and treated successfully with URS and ballistic energy. We considered only three patients with contraindication for a single immediate treatment. The three patients had developed hydronephrosis due to encrusted D-J stent, with stones embodying even the upper coil of the stent. One patient had a history of post-surgical stenosis at the level of proximal ureter, with a forgotten D-J stent placed one year before. The second one had febrile urinary tract infection for severe obstruction caused by multiple stones along all the upper urinary tract. The last patient had a high-burden stone embodying the stent and the URS resulted a too lasting procedure. In those three patients, a second auxiliary D-J stent was carefully inserted in the ipsilateral upper urinary tract without any relevant difficulty, beside the encrusted one, to delay the elective urological procedure (Figure).

Results
The second device, placed to decompress the hydronephosis, improved renal function, removed the infection source and amplified the compliance of the pathologic ureter, allowing us to wait for better clinical conditions of the patients. ESWL was performed in the first patient the day after. The conclusive results were later obtained in all the three patients with URS and lithotripsy.

Discussion
In complicated cases of encrusted D-J stent the temporary presence of the auxiliary D-J stent in the ipsilateral urinary tract results an effective and safe therapeutic option before elective conclusive endourologic procedure.
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URINARY TRACT INFECTION STILL A CHALLENGE TO FIGTH: A REAL SETTING STUDY

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Aim of the study
Urinary tract infections (UTIs) both in males and females represent one of the major cause of urological consultation in our clinical practice. Patients suffering from a symptomatic UTI are commonly treated with antibiotics; these treatments can result in long-term alteration of the normal micro-biota of the vagina and gastrointestinal tract and in the development of multidrug-resistant microorganisms. The asymptomatic bacteriuria (ABU) is often misdiagnosed as UTI leading to inappropriate antimicrobial use. Antibiotic overuse has several adverse effects, including multidrug resistant organisms and increased costs of health care. Aim of this study is to make a picture of these outpatients in the real life setting.

Materials and methods
This is a multicenter prospective study. It has been approved by the local ethics committee. We included male and female pts (age 18-75 years) who attended the outpatient clinic with signs to symptoms of acute uncomplicated cystitis (AUC), or recurrent uncomplicated cystitis (RUC), or complicated cystitis (CC). We excluded pts with bacterial prostatitis, pyelonephritis, or sepsis, or SIRS. We have completed an electronic database with demographic and general clinical information, microbiological characteristics of the cystitis, antimicrobial therapy used, and antimicrobial susceptibility patterns.

Results
From July 2017 to October 2017, 353 patients were enrolled. Of these, 232 were women (138 AUC, of which 107 RUC and 35 CC) with mean age 51.8±17.3 years; 132 were postmenopausal; 49 had POP (stage II-IV); 21 had chronic urinary retention; 1 had a permanent catheter; 6 were under an intermittent catheterization regimen (IC). One hundred and nine were men with a mean age of 52.4±16.9 years. Their symptoms and conditions broke down as follows: 20 had recurrent UTI, 63 had BPH of which 27 had chronic urinary retention and 4 had a permanent catheter; 9 were under IC; 8 had a permanent catheter. In 59 women (25%) and 9 (8%) men the reason for urological consultation was AB. Furthermore, in 94 women and 24 men, a history of previous AB was referred with 67 (71%) and 15 (62%) respectively previously treated with antibiotics by the general practitioners. Two hundred seventeen patients (61.4%) had multidrug resistance. Women had higher prevalence of antimicrobial resistance compared to men (59.4% vs 40.5%) p<0.0001. Graph 1 shows the prevalence of resistance of each principal antimicrobial class. The prevalence of resistance to fluoroquinolone was higher (22%) compared to other antibiotic agents. Of patients with antimicrobial resistance, 27% and 22% had previous AB and RUC respectively.

Discussion
Our study shows that 61.4% of patients with UTI referring to a urological clinic present multiresistance antibiotic patterns. Moreover, 40.5% of the women and 22% of men continue to be inappropriately treated for asymptomatic bacteriuria. The need for an educational campaign in favor of the correct UTI treatment remains a priority for urological societies.
DO WE REALLY NEED SYSTEMATIC USE OF ANTIMICROBIAL PROPHYLAXIS BEFORE TRANSURETHRAL RESECTION OF BLADDER TUMOR?

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Aim of the study
Aim of antimicrobial prophylaxis (AMP) is the prevention of infective complications resulting from diagnostic and therapeutic procedures. The Transurethral Resection of the Bladder (TURB) is a very common endoscopic surgery performed almost in all urological departments. Often an antibiotic prophylaxis is given to the patients that underwent TURB but this practice is not based on good quality evidences. Aim of this study is to report incidence of clinically relevant peri-operative infectious complications after TURBT without any antibiotic prophylaxis.

Materials and methods
We recruited all patients (pts) who underwent TURBT between 2011 and 2013 in our tertiary referral hospital. Data about preoperative urine culture, general health conditions, surgical procedure (duration and tumor features) and postoperative hospitalization until removal of the bladder catheter have been collected. Fever was defined as temperature >37.5 C for at least a whole day. Urosepsis was defined according to 2017 EAU guidelines on urological infections.

Results
In the period of the study 223 pts underwent TURBT without any antibiotic prophylaxis. None of the 223 patients received a single dose of antibiotic drugs during the day of the surgery. Median age was 70.3 years; median duration of the post-operative hospitalization was 3 days. 8 pts had immunodeficiency (3.58%), 43 pts had diabetes (19.28%) and a total of 24 pts (10.76%) received peri-operative antibiotic therapy. Among them 16 had antibiotic treatment due to positive preoperative urine culture and all of them repeated cultural examination without evidence of persistent bacteriuria. For this reason they all underwent surgery without any antibiotic prophylaxis. Other 8 pts received antibiotic therapy during postoperative hospitalization, 6 because fever and 2 because of surgeon decision. For 51 pts resection lasted more than 30 minutes and fever appeared only in 2 of them (4%). No cases of urosepsis were reported.

Discussion
The most important finding of this analysis is that infective complications after TURB without any antibiotic prophylaxis occurred in the 2.7% of the patients and no case of sepsis and septic shock were reported. To our knowledge this is the first report of postoperative infection complications after TURBT in a cohort of pts that do not received any antibiotic prophylaxis. Although utility of antibiotic prophylaxis before TURBT has never been clearly proved, we can surely state that for 199 pts antibiotic prophylaxis would have been unuseful and would have resulted as a kind of overtreatment with all risk connected with antibiotic abusage for patients and community. Tumor features and the last of surgical procedura did not seem to have a role in developing post-operative infections. Given the high incidence of bladder tumor TURB is among the most common urological procedure. Do not use antibiotic prophylaxis before TURB would spare thousands of doses of antibiotics every day.
URINE CULTURE, ASYMPTOMATIC BACTERIURIA AND DIABETIC PATIENTS. IS ANTIBIOTIC PROPHYLAXIS ALWAYS INDICATED?


Aim of the study
Preoperative urine culture is not ever included in the routinary evaluation of patients candidates for urological diagnostic procedures or genito-urinary surgeries. On the other hand antibiotic prophylaxis is not always recommended for diagnostic procedures such as cystoscopy and urethral catheterization. In this context, operators should be mindful of concomitant risk factors for Urinary Tract Infections (UTIs).

Materials and methods
Literature review on the terms “diabetes mellitus” AND “urinary tract infections” AND/OR “glycosuria” AND/OR “sodium-glucose cotransporter 2 inhibitors” was introduced by Medline research. Abstracts selection included 743 items. 14 full text articles were selected.

Results
The potential role of Diabetes Mellitus (DM) as risk factor in the genesis of UTIs is currently largely debated and the results obtained are conflictual. Some recent studies evaluated both the poor glycaemic control and the duration of the disease as relevant factors although diabetes in older age patients may be also related to functional abnormalities of the urinary tract. Furthermore the mean glycated haemoglobin levels were similar in patients with or without asymptomatic bacteriuria (ASB) suggesting that the increased prevalence of ASB may not be a direct consequence of poor glycaemic control of DM. On the other hand the risk of ASB seems to be higher in patients with DM than in healthy controls (OR 2.6 and 3.7 in women and men respectively). Altered pathogen-host interactions as a result of diabetes may be justified by increased glycosuria, increased adherence of bacteria to the transitional epithelium (variations of type 1 fimbriae receptors) and altered immune response (lack of leukocyte function and adhesion, chemotaxis and phagocytosis). These conditions seem to be also increased by sodium-glucose cotransporter-2 (SGLT2) inhibitors administered to patients with DM. In particular, SGLT2 inhibitors consumption is related to increased risk of genital infections due to a favourable growth environment for otherwise commensal genital microorganisms. Moreover their potential role in the determination of UTIs yet to be confirmed by adequate randomized controlled trials. SGLT2 inhibitors were expected to increase glucosuria and the prevalence of UTIs closely monitored and investigated during the first clinical trials, with an obvious risk of over reporting.

Discussion
Patients with DM and/or in treatment with SGLT2 inhibitors candidates for urological diagnostic procedures or genito-urinary surgeries should be always preoperatively investigated by urine culture or treated by antibiotic prophylaxis to avoid the risk of complicated UTIs and/or sepsis.
CONCORDANCE OF PREOPERATIVE BLADDER URINE, RENAL PELVIC URINE AND STONE CULTURES AFTER ENDouroLOGICAL PROCEDURES AND RISK OF SYSTEMIC INFLAMMATORY RESPONSE SYNDROME - RESULTS FROM A CROSS-SECTIONAL STUDY


Aim of the study
Infectious complications after endourological procedures may be associated with devastating morbidity. Prior studies suggest that renal pelvic urine culture (RPUC) and stone culture (SC) are more accurate predictors of infections than bladder urine culture (BUC). We assess the correlation between preoperative BUC, intraoperative RPUC and SC; and evaluate risk factors of systemic inflammatory response syndrome (SIRS) in patients undergoing endourological procedures.

Materials and methods
The study included 71 consecutive patients who underwent percutaneous nephrolithotomy (PCNL) or retrograde intrarenal surgery (RIRS) from January 2017 to September 2017 in one academic center. All patients underwent a preoperative BUC. Samples for RPUC were obtained by renal catheterization. Stone fragments extracted were sent for culture (SC). Patients were closely monitored for any signs of SIRS after surgery (defined as two or more of: Temperature >38°C or <36°C; Heart rate >90/min; Respiratory rate >20/min or PaCO2 <32 mm Hg; White blood cell count >12 000/mm3 or <4000/mm3). We analysed concordance between cultures and association with SIRS.

Results
Overall, 43 (60.6%) and 28 (39.4%) patients underwent RIRS and PCNL, respectively. Mean (SD) age was 54.1 (15.1) years and mean stone size was 15.7 (7.4) mm. Thirteen patients (18.3%) had positive BUC and received specific antibiotic treatment prior to surgery. RPUC was positive in 19 cases (26.8%), of which 10 (52%) had negative BUC. Concordance between RPUC and BUC species was found in 6/9 (66.6%) patients. SC was positive in 19 patients (26.8%), including 10 (52.6%) with negative BUC and 8 (42.1%) with negative RPUC. Concordance between species in SC and BUC was found in 6/9 (66.6%) cases and in 9/11 (81.8%) cases for SC and RPUC, respectively. The most frequently agents were E. faecalis, E. coli, P. aeruginosa, Klebsiella spp., and Candida albicans. SIRS occurred in 13 (18.3%) patients, sepsis in 3 (4.2%). All blood cultures revealed the same pathogen found in SC. Patients who developed SIRS more frequently underwent PCNL (p=0.002), had a longer length of stay (p=0.004) and had a higher rate of positive SC (p=0.015) than those without SIRS. At multivariable logistic regression analysis, PCNL procedure (OR 5.7, p=0.04) and positive SC (OR 5.9, p=0.04) achieved independent predictor status for SIRS, after accounting for age, gender, Charlson Comorbidity Index and preoperative stenting.

Discussion
We found high variability in culture results obtained during endourological procedures. Stone culture appears to be the best predictor of SIRS. These findings support the utility of SC in order to guide prompt and appropriate antibiotic treatment for patients who develop postoperative infectious complications.
CHARACTERIZATION OF THE NOVAGINAL MICROFLORA AFTER SURGICAL GENDER REASSIGNMENT IN HIV, HBV AND HCV SERONEGATIVE TRANSSEXUAL WOMEN


Aim of the study
The knowledge of the neovaginal microflora can help to understand the physiological mechanisms of the surgical reassigned genitalia and to ensure a proper therapy in case of infectious disease. We mapped the neovaginal microflora during the early perioperative days after male to female (M-F) gender reassignment surgery in HIV, HBV and HCV seronegative and healthy transsexual women.

Materials and methods
Between November 2016 and January 2017 we collected 2 neovaginal swabs (one in the neo-vaginal fundus and one in the proximity of the urethral meatus) during the early perioperative days from 8 patients (pts) who underwent M-F gender surgical reassignment. The V3-16S rRNA Next Generation Sequencing (NGS) and a multiplex PCR technology were used to investigate the microbial composition and the presence of Sexual Transmitted Infections, respectively. QIIME 1.8.01 was used to process the NGS data.

Results
Patients median age was 35 (24-49) years. For at least one year, all pts were taking an androgen deprivation therapy and an estrogen therapy, which was suspended 7 days before surgery. All pts were HIV, HBV and HCV seronegative and heterosexual. Swabs were performed between the 4th and the 10th postoperative days when no sign of infection was clinically present. All pts were using an iodone solution for the daily neovaginal hygiene. No STI, including Chlamydia tracomatis, Neisseria gonorrhoeae, Mycoplasma/Ureaplasma, HPV, Trichomonas vaginalis and Treponema pallidum, was detected in the samples analyzed. The microbial composition of the samples from neovagina and periurhetra is showed in Fig. A. Prevotella was the predominant genus in the neovagina. Moreover, the samples showed the presence of Bacteroides, Escherichia, and Proteus while no Lactobacilli were reported.

Discussion
We characterized the microbiome of the neovagina in the early postoperative days after M-F gender reassignment surgery. Despite estrogen substitute therapy, neovagina appeared massively colonized by microorganisms usually resident in the male urogenital tract and often responsible for genito-urinary infections in women while the native vaginal Lactobacilli were absent. To our knowledge, this is the first report describing the neovaginal microbiota in the early postoperative days after M-F gender reassignment surgery in healthy transsexuals women. Therefore, our study provides the standard model of vaginal microbiota of healthy transsexual women.
EVALUATION OF INSIGHT INTO THE DIAGNOSIS AND MANAGEMENT OF TROPICAL DISEASES AMONG EUROPEAN UROLOGISTS: ARE WE PREPARED TO DEAL WITH MASS MIGRATION? RESULTS OF AN INTERNATIONAL SURVEY

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Aim of the study
The recent rise in the migrant influx from Africa through the Mediterranean basin has resulted in an increased incidence of “tropical” diseases which were previously largely unknown in this region. According to literature, schistosomiasis, genito-urinary tuberculosis (GUTB), HIV nephropathies as well as other previously rare disease conditions are increasingly being seen in healthcare facilities in Europe. In this light, the aim of this study is to evaluate the insight of European Urologists into the diagnosis and management of these disease conditions in order to determine if they are suitably prepared for dealing with the changing disease elements in their countries.

Materials and methods
A 29-items survey including specific questions about the clinical features, diagnosis and management of “tropical” urological diseases (GUTB, urological manifestations of HIV, echinococcosis, schistosomiasis and filariasis) was edited by 2 urology consultants who are board certified by the South African Urological Association (SAUA). The survey was designed in accordance with Checklist for Reporting Results of Internet E-Surveys (CHERRIES) guidelines, uploaded on SurveyMonkey, and was distributed in march 2018 via e-mail and social media to urologists and residents working in Europe and in Africa. The European cohort was named “EG” while the African “AG”. Statistical analysis of nominal variables about comparison between the two different groups using the Chi Square test.

Results
A total of 287 surveys were considered for the study: the EG was made of 184 (64,1%) while the AG of 103 (35,9%). The median age in the AG was 37 years, 44 (42,7%) were residents and 59 (57,3%) specialists while in the EG 33 years, 95 (51,6%) and 89 (48,4%) respectively. The 52,7% of EG was working in Italy and the 45,6% of AG in South Africa. In the AG more than 50% of responders gave the correct answer in 19/20 items (95%) while only in 2/20 (10%) in the EG. In 6/20 (30%) of items less than 25% of EG responders gave the right answer. In all items we found a significant superiority in numbers of correct answers given by the AG (p<0.05). As shown in figure n°1, only the 11% of EG responders declared to feel confident managing these type of urological diseases.

Discussion
Though european urologists are not required to have the same insight of africans, they showed a very poor level of knowledges in these fields. Short educational programs including lessons, conferences and working experiences in developing countries should be implemented in order to fill this gap.
EFFECTIVENESS OF VACUUM-ASSISTED CLOSURE THERAPY (VAC) IN THE MANAGEMENT OF DISSEMINATED FOURNIER’S GANGRENE: A MULTICENTRE STUDY


Aim of the study
Fournier’s Gangrene (FG) is a potentially fatal polymicrobial soft tissue infection of the perineum, peri-anal and genital regions for which repeated surgical debridement is necessary, followed by multiple wound dressing for the entire healing process. Aim of this study was to evaluate the effectiveness of vacuum-assisted closure therapy (VAC) for treating patients with local and disseminated FG following initial debridement.

Materials and methods
Data of patients admitted for FG in the emergency room of 8 Italian Hospitals, between February 2007 and December 2017, were retrospectively reviewed. Data regarding: patient gender, age, length of hospital stay, use of VAC, microbiology, predisposing conditions (diabetes mellitus type II, chronic alcoholism, obesity, hypertension, smoking and pelvic radiotherapy), origin of FG (anorectal, urogenital), blood results on admission, transfusions, enterostomies, urinary diversion and complications (sepsis, renal failure, acute respiratory distress syndrome and multi-organ failure) were collected. Our study population has been divided into two groups, patients with local (Group I – involving the perineum and/or pubic regions) and disseminated (Group II – extended out of these regions) FG. The effectiveness of VAC (surgical debridement + VAC application) respect to conventional treatments (surgical debridement + standard medication) was evaluated in terms of rate of non-closure of the wound and of overall survival (OS).

Results
Seventy patients who underwent surgery were included in the study. There were no significant differences between the two groups in most of the variables considered. After the surgical debridement, the VAC has been used for 18 patients (62%) with local FG and for 11 patients (38%) with disseminated FG. In the Group I, treated using VAC, the timing of the wound closure was longer than in patients treated with conventional approaches. A rate of 50% of non-closure of the wound was reached after 15 days using conventional treatments and after 45 days with VAC. In the Group II treated using VAC, the rate of non-closure of the wound decreased in response to the therapy reaching a level of 9% in 126 days while, in response to conventional treatments, the minimum rate of non-closure of the wound was 62.5% in 18 days. A statistically significant difference of VAC effect between local and disseminated FG was found (p=0.031). Finally, the OS was higher in the group of patients with disseminated FG treated using VAC than those treated with conventional approaches (30-day OS: 0.88 vs 0.5, respectively, p=0.028)

Discussion
This study supports the effectiveness of VAC in the management of disseminated FG in terms of earlier wound closure and improvement of OS. The use of VAC doesn’t show any benefit over conventional approaches in treating local FG.
L-METIONINA ASSOCIATED WITH IBISCUS SABDARIFFA AND BOSWELLIA SERRATA (ACIDIF PLUS®)
EXTRACTS IN PATIENTS AFFECTED BY RECURRENT UNCOMPLICATED URINARY TRACT INFECTIONS: IS IT A FEASIBLE ALTERNATIVE TO ANTIBIOTIC TREATMENT?

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Aim of the study
The management of recurrent uncomplicated urinary tract infections (UTI) in women is still controversial. The phytotherapy seems an attractive alternative to antibiotic therapy to alleviate symptoms related to UTI and decrease the rate of symptomatic recurrence. The aim of the study was to evaluate the efficacy of a combination of L-Metionina associated with Ibiscus sabdariffa and Boswellia serrata (ACIDIF PLUS®) for treating acute episode of UTI in women affected by recurrent UTIs. Moreover, we evaluated the role of ACIDIF PLUS® in reducing the use of antibiotics and improving quality of life (QoL).

Materials and methods
In this prospective single centre randomized phase III clinical trial, all patients with clinical demonstration of uncomplicated UTI (without any microbiological demonstration) were enrolled into one of the following two groups: Group A: ACIDIF PLUS® 1 tablet in the morning and 1 tablet in the evening for 7 days; Group B: Short term antibiotic treatment in line with the trialist’s choice. At the baseline, all patients underwent urologic visit with QoL questionnaires and mid-stream urine culture. At each follow-up visit, patients completed a QoL questionnaire and underwent urological examination with a mid-stream urine culture.

Results
Forty-six patients have been enrolled in the Group A (mean age 46.5; range: 23-62) and 47 in the Group B (mean age 47.1; range: 22-63). At the first follow-up visit 1 (month), 44/46 patients in Group A showed a clinical significant improvement (QoL 94.3 vs 98.5 p<0.001), as well as 47/47 patients in Group B (QoL 94.5 vs 98.7 p<0.001). No statistically significant differences have been reported between the two groups. On the other hand, 37/46 and 45/47 patients showed a sterile urine in Group A and Group B respectively. In 9/46 patients in Group A a transition from symptomatic UTI to asymptomatic bacteriuria (ABU) was observed. In the Group B only 2 patients showed the transition from UTI to ABU. At the second follow-up visit (3 months), 44/46 patients in Group A showed a clinical significant improvement (QoL 94.3 vs 99.1 p<0.001), as well as 45/47 patients in Group B (QoL 94.5 vs 98.1 p<0.001). A statistically significant difference has been reported in terms of QoL between the two groups (p<0.003; 99.1 vs 98.1). In 12/46 patients in Group A we observed a transition from symptomatic UTI to ABU. In Group B no patients showed transition to ABU.

Discussion
The role of phytotherapy in the management of recurrent UTIs seems interesting. In particular, the use of ACIDIF PLUS® is able, in comparison to antibiotic treatment, to improve patients quality of life, reducing symptoms in acute setting and preventing the recurrences. Moreover, the use of ACIDIF PLUS® seems interesting in terms of antibiotic stewardship because reduce the need of antibiotics. The fact that ACIDIF PLUS® is able to establish an ABU is a clear demonstration of the absence of its effects on the resident flora. Further studies are needed to confirm our results.
**EPIDEMIOLOGICAL FEATURES OF RESISTANCE PATTERNS AMONG UROPATHOGENS: FOCUS ON FOSFOMYCIN TROMETAMOL**

P. Lanzafame, T. Cai, P. Caciagli, A. Palmieri, P. Verze, D. Arcaniolo, V. Mirone, G. Malossini (Trento)

**Aim of the study**
Several authors showed that the resistance rate among uropathogens against fosfomycin trometamol (FT) is still low (about 5%), due to its specific pharmacological characteristics. However, up to the moment we have no updated data about the resistance rate against FT among outpatients. We aimed to evaluate the resistance rate against FT among outpatients in the last 4 years in two high volume laboratories in Italy.

**Materials and methods**
All urinary samples collected and analyzed for culture in two high volume laboratories in Italy (Trento and Naples) have been retrospectively reviewed from January 2015 to March 2018. All samples have been sent to laboratory from patient with clinical diagnosis of urinary tract infections. All samples have been analyzed in order to evaluate the pattern of resistance to FT. The FT sensibility assay has been performed by using the Kirby-Bauer test or Vitek II.

**Results**
From 2015 to 2018 4,442 urinary samples have been collected and analyzed in the two centres. The table shows the results about resistance rates in all samples.

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>84</td>
<td>1431</td>
<td>2134</td>
<td>793</td>
</tr>
<tr>
<td>S</td>
<td>6</td>
<td>103</td>
<td>196</td>
<td>104</td>
</tr>
<tr>
<td>S</td>
<td>78</td>
<td>1328</td>
<td>1938</td>
<td>689</td>
</tr>
<tr>
<td>Resistance Rate</td>
<td>7,14</td>
<td>7,2</td>
<td>9,23</td>
<td>13,1</td>
</tr>
</tbody>
</table>

No statistically significant difference has been reported between the two areas (p=0.53); on the other hand along the study period, a statistically significant difference has been reported between the 2018 and the 2016 (p=0.001). FT shows the same resistance rate in the study period: 9.2%.

**Discussion**
Although the findings are supported by a retrospective study, this is the first study to show the resistance rate against FT in outpatients in Italy in two areas (North and Sud of Italy). Moreover, even if FT shows an higher rate of resistance in comparison with the previous study, no significant increasing has been reported along the study period (in the 2015-2017 years), showing the good pharmacological profile of FT. A significant increasing of resistance rate against FT has been showed between the 2018 and 2016 years. However, the data collection for the years 2018 has not completed and it could be a limitation to resolve in the future. In fact, future studies should be performed in order to confirm these results.
RATE OF COMPLICATIONS AND URINARY INFECTION AFTER ANTIBIOTIC PROPHYLAXIS WITH FOSFOMYCIN VS. STANDARD OF CARE IN PATIENTS UNDERGOING PROSTATE BIOPSY: A RANDOMIZED, SINGLE-BLINDED, CLINICAL STUDY

S. Cimino, P. Verze, G. Russo, L. Venturino, P. Alessio, A. Migliara, C. Imbimbo, V. Mirone, G. Morgia (Catania)

Aim of the study
Prostate biopsy still represents the gold standard method for the diagnosis of prostate cancer (PCa) and the transrectal approach (TR-PB) remains the most commonly used in clinical practice. The primary aim of the current study was to determine the complication rate in a cohort of patients undergoing prostate biopsy according to different antibiotic prophylaxis regimens (fosfomycin trometamol [FT] vs. ß-lactame or fluoroquinolones [FQ]).

Materials and methods
The analyses were based on prospectively collected data of a cohort of patients whose underwent prostate biopsy (either TR or TP) for elevated PSA (≥ 4 ng/ml) or clinical suspicion of PCa in two academic centers or when appropriate according to risk calculator and consecutively included in the study, between September 2016 and March 2017. We included in our analysis patients whose underwent prostate biopsy receiving a single dose of 3 g oral fosfomycin trometamol (FT) the night before the procedure and 12 hours after the procedure (Group A), or alternatively, fluoroquinolones (FQ) or ß-lactame both 60 minutes before the procedure (Group B). FQ consisted of 200 mg of endovenous ciprofloxacin while ß-lactame consisted of 1 gr of ceftriaxone. Adjustment variables consisted of age, PSA, biopsy technique (TP vs. TR), antibiotic prophylaxis (FT vs. ß-lactame or FQ) using 1:1 propensity-score matching. Overall, 526 patients were considered subdivided into the following 258 patients who received FT (group A) and 258 who received ß-lactame or FQ (group B).

Results
The proportion of patients with diabetes and CCI ≥ 2 were 14.92% (77/516) and 63.18% (326/516). The overall detection rate for PCa was 38.95% (201/516). Overall complications were 390 (75.58%) while major complications in the entire cohort were 67/516 (12.98%). When considering major complication rate stratified according to the different prostate biopsy approach, we found statistically significant differences between TRBx and TPBx (16.15% vs. 8.89%; p<0.01, respectively). Moreover, we found a statistically significant difference for prevalence of Clavien-grade II of haematuria (TRBx 3.11% vs. TPBx 1.72%; p<0.01), but this was not the case for haemospermia (TRBx 0.0 vs. TPBx 1.03%; p=0.178), AUR (TRBx 5.78% vs. TPBx 8.25%; p=0.43) and UTIs (TRBx 34.67% vs. TPBx 41.92%; p=0.09). We demonstrated that TPBx approach was significantly associated with greater risk of Clavien-Dindo grade II complications (OR: 4.5 [95%CI 2.18-9.27]; <0.01). Furthermore, we found that ß-lactame prophylaxis (OR: 1.54; p=0.03), I-grade haematuria (OR: 6.17; p<0.01) and II-grade haematuria (OR: 5.13; p<0.01) were significantly associated with increased risk of UTIs.

Discussion
In this population-based study comparing complications after TRBx vs. TPBx, we found that AMP with fluoroquinolones or ß-lactam antibiotics increased the rate of UTIs.
SURGERY OF EXTERNAL GENITALIA AND URETHRA

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LONG-TERM SURGICAL, FUNCTIONAL AND PATIENTS’ REPORTED OUTCOMES OF THE TURIN’S CORPOROPLASTY: RESULTS FROM A SINGLE TERTIARY REFERRAL CENTER EXPERIENCE


Aim of the study
Several shortening corporoplasty techniques have been proposed to correct penile deformity due to congenital curvature or peyronie’s disease (PD). In 2005, we proposed a modification of Nesbit’s corporoplasty. We report long-term surgical, functional and patients’ reported outcomes (PROs) of Turin’s corporoplasty.

Materials and methods
From May 2005 to May 2016, 145 patients underwent Turin’s corporoplasty. 87 patients were included in the study. Congenital curvature was identified in 61 patients (A) and PD (B) in the remainers. Intraoperative complications, hospital stay and postoperative complications were evaluated for surgical outcomes. Validated questionnaire were administered preoperatively and 12 months after. An “ad-hoc” questionnaire was submitted to assess PROs.

Results
The median age of our patients was 30 (IQR 20-54). The penile curvature was dorsal in the 29.8% of cases, ventral in the 52.9% and lateral in the 17.2%, with a median of 60° (IQR 45-70). The average follow-up time was 97 months. The median hospital stay was 2 days for both group. Postoperative haematoma were more frequent (p=0.003) in the group A when compared to the group B. Postoperative complications, in terms of bleeding, infection or unaesthetic scarring, resulted a rare event (13.6%) without a significant difference in-between groups. A recurrent curvature was observed in 9.9% of cases. A minor residual curvature (< 20°) was detected in 14.8% of patient. Long-term postoperative erectile dysfunction (ED) was observed in 3.2% of case in group A and in 43.5% in group B (p=0.001). Long-term PROs demonstrated a higher incidence of dissatisfaction for penile length loss in group B compared to group A (p=0.001). An higher improvement of quality of both everyday life and sexual life was observed in group A compared to group B (p=0.01; p=0.004). PD, age (> 35) and postoperative complications were identified as Independent risk factors for the development of postoperative ED.

Discussion
Turin’s corporoplasty represents an easy and effective approach. Despite low incidence of postoperative complications, both functional and PROs tend to be sharply lower in patients with PD curvature compared to congenital deformations.
P45

IS DEGLOVING MANDATORY IN PENILE CORPOROPLASTY WITH YACHIA’S TECHNIQUE?


Aim of the study
Peyronie’s Disease (PD), congenital and acquired penile curvature represent three separate types of penile curvature deformities. Surgical correction of the curvature is indicated when the deformity inhibits vaginal penetration or erectile function. Penile corporoplasty with Yachia’s technique (CYT) with degloving (DG) or without degloving (WDG) provides a minimally invasive option for treatment of penile curvature. The purpose of this study was to review the outcomes of penile CYT with DG and WDG of the penis.

Materials and methods
Clinical data and operative outcomes of 71 patients (pts) who underwent penile plication were reviewed. The preoperative characteristics of the pts (age, direction of curvature, degree of angulation, IIEF-5 score and presence of plaque), postoperative outcomes (change in angulation, palpation of sutures, penile shortening, patient satisfaction and postoperative IIEF-5), operative time and hospital stay were recorded. All pts were asked about their sexual satisfaction status (which was as “excellent”, “satisfied”, or “poor”). Pts without at least 6-months of follow-up were not included in this study. Statistical analysis was performed with SPSS 23.0. Normally and non-normally distributed variables were presented as mean ± SD (compared using Student t-test) and median (compared using the Mann-Whitney U-test), respectively. A P value <0.05 was considered statistically significant.

Results
A total of 71 pts were admitted for penile CYT, out of which 8 pts were excluded. 63 pts were included in the study and divided into two groups: 33 pts in Group I (DG) and 30 pts in Group II (WDG). The mean age of the patients was 49.01±18 years. The diagnosis of penile curvature was PD in 41 pts, congenital curvature in 19 pts, and acquired curvature (after a penile surgery) in 3 pts. The two groups were similar in age, IIEF-5, direction and degree of curvature. The mean operative time was 65.87±21.32 minutes for Group I and 49.17±24.82 minutes for Group II (p<0.02). The mean hospital stay was 3.08±0.96 and 2.97±0.93 days in DG and WDG, respectively (p=0.324). There were no complications during surgery in either group. The median follow-up was 19.4 (range 6-36) months. There were no significant differences in recurrence rates and complications [palpation of sutures: (DG:10%; WDG:12.1%), penile shortening (DG:0; WDG:0), IIEF-5 score (DG:17.81±4.80; WDG:17.01±4.63)]. One patient in the Group II underwent reparation due to inadequate surgical correction (p=0.526). One patient in Group I reported gland hypoesthesia. All pts reportedly had resumed their sexual activity at 1 month postoperatively. When sexual satisfaction after surgery was reviewed in the DG group (63.6%: excellent, 27.3%: satisfied, and 9.1% poor), while in the WDG group (63.4%: excellent, 23.3%: satisfied, and 13.3% poor) (p=0.526).

Discussion
CYT with DG or WDG is safe and effective for treatment of penile curvatures. The outcomes of the DG and WDG techniques were similar in outcomes, but not in length of operative times.
PERCUTANEOUS ANGIOPLASTY OF INTERNAL PUDENDAL ARTERIES FOR THE TREATMENT OF ERECTILE DYSFUNCTION NOT RESPONSIVE TO PHARMACOLOGICAL THERAPY. INITIAL EXPERIENCE IN SIX PATIENTS

F. Migliorini, A. Marcer, M. Sebben, S. Bassi, A. Mariotto, E. Rubilotta, M. Balzarro, F. Ribichini, W. Artibani (Verona)

Aim of the study
To assess the feasibility and efficacy of percutaneous angioplasty of Internal Pudendal Arteries (IPA) stenosis with drug-eluting paclitaxel-medicated balloons in the treatment of Erectile Dysfunction (ED) no longer responding to pharmacotherapy.

Materials and methods
Six patients with severe ED no longer responsive to oral and intracavernosal pharmacotherapy were treated. The mean age was 61+/-5 years old. Serum testosterone and prolactin levels were normal in all patients, IIEF-5 ranged between 3 and 7 (mean 4.8). The penile Dynamic Colour Duplex Doppler Ultrasound (D-CDDU) detected arteriogenic ED with Systolic Peak Velocity (PSV) between 18 and 25 cm/sec (mean 21.8). Penile rigidity was grade 1 on 4 according to Erection Hardness Score. Through a single or bilateral femoral percutaneous access, patients underwent selective angiography of internal iliac arteries and IPA. Angiographically significant stenosis of IPA (diameter obstruction >50%) were observed bilaterally in five patients and unilaterally in one. Stenosis were gradually dilated with 2.0, 2.5 and 3.0 mm diameter medicated balloons. All patients were discharged one or two days after angioplasty on double antiplatelet therapy (clopidogrel 75 mg + ASA 100 mg) and atorvastatin 40 mg die.

Results
All procedures were successful in restoring of good IPA flow. No complications occurred. Patients were followed at 4 and 8 months. At the first check all patient reported a significant improvement in erections with an average increase of 9 points in the IIEF-5. Three patients had to use sildenafil 100 mg and three 50 mg to have good erections. D-CDDU detected an average increase of 13,5 cm/sec in PSV. At eight months, one patient was regressed at the initial state because and underwent prosthesis placement; two patients had to use alprostadil 10 ugr and three had satisfactory erections using Sildenafil 100 mg.

Discussion
IPA stenosis angioplasty with paclitaxel-eluting balloons seems to be a promising therapy for ED not responsive to pharmacotherapy. It is a safe and repeatable procedure, leads to improvement of erectile function in a good percentage of cases and should be considered as a last therapeutic opportunity before proposing a penile prosthesis.
THE EFFICACY OF COMBINED LOW INTENSITY SHOCK WAVE THERAPY (LI-ESWT) AND TADALAFIL 5 MG DAILY IN DIABETIC PATIENTS WITH ERECTILE DYSFUNCTION (ED): THE RESULTS OF A CASE-CONTROL RETROSPECTIVE STUDY

P. Verze, M. Creta, F. Persico, A. Palmieri, C. Imbimbo, R. La Rocca, V. Mirone (Napoli)

Aim of the study
To evaluate the efficacy of combination therapy with Low Intensity Shock Wave Therapy (LISWT) and Tadalafil 5 mg daily (TAD oad) in diabetic patients with ED and to compare protocols of LISWT characterized by different number of shock waves for session.

Materials and methods
We performed a retrospective observational case-control study. We enrolled diabetic patients with ED naïve for ED treatment. The case group (Group 1) consisted of patients who received TAD oad bed-time for 12 weeks and LISWT. Shockwaves were delivered by a probe attached to an electrohydraulic unit with a focused shockwave source. Shockwaves were delivered to the distal, mid, and proximal penile shaft, and the left and right crura. The duration of each LI-ESWT session was about 20 min. Energy density was set at 0.09 mJ/mm² and frequency at 120/min. The number of number of shock waves delivered during each session varied from 1500 to 2400. Treatment protocol consisted of 2 treatment sessions per week for 3 weeks. Patients with same demographic and clinical characteristics who received only TAD oad for 12 weeks served as controls (Group 2). International Index of Erectile Function (IIEF-5) scores recorded at baseline, at 4 and 12 weeks after the end of the treatment were compared. A subgroup analysis was performed according to the number of shock waves administered during each session (1500, 1800, 2400).

Results
Thirty-one and 10 patients were enrolled in Group 1 and 2, respectively. Eleven, 10 and 10 patients belonging to the Group 1 received 1500, 1800 and 2400 hits, respectively. Mean baseline IIEF-5 scores were 16.8 and 15 in Group 1 and 2, respectively (p= 0.09). A statistically significant improvement of mean IIEF-5 score was observed in both groups at 4 weeks follow-up (19.7 and 18.3 in Groups 1 and 2, respectively) (p < 0.05 vs baseline). Mean IIEF-5 scores recorded at 12 weeks did not varied significantly in comparison to values recorded at 4 weeks (p=0.1 in both groups). Inter-group analysis did not show significant differences at 4 and 12 weeks (p=0.2 in both cases). Subgroup analysis revealed a statistically significant improvement of mean IIEF-5 score at 12 weeks with respect to 4 weeks only in patients who received 2400 hits (Figure 1). The percentage of patients in which it was registered a normalization of erectile function after 12 weeks of treatment was 20%, 27.2%, 20% and 50%, in Group 2 and in the subgroups of Group 1 treated with 1500, 1800 and 2400 hits, respectively.

Discussion
The combination of TAD oad and LISWT leads to a statistically significant improvement of erectile function in diabetic patients with concomitant ED at 4 weeks follow-up, with a stable trend over time up to 12 weeks. The administration of 2400 hits for session allows to get an additional, significative improvement of erectile function at 12 weeks follow-up.
Aim of the study
The European Urological Association (EAU) guidelines suggest penile prosthesis implantation (PPI) only as a third line therapy for the treatment of erectile dysfunction (ED), despite excellent results in terms of patients’ satisfaction and overall safety. We looked at the current indications for PPI in clinical practice using data from a prospective national registry.

Materials and methods
Data from a national multi-institutional database of PPI including patients treated from 2014 to 2017 in Italy (INSIST-ED) were analyzed. Data have been prospectively recorded by 45 surgeons on a dedicated website (www.registro.andrologiaitaliana.it) and revised by a single datamanager. Clinical characteristics, ED etiology and hospitalization regimens were analyzed for every patient. According to EAU guidelines, the indication for PPI was considered appropriate when patients have been offered both a first line (e.g. PDE5is and/or vacuum therapy) and a second line (e.g. intracavernous injection [ICI]) treatment approach before surgical treatment. Likewise, patients with penile curvature and ED were considered as properly submitted to PPI when they were previously offered at least with PDE5is. Logistic regression analyses tested the association between clinical characteristics, surgeon experience and ED etiology with the likelihood of a proper indication for PPI.

Results
Complete data were available for 579 patients; median (IQR) age was 61 (56-67) years. ED etiology was vasculogenic in 39% (226) and post-pelvic surgery in 40% (231) of cases, respectively. Overall, only 20 (3.5%) patients did not have a proper indication for PPI according to EAU guidelines. Of them, 14 (70%) and 6 (30%) were either nonresponders to or refused a first-line ED therapy and were not offered with a second line therapy prior to surgery. Moreover, most patients with a proper PPI indication were treated in a public center [442 (79%) vs. 117 (21%)]. Both nonresponders to a previous ED therapy (OR: 3.3; 95%CI: 1.2-9.1, p=0.01) and patients treated in a private center (OR: 2.51; 95%CI>1.01-6.3, p=0.04) were more likely to undergo PPI surgery without a proper indication according to current EAU guidelines. No significant association was found between ED etiology, surgeon’s experience and patients’ age and the likelihood of a proper indication for PPI.

Discussion
Current findings from a national registry showed that EAU guidelines are properly followed in terms of indications for PPI surgery in patients with ED. Patients treated in a private hospital setting and those nonresponders to a previous first-line treatment were more likely to be counseled for PPI before being offered a second-line therapy.
COMPARISON OF OUTCOMES AND SATISFACTION OF HYDRAULIC AND NON HYDRAULIC PENILE IMPLANTS: PROSPECTIVE DATA FROM A 207 PATIENTS MONOCENTRIC SERIES


Aim of the study
The choice between hydraulic and non-hydraulic prosthetic implant is carried out considering surgeon’s experience, economic issues, anatomical-clinical conditions and personal preferences of the patient. Few data are available in the literature comparing the outcome of various types of prosthesis, so patient counselling is often based on personal opinions of the surgeon. The aim of the work was to compare surgical results, complications and patient satisfaction after placement of a hydraulic and semi-rigid prosthetic implant in a monocentric prospective data base.

Materials and methods
We analyzed follow up data of 203 patients who underwent from 2004 to 2016 prosthesis placement for erectile dysfunction, 163 three-component hydraulic implants AMS 600 (GROUP 1) and 40 malleable semi-rigid implants Coloplast Genesis (GROUP 2). The two groups were homogeneous by age and comorbidity. 12 months after surgery, all patients underwent an andrological examination with EDITS questionnaire and ad hoc questions on satisfaction regarding different aspects: intervention outcomes, penis size, quality of sex life, quality of life. Complications were recorded prospectively and all patients were re-contacted in the years 2016-2017 to exclude follow-up losses. Statistics: Fisher test, T-test.

Results
Results are listed in table 1.

<table>
<thead>
<tr>
<th></th>
<th>Hydraulic prosthesis (Group 1)</th>
<th>Non hydraulic prosthesis (Group 2)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infections</td>
<td>4/163 2.5%</td>
<td>2/40 5%</td>
<td>0.34</td>
</tr>
<tr>
<td>Apical failures</td>
<td>2/163 1.2%</td>
<td>2/40 5%</td>
<td>0.17</td>
</tr>
<tr>
<td>Edits 12 months, average</td>
<td>42.7</td>
<td>37.8</td>
<td>0.003</td>
</tr>
<tr>
<td>Satisfaction from surgery</td>
<td>17/163 89.5%</td>
<td>7/40 82.5%</td>
<td>0.27</td>
</tr>
<tr>
<td>Satisfaction from penile length</td>
<td>148/163 91%</td>
<td>31/40 77.5%</td>
<td>0.9</td>
</tr>
<tr>
<td>Improvement in sexual life</td>
<td>151/163 93%</td>
<td>32/40 80%</td>
<td>0.03</td>
</tr>
<tr>
<td>Improvement of QoL</td>
<td>118/163 72%</td>
<td>21/40 52%</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Discussion
There were no statistically significant differences between the two groups in the complication rate. Patients in both group were satisfied by the procedure and the size of the penis, and they would redo the surgery or recommend it to a friend; in general, all scores were largely positive in both groups, but patients with a hydraulic prosthesis showed higher EDITS scores and declared in a significantly higher proportion that they had an improvement in sex life and quality of life. In conclusion, no significant differences emerged among the parameters most closely related to the outcome of the intervention, while among the more general satisfaction parameters the hydraulic prostheses, which more faithfully simulate a physiological state, were more appreciated.
EXTERNAL BEAM RADIOThERAPY FOLLOWING RADICAL PROSTATECTOMY IS THE STRONGEST RISK FACTOR FOR INFECTIONS IN PENILE PROSTHETIC SURGERY. RESULTS FROM A 395 IMPLANTS MONOCENTRIC SERIES


Aim of the study
Penile prosthetic surgery, with or without adjunctive manoeuvres, is the standard solution for erectile dysfunction (ED) patients (pt) non-responders to medical therapy or presenting deformations due to La Peyronie’s disease (PD). Infection is the worst complication. Aim of the study is to assess the risk factors for infection in a large monocentric series.

Materials and methods
We prospectively collected perioperative and follow-up data of 395 pt (average age 61 years) who underwent prosthetic surgery at our referral centre from 10/2004 to 01/2017. 276 pt had a hydraulic implant, 119 non-hydraulic. In 308 pt (age 61) we performed a simple prosthetic procedure, in 87 (age 60) a complex procedure. In 128 pt (age 59) the main diagnosis was vascular ED, in 143 (age 61) PD with important deformity, in 124 (age 63) post-prostatectomy ED. In the latter group, 29 pt out of 124 underwent also an adjuvant or salvage radiotherapy. Statistical analysis: Fisher's test, chi-square test, mono and multi-variate logistic regression. Software: med-Calc.

Results
Globally, we registered 15 cases of infection out of 395 (3.8%). No correlation was found between infection rate and adjunctive surgical manoeuvres (p 0.15) or model of prosthesis implanted (p 0.34). Infection rate resulted 3/128 (2.3%) in vascular ED, 3/143 (2.1%) in PD, 9/124 (7.2%) in post-prostatectomy ED. In particular, infection rate was 4/95 (4.2%) in pt who underwent radical prostatectomy alone and 5/29 (17%) in pt who underwent surgery and RT. At multivariate analysis, no statistical correlations were registered between infection rate and age (p 0.32), diabetes (p 0.20), coronary artery disease (p 0.14), hypertension (p 0.89) or smoke (p 0.34). Previous prostatectomy alone showed a significant correlation with infection rate (OR 5.88, p 0.04). Radiotherapy, in combination with pelvic surgery, showed an even stronger correlation (OR 5.9 p 0.018). Subsequent multivariate analysis performed on post-surgery pt only showed significant correlation between previous post-prostatectomy RT and prosthesis infection (p 0.032).

Discussion
No statistically significant correlation was found between infection and complexity of surgery, as well as comorbidities such as diabetes. Probably, these results are due to a strict respect of inclusion criteria for surgery and infection prevention policies. According to our data, the strongest risk factor associated to prosthetic infection is the radiotherapy treatment following a previous pelvic surgery, that increases of 6 folds the risk of infection. These data define a new risk profile for infection after prosthetic surgery and highlight the need for particular care in patient selection, infection prevention and counselling among an emerging category of subjects such as post prostate cancer patients.
AN OUTCOMES ANALYSIS OF 47 PENILE PROSTHESIS IMPLANTATIONS AFTER CISTOPROSTATECTOMY FOR MUSCLE-INVASIVE BLADDER CANCER: A MULTICENTRIC STUDY


Aim of the study
To report the outcomes of a multicentric series of patients underwent a penile prosthesis (PP) implantation following radical cystoprostatectomy (RCP).

Materials and methods
A multicentric database, involving 4 tertiary referral centers, was created. From December 2004 to September 2017 65 patients underwent a PP implantation for a medically refractory ED following a RCP for bladder cancer. Clinical records were retrospectively reviewed. 47 patients, presenting comprehensive intraoperative and postoperative information were enrolled in the study. Patients were confined in 2 groups according to the type of urinary diversion: neobladder (A) or other diversions (B), including ileal conduit and ureterocutaneostomy. The intraoperative complications, the hospital stay, a postoperative haematoma scale and the postoperative complications were selected as variables for the surgical outcomes.

Results
Patients’ features are summarized in table 1. 14 patients (29.8%) were enrolled in group A, whereas the remainders were in group B. A consistent percentage (65.9%) of patients were referred to an early postoperative sexual counseling, with a median time of 12 months after surgery. Most of the patients (65.9%) started pde-5 inhibitors as a first line treatment and less than half of the them (44.7%) used a second line attempt, intracavernous injections (ICI). Surgical outcomes are listed in table 2. Overall, the time elapsed between the RCP and the PP implant was long, with a median of 38 months. Nevertheless, the median implant length resulted to be satisfactory (19 cm) and the need of a reduced diameter cylinder (CXRx®) was a rare event. Despite the previous pelvic surgery, most of the PP implanted were three-pieces. The spherical reservoir was the most used, compared to the low-profile (Conceal®). In most of the cases a safe placement of the reservoir in the extraperitoneal space through a second abdominal incision was the preferred surgeon’s choice. However, the ectopic high-submuscular placement was used in up to 30% of cases in group A. Both intraoperative and postoperative complications resulted to be rare events. Finally, the multivariate statistical analysis did not show any independent predictive risk factor for postoperative complications.

Discussion
PP implantation after RCP seems not to represent a concern for expert implanters, being the incidence of complications extremely low. Despite the consistent elapsed time between the RCP and the PP implantation, a satisfactory penile girth and length can be obtained in most of the cases.
INFLATABLE PENILE PROSTHESIS IMPLANT IN PATIENTS WITH PREVIOUS OR CONCOMITANT PENILE AND/OR URETHRAL SURGERY: PERIOPERATIVE RESULTS AND SAFETY PROFILE IN A SINGLE CENTER SERIES


Aim of the study
To assess the impact of previous or concomitant penile and/or urethral surgery on perioperative results and safety profile in patients undergoing inflatable penile prosthesis (IPP) placement for erectile dysfunction.

Materials and methods
From June 2011 to January 2017, 66 consecutive patients undergoing IPP placement by an experienced single surgeon at our centre were enrolled. All patients were assessed pre- and postoperatively with detailed medical history and physical examination. Clinical and surgical data were prospectively collected. Complications were evaluated using Clavien classification. Minimum follow-up was 12 months. The Mann-Whitney and $\chi^2$ tests (or the Fisher exact test) were used to compare continuous and categorical variables, respectively, among patients with or without previous or concomitant penile surgery (for congenital or acquired recurvatum) and/or urethral surgery. All reported p values are two sided and statistical significance was set at $p < 0.05$.

Results
Of the 66 patients included in the analysis, 15 (23%) had previous or concomitant penile and/or urethral surgery (Group 1) while 51 (77%) had not (Group 2). In particular, of the 20 previous or concomitant penile and urethral surgeries in the 15 patients of Group 1, 10 were IPP placements, 4 corrections of penile recurvatum, 3 urethrotomies, 2 urethroplasties and 1 artificial urinary sphincter placement. There was no statistically significant difference regarding baseline characteristics between the two groups. Mean (SD) operative time was 129 (58.2) min in Group 1 and 124 (55.3) min in Group 2 ($p=0.544$). No difference was observed in mean (SD) hospital stay [2 (1.5) d in Group 1 vs 2 (1.6) d in Group 2; $p=0.598$]. No intra-operative complications occurred in both groups. Post-operative complications occurred in 2/15 (13%) in Group 1 and 7/51 (12%) in Group 2, respectively ($p=0.623$). No patients had complications graded higher than II.

Discussion
The results of the present study suggest that IPP placement represents a feasible and safe option for the treatment of erectile dysfunction also in the setting of previous or concomitant penile and/or urethral surgery, when performed in experienced hands. A greater number of patients and longer follow-up is needed to draw definitive conclusions.
QUALITY OF LIFE AFTER PENILE PROSTHESIS IMPLANTATION - 1-YEAR FOLLOW-UP DATA OF THE INSIST-ED NATIONAL PROSPECTIVE REGISTRY


Aim of the study
The impact of penile prosthesis implantation (PPI) in terms of overall patients’ quality of life (QoL) has been scantily analysed. The aim of this study was to assess QoL of patients submitted to PPI, using the validated questionnaire Quality of Life and Sexuality with Penile Prosthesis (QoLSPP).

Materials and methods
Data from a national multi-institutional database of PPI including patients treated from 2014 to 2017 in Italy (INSIST-ED) were analysed. All data have been prospectively recorded by 45 surgeons on a dedicated website (www.registro.andrologiaitaliana.it) and revised by a single datamanager. Etiology of erectile dysfunction (ED) and type of implanted prosthesis were analysed. In order to simultaneously evaluate perceived penile prosthesis function and QoL, all patients were re-assessed at 1-yr follow-up with the QoLSPP questionnaire. Linear regression analyses were applied to assess the correlation between clinical variables, functional outcomes and QoL. Locally weighted regression methods were used to explore the relationship between surgeon experience and QoLSPP scores.

Results
Complete follow-up data were available for 142 patients [median age 60 years (IQR: 56 – 67)]. Overall, the most commonly reported ED etiology was vasculogenic (44%) followed by either previous pelvic surgery or radiotherapy (39%). Most patients had been implanted with a tri-component hydraulic prosthesis (77%), while a non-hydraulic model was used in 14% of cases. A penoscrotal approach was preferred in 84% of the surgeries. At 1-yr follow-up, high median scores were reported for the QoLSPP functional (F:23/25), Personal (P:13/15), Relational (R:17/20) and Social (S:13/15) domains. Patients implanted with hydraulic devices showed higher functional (23 vs. 21.5; p=0.01) and total score (68 vs. 65.5; p=0.03) as compared with those with a malleable prosthesis. Surgeon experience emerged as the only independent predictor of higher satisfaction scores, depicting a non-linear association with both QoLSPP total and domain scores (all p<0.03). Data suggested that the higher the number of procedures per year, the greater the satisfaction scores, further reaching a plateau after 15 procedures/year.

Discussion
This is the first study reporting QoL data after PPI using the validated QoLSPP questionnaire. Current findings suggest that patients are highly satisfied after PPI, regardless of age, type of prosthesis received and ED etiology. Better outcomes should be expected for patients treated by surgeons with higher experience.
OMTFSFI: OPERATED MALE TO FEMALE SEXUAL FUNCTION INDEX. DEVELOPMENT AND VALIDATION OF THE FIRST QUESTIONNAIRE TO ASSESS SEXUAL FUNCTION AFTER MALE TO FEMALE GENDER REASSIGNMENT SURGERY


Aim of the study
The available literature does not provide any questionnaire to evaluate sexual function after male to female (MtF) gender reassignment surgery. The assessment of sexual function in these patients is routinely performed by using tools designed for biological women, such as Female Sexual Function Index (FSFI). Such a limit leads to a suboptimal evaluation, especially in domains like lubrication and dyspareunia. Moreover, FSFI scores in MtF patients often are similar to those observed in non-transsexual women with sexual dysfunction. We aim at developing validate new questionnaire, the operated Male to Female Sexual Function Index (oMtFSFI) in order to assess sexual function in patients who underwent MtF gender reassignment surgery.

Materials and methods
A panel of experts in gender dysphoria (4 uro-andrologists, 3 psycho-sexologists) defined salient content areas to be explored (genital self-image, desire, arousal, lubrication, orgasm, satisfaction and sexual pain). Ten MtF patients were administered the questionnaire in order to check its face validity. Their suggestions helped the expert revising the initial version. The revised oMtFSFI questionnaire presents 18 items and was applied in the present study. oMtFSFI with FSFI, Back Depression Inventory II and SF-36 questionnaires were web-based administered to 125 operated MtF patients, recruited during follow-up visits in 7 italian centres and to 80 women who provided self-ratings. The MtF participants completed oMtFSFI twice, three to four weeks apart.

Results
65 MtF and 57 women completed the study. MtF and biological women did not differ in their age (mean 38.5 SD 9.3 versus 37.7 SD 11.5 years old) or in their present vs not sexual activity in the last month (p=0.18). MtF women underwent reassignment surgery up to 19 years before (mean 5.1 SD = 5.1). Principal component analysis performed on the self-ratings provided by MtFs on the oMtFSFI items yielded a 3-domain structure (accounting for the 68.7% of the total variance): Sexual Dissatisfaction, Sexual Pain and Genital self-image. The same structure emerged when data from the whole group were analysed. For MtFs, Cronbach Alphas ranged from 0.64 to 0.93 for the three domains. Convergent association with FSFI scales were found for Sexual Dissatisfaction and Sexual Pain but not for Genital Self-image, after controlling for age and years from the surgery.

Discussion
These results support the reliability and psychometric validity of the oMtFSFI in the assessment of key dimensions of transsexual women sexual function. Further studies are needed to develop a diagnostic cut-off scores for a potential classification of operated MtF’s sexual dysfunction.
TIMING OF COLOR DOPPLER SONOGRAPHY OF THE SCROTUM AFTER SURGERY FOR VARICOCELE

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Aim of the study
Varicocele is quite common in young males. Color doppler sonography of the scrotum is the gold standard to detect it. Our study aims to find out the best timing for color doppler sonography of the scrotum after surgery for varicocele, to understand if surgery was decisive or to confirm the persistence of varicocele.

Materials and methods
From May 2015 to May 2016, 130 patients underwent surgery for varicocele: 66 were treated with subinguinal varicocelectomy and 64 were treated with Tauber antegrade sclerotherapy. All patients had grade 3 varicocele.

Results
All patients underwent color doppler sonography of the scrotum two weeks and three months after surgery. In the group of patients treated with subinguinal varicocelectomy, 28 (42.42%) presented a sonographic persistence of varicocele two weeks after surgery. 7 patients in the subinguinal varicocelectomy group presented a sonographic persistence of varicocele (10.60%) three months after surgery. This was confirmed with color Doppler sonography of the scrotum 12 months after surgery (p>0.05). In the group of patients treated with Tauber antegrade sclerotherapy, 10 (15%) presented a sonographic persistence of varicocele two weeks after surgery. 4 patients (6%) had a sonographic persistence of varicocele at three months and twelve months control (p<0.001).

Discussion
Color doppler sonography of the scrotum after Tauber antegrade sclerotherapy for varicocele indifferently can be made two weeks or three months after surgery, considering that a statistically significant difference between periods was not verified. On the contrary, color doppler sonography of the scrotum after subinguinal varicocelectomy must be performed three months after surgery to confirm the persistence of varicocele.
COMBINED DORSAL PLUS VENTRAL DOUBLE BUCCAL MUCOSA GRAFT URETHROPLASTY VERSUS DORSAL GRAFT PLUS VENTRAL SIS PATCH: A COMPARISON OF TECHNIQUES

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Aim of the study
Urethral stricture is a common male urological problem, with a high rate of recurrence and a great reduction in quality of life for patients. Long urethral strictures (>2cm) require a urethral substitution procedure, to enlarge the stenotic section. The gold standard is buccal mucosa graft urethroplasty, both for peri- and postoperative results, nevertheless this technique is afflicted by donor site morbidity which increases for larger grafts. There may be patients who require a combined graft, to reduce the possibility of recurrence. Since the SIS patch is easily available and ready to use, it could replace the ventral graft. Primary endpoint of the study was to compare short to middle-term functional results in patient who underwent double buccal mucosa graft (BM/BM) or buccal mucosa graft plus ventral SIS patch (BM/SIS) urethroplasty. Secondary endpoint of the study was to evaluate the rate of recurrence and complications in the two groups.

Materials and methods
We enrolled 50 patients, 30 of which underwent BM/BM urethroplasty and 20 patients underwent BM/SIS urethroplasty, from 2008 to 2017 in our Unit. Mean Age was 47.7±18.1 years. All surgery was performed by a single operator. All patients had bulbar strictures. After surgery all patients had the transurethral catheter removed at three weeks, after a retrograde urethrography was performed. All patients underwent cystoscopy at 3 and 24 months. Uroflowmetry was performed at 3, 6, 9, 12, 18 and 24 months. Cystography was performed again at 12 months.

Results
The two groups were homogeneous for age. The rate of recurrence that required a new intervention was 8% (4 patients, two of which underwent Sachse urethrotomy, both in the MB/MB group, one underwent salvage perineostomy and the last one staged surgery, both in the MB/SIS group). There was no statistical difference for recurrence in the two groups (p=0.289). The analysis showed a slow and steady decrease in post void residue, without any difference in the two groups up to 24 months (p=0.824). A better peak flow rate was registered in the MB/SIS up to 24 months (p=0.015) (fig.1). There were no postoperative complications for donor site in both groups.

Discussion
The buccal mucosa graft plus SIS patch urethroplasty is a feasible technique, with comparable results to double buccal mucosa graft, both for perioperative results and at 2 years follow up in terms of uroflowmetry recordings and incidence of recurrence. The better results in peak flow in the MB/SIS group, although the small number of patients, were the most surprising ones and this is encouraging us to improve and continue the study and the follow up to have further confirmation.
TREATMENT OF BULBAR URETHRAL STRICTURES: EVALUATION OF THE RESULTS AT LONG-TERM FOLLOW-UP IN 1247 PATIENTS

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Aim of the study
We investigated the long-term results of treatment of bulbar urethral strictures using different techniques.

Materials and methods
Retrospective study including patients with bulbar urethral strictures and excluding patients with strictures involving also the penile tract, failed hypospadias, lichen sclerosus, and patients with incomplete follow-up data. The primary outcome of the study was to evaluate the overall results of treatment (success vs. failure) using different techniques; the secondary outcome was to evaluate the outcome according to any surgical technique. Cysto-urethrography was performed one month following surgery. Patients underwent clinical evaluation, uroflowmetry and residual urine measurement every 6 months for two years after surgery and later once on year. When patient showed obstructive symptoms, Qmax < 12 ml/sec, the urethrography was repeated. Patients who underwent further treatment for recurrent stricture were classified failures.

Results
Were included in the study 1247 patients (mean age 40 years). Median stricture length was 4 cm (range 1 - 8). The median follow-up was 103 months (range 12 - 362). Over 1247 patients, 916 (73.5%) were success and 331 (26.5%) failures. Fourteen different surgical techniques showed a success rate ranging from 87.5% to 14.3% at long-term follow-up. Oral mucosa urethroplasties showed 78% overall success rate and penile skin 48.

Discussion
Our results showed that treatment of bulbar urethral stricture is satisfactory on 73.5% of patients, but with a wide range of success rate (from 14.3% to 87.5%) at long-term follow-up using different techniques. Oral mucosa is greatly superior to the skin as substitute material.
PRELIMINARY STUDY FOR A NON-INVASIVE EVALUATION OF MALE URETHRA’S STENOSIS: THE CINE-URETHRO RM


Aim of the study
To assess accuracy of non-invasive dynamic technique to investigate male urethra stenosis using MRI.

Materials and methods
From January 2017 to February 2018, 40 patients with suspected urethral stenosis were prospectively enrolled in the study. Every patient underwent Cine-Urethro RM (INTERA 1,5T, Philips Medical Systems, Best, the Netherlands) without administration of gadolinium contrast. Balance sequences, with cycles every 0,5 second to result in cine effect were used. Two experienced radiologists independently revised the exam. Every patient underwent subsequent standard urethrocystography.

Results
Cine-urethro MRI was completed in 33 (82,5%) patients, 7 (17,5%) were excluded as they were not able to urinate during the exam. MRI found a urethral stenosis was in 25/33 (75,8%). An assessment of the entire urethral length was possible only in 11/33 (33,3%) pts, in 12/33 (36,4%) three portions of the urethra (prostatic, bulbar and initial portion of the penile) while in 10 (30,3%) only prostatic and bulbar was assessed. Compared to conventional urethrographic study, MRI did not detect a stenosis in 8/33 (24,2%). Of those 5/33 (15,2%) cases were a stenosis of the penile urethra and 3 (9,1%) of the bulbar urethra.

Discussion
Cine-Urethra-MRI is a promising method to study the male urethra. It showed an excellent detection rate for stenosis located in the posterior urethra, avoiding patient catheterization and exposure to x-rays.
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STANDARDIZED EVALUATION SYSTEM OF BPS/IC: AN ITALIAN PROPOSAL

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Aim of the study
The diagnosis of BPS/IC is substantially clinical, according to the ESSIC definition. There are different severity grades, involved organs, possible allergies, and impact on quality of life, varying in the natural history of disease and after treatment. To facilitate a diagnostic pathway and follow up, we elaborated a standardized system.

Materials and methods
We elaborated a 12 items chart, each considering a peculiar aspect/domain of the disease: micturing diary, VAS, presence of pelvic/systemic pain, prevalence symptom (pain/LUTS), validated questionnaires, associated pathologies, allergies and intolerances, ESSIC classification, bladder anatomical capacity, pelvic floor involvement.

Results
The voiding diary highlights the urinary symptom that may vary in severity; some treatments act more on urinary symptoms than on pain. The second item is represented by pain, the cardinal symptom of the pathology. VAS allows to measure it and monitor changes during treatment. Pain can be exclusively pelvic or involve other districts. Pain and LUTS can be variously represented: sometimes pain prevails over LUTS, sometimes LUTS are the prevailing symptoms. The second line is dedicated to different validated questionnaires, to quantify the impact on QoL and to monitor results of therapy. The third line allows to investigate comorbidities, allergies and intolerances, to request the intervention of the right specialists for a specific comorbidity. Being BPS/IC a diet sensitive pathology, the finding of alimentary problems can recommend the intervention of a nutritionist specialist. One record is dedicated to the ESSIC classification, (endoscopic and histological phenotyping), to relate the phenotype to the different clinical aspects, and to assess the impact of a given treatment on the basis of the phenotype. Anatomical bladder capacity is a very important information in case of bladder augmentation surgery. The last record concerns the perineal plane which is often hypertonic with multiple trigger points. We used this evaluation system in everyday practice.

Discussion
Patients affected by this disease have often stories that lasted for many years, it is not always so easy to extrapolate the most important data from such complex stories. Moreover, some patients were already labeled as affected by BPS/IC, but following the grid did not show the elements that characterize the pathology. The grid demonstrated in our practice to be a simple and immediate instrument to characterize the clinical picture and follow the variations over time. Following each item of the chart, it was easy to collect all necessary information about the disease and have an immediate view of the condition. The use of the grid during follow-up made it very easy to highlight changes in any item. With this grid we standardized the clinical approach, collecting useful information for clinical classification and management of the disease. In our opinion, the grid could represent a methodological guidance in the approach to the pathology.
Aim of the study
Telephone interview (TI) has been proposed to follow-up patients at home after surgery. Limits of these studies were retrospective evaluation, selection of uncomplicated cases, lack of comparison between the telemedicine result and the objective evaluation in a clinic setting. We prospectively compared TI and in-clinic evaluation in a non-selected population of women treated for stress urinary incontinence (SUI) and/or cystocele.

Materials and methods
A prospective crossover blind comparative study was done involving women referring to our outpatient clinic from Dec 2015 to Dec 2017 following surgery for SUI and/or cystocele. First evaluation was done with a TI, including a checklist of questions (fig 1) and validated questionnaires [Patient Global Impression of Improvement (PGI-I), Patient Perception of Bladder Condition (PPBC)]. All patients were then scheduled for a conventional outpatient clinic setting for the next 7-12 days, where all women have been investigated with an interview and the same questionnaires. In-clinic setting allowed also objective outcome. Success rate of MUS at the TI was considered when no episode of SUI was referred; at office evaluation this data was checked by stress test. Objective cure of cystocele was defined in case of asymptomatic POP with the midline anterior vaginal wall <POP-Q 2nd stage. Correspondence between TI and office follow-up was obtained by Cohen test.

Results
Tab 1-2 report characteristics of the 297 women enrolled. All surgical procedures (synthetic MUS and/or anterior vaginal wall repair) were performed in our Department from 2000 to 2017. In women with MUS 22% reported SUI recurrence at the TI, but in-clinic follow-up has shown a real SUI recurrence only in 13.5%, while part of the women misinterpreted urge urinary incontinence (UUI) for IUS recurrence. No patient reported vaginal discharge nor the suspect of vaginal extrusion at TI and in-clinic follow-up. 13 patients had objective tape and/or mesh extrusion. In the group treated for POP all women were able to refer by TI a prolapse recurrence and if it was symptomatic. No statistical significant difference was found analyzing PGI-I and PPBC when administered by TI or in clinic follow-up. Cohen test showed a “substantial agreement” (K=0.782) between the two methods of follow-up (tab 3).

Discussion
TI was successful assessing an anterior vaginal POP recurrence in all the women due to the fact that all women experienced cystocele before surgery. Also in the case of dry women the detection rate was comparable in both follow-up. TI missed diagnosis of tape/mesh extrusion due to the lack of symptoms. Indeed, all women were no sexual active and with no tape infection. In these cases only an objective evaluation can lead to a correct diagnosis. Moreover, TI overestimated IUS recurrence due to misinterpretation of de-novo UUI. A dedicated checklist is suggested to focus the main clinical problems saving time. An appropriate counseling both preoperatively and at the TI may limit part of these criticisms.
THE IMPACT OF MIRABEGRON ON SEXUAL FUNCTION IN WOMEN WITH OVERACTIVE BLADDER

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Aim of the study
Overactive Bladder (OAB) is a highly prevalent syndrome that can often have a negative impact on female sexual function. Mirabegron has been demonstrated to be effective and safe in the treatment of OAB but there is limited knowledge about its impact on female sexual dysfunction (FSD). Aim of our study was to evaluate the impact of Mirabegron (Betmiga®) on sexual function in women with OAB.

Materials and methods
An observational prospective study was conducted in two Italian centers. Fifty sexually active women with idiopathic OAB (including urgency with or without urgency urinary incontinence (UUI) and increased urinary frequency) were enrolled. At baseline, all patients underwent urogynecologic assessments (physical examination, 3-day voiding diary and uroflowmetry with post-void residual volume (PVR)), a validated Italian version of “Female Sexual Function Index” (FSFI) questionnaire, “International Consultation on Incontinence Questionnaire- Short Form” (ICIQ-SF) questionnaire and VAS to score the impact of urinary symptoms on Quality of Life (QoL; 0= worse; 10= best). Patients started assuming Mirabegron 50 mg once daily. Baseline evaluations were repeated again at 12 weeks follow-up. Side effects were also noted.

Results
All patients completed the study. Mean ± SD age was 49.3 ± 11.3 yrs. Clinical results related to the baseline evaluation and to the 12 weeks follow-up have been reported in the Table. 8/50 patients (16%) had coital incontinence. Sexuality was assessed using the FSFI questionnaire: at baseline 49/50 patients (98%) had FSD (FSFI Total Score < 26.55). At 12 weeks follow-up, 42/50 patients (84%) reported improvements in FSFI Total Score and 16 patients (32%) had no FSD (Figure 1). Mean ± SD FSFI Total Score significantly increased from 18.9 ± 4.3 to 21.8 ± 4.5 (p< 0.0001). Mean ± SD ICIQ-SF score significantly increased from 17.1 ± 5 (pathologic value) to 7.9 ± 4.8 (normal value; p< 0.0001). Most importantly, the mean ± SD VAS score significantly increased from 3.9 ± 1.2 to 6.9 ± 1.2 (p< 0.0001). We did not observe any intolerable side effects.

Discussion
The results of the present study represent, to the best of our knowledge, the first observation on the impact of Mirabegron on FSD in OAB patients. Mirabegron not only control urinary symptoms in women with OAB, but also induce a significant improvement in their sexual life.
CHARACTERIZATION OF WHOLE BODY PAIN IN PATIENTS WITH INTERSTITIAL CYSTITIS/BLADDER PAINFUL SYNDROME: RELATIONSHIPS BETWEEN PAIN SITES, URINARY SYMPTOMS AND NON-UROLOGIC ASSOCIATED SYNDROMES

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Aim of the study
Nonurological associated somatic syndromes (NUASS) represent important clinical characteristics of Interstitial cystitis/bladder painful syndrome (IC/BPS). Multimodal approaches to the therapy of IC/BPS are currently being tested, as in the frame of complex diagnostic-therapeutic phenotypic approaches based on pain site mapping and on UPOINT system (urinary, psychosocial, organ-specific, infection, neurological/systemic and muscle tenderness). Aim of our study was to characterize the whole body pain and determine the prevalence of pelvic pain (PP) only, pain beyond the pelvis, and widespread pain in a group of patients with IC/BPS. Frequency of NUASS and their correlation with urinary symptoms and severity of pain have been also evaluated.

Materials and methods
Forty-one patients with IC/BPS were enrolled in this observational study. Patients were classified according to a pain site mapping as having PP only, PP beyond the pelvis and widespread pain. Urinary symptoms and NUASS were assessed using self-reported history, 3-day voiding diary, uroflowmetry with post-void residual volume (PVR) and pain numeric rating scale (PNRS: 0 =worst pain imaginable; 10 =no pain). Patients presenting with haematuria underwent also cystoscopy with biopsy.

Results
There were 14 males and 27 females; mean±SD age was 57.5±15.4 yrs. Mean±SD duration of pain was 5.2±1.4 yrs. PP only was observed in 26.8% of patients, PP beyond the pelvis in 58.6% and widespread pain in 14.6% of cases. Mean±SD of PNRS score was 4.16±1.07 in patients with PP only, 4.18±1.05 in patients with pain beyond the pelvis and 3.79±0.8 in patients with widespread pain. Frequency of urinary symptoms is reported in the Table. 31 patients (75.6%) presented also with NUASS. The most frequently reported NUASS were irritable bowel syndrome and gastro-oesophageal reflux disease. Constipation was significantly related with nocturia (p<0.001); gastro-oesophageal reflux disease was significantly related with urgency (p<0.002) and pain duration (only in patients with widespread pain) was significantly related with increased PVR (p<0.005). Only 10 patients had no NUASS. Patients with haematuria (13/41) underwent cystoscopy: glomerulations, hyperaemic or bleeding mucosa were detected in 11 cases. All patients underwent poly-pharmacotherapies tailored to the different phenotypes by using: antidepressants, pregabalin, skeletal muscle relaxants, anticholinergics, alpha-lytics, non-steroid anti-inflammatory drugs, intradetrusor Onabotulinum toxin-A injections.

Discussion
Clinician should consider performing clinical phenotyping to tailor treatment to patients with NUASS. Patients with localized bladder/pelvic pain may be more likely to benefit from bladder centric treatment; subpopulation with widespread pain may require additional systemic therapies for centrally mediated mechanisms.
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ROLE OF CYSTOSCOPY WITH HYDRODISTENSION AND BLADDER BIOPSY IN THE DIAGNOSIS OF BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS

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Aim of the study
The aim of the study is to evaluate the effective utility of cystoscopy with hydrodistension in anesthesia and bladder biopsy for the diagnosis of Bladder Pain Syndrome/Interstitial Cystitis (BPS/IC).

Materials and methods
60 patients who had been diagnosed of BPS/IC from January 2000 to February 2018, recorded in the Regional Register of Adult Rare Diseases, have been retrospectively studied. Endoscopic features at cistoscopy with hidrodistension and pathology of the bladder biopsy were recorded according the ESSIC criteria. 57 women and 3 men, mean age of 56.3 years, were stratified according to different line of therapy: 1st line (diet and behavioral therapy), 2nd line (oral drugs), 3rd line (intravesical instillations), 4th line (phasisal therapy), 5th line (major surgery).

Results
Endoscopy with bladder biopsy were available in 43 of 60 patients. Pathological changes according to ESSIC criteria were observed in 41 of 43 pts (95.3%) who underwent biopsy, 2 (4.7%) were normal tissue. Among positive cases, 40/41 (97.6%) had inflammatory infiltrates, 16/41 (39%) had detrusor mastocytosis, 8 (19.5%) intrafascicular fibrosis and 3 (7.3%) showed granulation tissue. In 2 pts (4.8%) all pathological features were contemporary present. Average number of mast cells in the subepithelial connective tissue was 91.7/mm² (3-190), while in the detrusor muscle was 38.2/mm² (2-110). At cystoscopy with hydrodistension, 23/43 (53.5%) were positive for endoscopic ESSIC criteria: 19/23 (82.6%) patients had glomerulations, 16/23 (69.6%) had haemorrhagic spots, 6/23 (26.1%), had mucosal fractures and 8/23 (34.8%) had Hunner lesions. Two of 60 (3.3%) patients had the diagnosis of BPS/IC only based on clinical features and did not underwent endoscopy neither biopsy. Twenty of 43 (46.5%) patients had normal looking mucosa at cystoscopy, however the biopsy showed inflammatory infiltrate in most of them (17, 85%), detrusor mastocytosis in 5 (25%). In any normal looking bladder mucosa were observed intrafascicular fibrosis or granulation tissue at biopsy. In the 23 positive cases: 0 patients are in 1st line therapy, 6 (26.1%) are in 2nd line, 12 (52.2%) are in 3rd line, 3 (13%) are in 4th line and 2 (8.7%) are in 5th line. In the 20 negative cases at endoscopy: 0 patients are in 1st line therapy, 8 (40 %) are in 2nd line, 11 (55%) are in 3rd line, 0 are in 4th line and 1 (5%) are in 5th line.

Discussion
In most of cases the diagnosis of CI was based on a thorough medical history, cystoscopy and biopsy. Pathological findings are not correlated to endoscopic finding, except the fibrosis/granulation. The clinical course and response to treatment lines were not influenced by endoscopic findings.
LONG TERM SEXUAL OUTCOMES OF TRANSVAGINAL MESH REPAIR FOR PELVIC ORGAN PROLAPSE

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Aim of the study
Pelvic Organ Prolapse (POP) is a condition that may involve up to 50% of parous woman. POP may impair urinary, bowel and sexual health and can affect patients’ quality of life. POP is associated with reduced sexual arousal and dyspareunia. However, sexual dysfunctions are usually underestimated, both before and after surgery. Moreover, transvaginal mesh repair is debated as a possible cause of worsening in sexual function. Aim of our study is to evaluate pre and post-operative sexual outcomes in women undergone to surgical POP repair.

Materials and methods
We retrospectively collected data on women treated with surgical POP repair in our tertiary referral center from 2008. POP was measured according to the Half Way System (HWS) classification. Patients’ characteristics, operative and post-operative data were collected. Follow-up was carried out at month 3, 6 and 12 and then yearly. Sexual function was measured through the Italian version of FSFI (Female Sexual Function Index) questionnaire which evaluates 6 domains (desire, arousal, lubrication, orgasm, satisfaction and pain). Minimum follow up was 12 months. FSFI score was assessed in women who had an active sexual life before and after POP surgical repair.

Results
A total of 168 women underwent transvaginal mesh for III or higher POP. Overall, 107 (63,6%) patients were sexually active at surgery or sexually inactive for genital discomfort. Patients lost at follow up were 21 (19,6%). Patients' characteristics are summarized in Table. Median follow up was 62 months (IQR 38-96). Globally FSFI was affected from mesh surgery at 12 months and at last follow up, with lower scores at each visit. In detail, desire, arousal, lubrication, orgasm and satisfaction were reduced after transvaginal mesh surgery. An unexpected finding was that pain was not affected from surgery, and dyspareunia was a rarely reported complication (1 patient, 0,9%). Age should have had a role in the reported FSFI, especially at long term follow-up, as demonstrated with the relatively stable results. However, transvaginal surgery should have had affected the sexual life of the patients, reducing both elasticity of the tissue and the lubrication. Desire and arousal should have been reduced also for the fear of POP recurrence, thus affecting the results.

Discussion
In our experience, global sexual function could have been affected from transvaginal mesh surgery. However, dyspareunia was not reported as a frequent complication in patients during follow-up.
CHANGES IN VESICO-SPHINCTER FUNCTION AFTER SURGERY FOR PELVIC ORGAN PROLAPSE

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Aim of the study
Despite an increased interest to identify the risk associated with pelvic organ prolapse (POP) surgery, there have been few studies investigating the effects on lower urinary tract (LUT) function using urodynamics with pressure-flow studies. We evaluated pre-operative and post-operative voiding function in women undergoing POP surgery; clinical and anatomical outcomes were also investigated.

Materials and methods
Women affected by POP requiring surgery have been prospectively included in the study. Inclusion criteria were: POP ≥ III with or without LUT symptoms, or POP = II with LUTS, according to POP Quantification system (POP-Q). Excluded were patients unfit to surgery, with recurrent urinary tract infections and with neurogenic bladder. Patients underwent detailed history, urogynecologic assessment and urodynamics before and 6 months after surgery. On urodynamics, bladder outlet obstruction (BOO) and detrusor contractility strength were evaluated with the Blaivas-Groutz BOO nomogram and the projected isovolumetric pressure (PIP1), respectively. Primary end-points were: changes in urodynamics parameters; secondary end-points were changes in clinical and anatomical parameters.

Results
Thirty-three consecutive patients have been studied. At baseline, POP III and II were detected in 22 (66.7%) and in 13 (39.9%) patients, respectively. A vaginal bulge was reported by 22 (73.3%) patients and voiding LUTS by 23 (69.7%). Six (18.2%) patients suffered from stress urinary incontinence (UI) and 11 (33.3%) from mixed UI. BOO and PIP1 results are shown in the table. Anterior and posterior colpoplasty were performed in 10 and 2 patients, respectively. Abdominal hysterocolposacropexy was performed in 21 patients: with an open approach in 9, and laparoscopic or robot-assisted in 12. Six-month after surgery, pDetmax significantly decreased and Qmax significantly increased (p=0.024 and p=0.041). The number of unobstructed women increased and PIP1 values showed a trend to a normal detrusor strength restoration. There was an excellent restituto ad integrum, especially for cystocele and uretrocele (p=0.000), and a statistically significant reduction of vaginal bulge (p=0.000), voiding LUTS (p=0.001) and UI (p=0.039). LUTS de novo occurred in 20% (2 pts) of cases, urgency in 23% (5 pts) and incontinence in 7% (1 pts). When comparing abdominal vs vaginal approach, the first modality gave better results in terms of Qmax and detrusor contractility improvements as well as voiding LUTS reduction.

Discussion
Little is known about vesico-sphincter function modifications after surgery for POP. This study shows that voiding conditions greatly change in patients who underwent POP surgery, with a trend to BOO resolution and restoration of a normal detrusor strength 6 months after surgery.
LAPAROSCOPIC AND ROBOTIC ASSISTED LAPAROSCOPIC SACROCOLPOPEXY: A RANDOMIZED CONTROLLED TRIAL IN THE ERA OF MINIMALLY INVASIVE SURGERY, OUR NEW DATA

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Aim of the study
The present randomized study compares laparoscopic sacropexy (LSC) and robotic assisted sacropexy (RASC) in women with advanced pelvic organ prolapse (POP) to demonstrate the equivalence between the 2 techniques.

Materials and methods
Consecutive patients referred to our tertiary Department of Urology for symptomatic stage >II POP according to the POP-Q classification were prospectively randomized to test the clinical equivalence of RASC and LSC. The local ethics committee approved the study. All patients signed an informed consent. Preoperative evaluation included urogynaecological history, evaluation of urinary symptoms and sexual activity, clinical examination, urodynamic study. Patients completed self-administered UDI-6, IIQ-7, FSFI questionnaires. All procedures were performed by 2 senior surgeons, with standardized technique. Patients were followed up at 1, 3, 6, and 12 months after surgery, and then annually. At each visit, patients underwent clinical examination, evaluation of urinary and sexual symptoms, uroflowmetry with PVR measurement and PGI-I questionnaire. Furthermore patients completed self-administered UDI-6 and IIQ-7 questionnaires annually and FSFI at 1 and 2 years. The following outcomes were recorded: a) anatomic outcomes, b) functional outcomes c) complications d) global patient perceptions. Then we evaluated the difference between the two groups in terms of hospital stay length, blood loss, operating time. Statistical analysis: Mann-Whitney U test, X2 test, p-value <0.05.

Results
From May 2013 to April 2016, 21 women have been randomized to RASC and 19 to LSC. The mean follow-up was 15.5 months for RASC and 32.05 for LSC. No significant inter-group differences emerged in the pre-operative evaluations of age (mean 63.5 vs 58.82 yrs for RASC and LSC respectively, p=0.06) and BMI (mean 24.59 vs 25.41 kg/m2 for RASC and LSC respectively, p=0.55). The objective success rate was 81% for RASC vs 78.9% for LSC (p=0.6), 85% for RASC vs 79% for LSC (p=0.8) and 100% for RASC vs 94.7% for LSC (p=0.57) for cystocele, rectocele and point c/D repair respectively. Although not significant, operating time was longer for RASC (mean 213 min for RASC vs 184 min for LSC, p=0.11) and intra-operative blood loss was higher in RASC (mean 32 ml for RASC vs 47 ml for LSC, p=0.014). No difference emerged in hospital stays (mean 3.8 days for LSC vs 3.9 days for RASC, p=0.76). Functional results are reported in table 1. No major complications were detected, only 2 grade III complication according to Clavien-Dindo classification has been reported in the LSC group (1 bladder injury and 1 mesh exposure). The subjective success rate was very high, 100% of patients of both groups reported to be “much satisfied” and “very much satisfied” at the PGI-I questionnaire.

Discussion
RASC aims at providing a similar excellent outcome as LSC in terms of anatomical results, satisfaction rate, complications, sexual function and voiding and storage symptoms relief.
Aim of the study
Pelvic organ prolapses (POP) in female gender is a diffuse pathology, ranging from 5 to 10% of the population. Sacrocolpopexy is an increasingly considered treatment option in anterior compartment prolapse and in young women with active lifestyle. The aim of our study is to evaluate the intraoperative, early and late perioperative outcomes after minimally invasive mesh repair for POP in a high-volume center with high surgical experience after a long follow-up.

Materials and methods
Since 2008, we prospectively collected data on patients who underwent robotic or laparoscopic sacrocolpopexy for POP in our center. All cases were performed by expert surgeons. POP was classified according to HWS (Half Way System) and divided in anterior, medium and posterior compartment. Sacrocolpopexy success was defined as a postoperative grade 0-1 HWS prolapse in treated compartment. Early postoperative complications were classified according to Clavien-Dindo. Late postoperative complications were de novo prolapse, De novo urinary incontinence (UI), dyspareunia and mesh erosion. Reintervention rate was recorded. Follow up was performed at month 1, 3, 6, 12 and then yearly. Minimum follow up was 12 months.

Results
Since 2008 115 patients were submitted to sacrocolpopexy in our center. Approach was open, laparoscopic or robotic in 14 (12,2%), 56 (48,7%) and 45 (39,1%) patients respectively. A total of 101 patients were enrolled and median follow up was 46 months (IQR 34-70). Patients lost at follow up were 22 (21,7%). Preoperative patients’ characteristics are reported in Table 1. Patients who had previous hysterectomy were 9 (8,9%). Surgery was primarily for anterior compartment in 98 (97%) of the patients, while in the remaining 3 cases for enterocele and concomitant POP. Concomitant suburethral sling was placed in 29 patients. Mean operative time was 171’ (SD 51,3’) for laparoscopy and 173’ (SD: 47,6’) for robotic. Overall, perioperative complications occurred in 19 (18,8%) patients and were bleeding in 2 (2,0%), haematoma in 1 (1,0%), urinary retention in 2 (2,0%), de novo UI in 5 (5,0%), urinary infection in 6 (5,9%), delayed wound healing in 1 (1,0%) and deep vein thrombosis in 1 (1,0%). No complications exceeded Clavien 2. Sacrocolpopexy was successful in 99 (98%) patients. POP recurrence occurred in 2 patients (2,0%). De novo rectocele occurred in 1 (1,0%) at month 12. De novo UI were 15 (14,9%). One patient reported dyspareunia. Mesh erosion occurred in 1 patient (1,0%). Reintervention occurred in 10 cases (9,9%) at month 12 and were 1 open sacrocolpopexy, 1 mesh removal for erosion and 8 SUI surgery. Follow up data are reassumed in Table 1.

Discussion
Minimally invasive sacrocolpopexy is a valid surgical technique for POP repair as it allows good outcomes with a low rate of perioperative and postoperative complications also at long term follow up.
DE NOVO URINARY INCONTINENCE AFTER TRANSVAGINAL MESH REPAIR FOR PROLAPSE IN A HIGH VOLUME CENTER

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Aim of the study
The last Cochrane systematic review concluded that there is no statistically significant risk of stress urinary incontinence (SUI) following anterior vaginal polypropylene mesh repair. (RR 0.67, 95% CI 0.44-1.01). Preoperative OAB symptoms may resolve in 40% of patients following POP repair. However, de novo OAB symptoms and voiding dysfunction may develop in 12% and 9% respectively after POP vaginal surgery. Aim of our study is to evaluate the impact of de novo SUI or de novo OAB symptoms after transvaginal mesh (TVM) POP repair.

Materials and methods
We prospectively collected patient's data of which underwent TVM repair for POP in a high-volume center from 2008. All cases were performed by 2 expert surgeons. After surgery we followed-up our patients after 1,3,6,12 months and then annually. We recorded de novo stress urinary incontinence (SUI) and de novo OAB symptoms. UI was evaluated by Incontinence Impact Questionnaire (IIQ-7) and urodynamic study. After TVM POP surgery, women with urodynamic SUI underwent mid-urethral sling (MUS) procedure. Minimum follow up was 12 months.

Results
A total of 168 patients were considered from January 2008. Median follow up was 62 months (IQR 38-96) and 34 patients were lost at follow up. Preoperative patients' characteristics are reported in Table. Twenty-five patients (14.9%) had previous hysterectomy. Surgery for anterior/medium and posterior compartment was performed in 162 (96.4%) and 6 (3.6%) patients respectively. According to preoperative urodynamics and patients' symptoms, 22 patients (13.1%) were submitted to concomitant MUS placement. Twenty women (11.9%) reported preoperative Urinary Incontinence (SUI 65%, UUI 10%, MUI 25%) that was resolved after POP repair without additional treatment. After 1 year of follow up de novo SUI and de novo OAB symptoms were reported in 12 (7.1%) and 6 (3.6%) patients, respectively. The median IIQ-7 score was 32 (IQR 0-68). Among women reporting SUI, 10 (90%) had a urodynamic SUI and underwent MUS placement. In the de novo OAB group only 2 women had OAB wet (33%) and they had a diagnosis of detrusor overactivity (DO).

Discussion
Vaginal mesh repair surgery is burdened by a low rate of de novo SUI and de novo OAB symptoms, low rate of de novo urodynamic evidence of DO when performed by experienced surgeons. Urodynamic study may help for a better diagnostic classification, surgery strategy and patient's counseling especially in all patients with complicated urinary incontinence.
ADJUSTABILITY SINGLE INCISION SLING (ALTIS) FOR THE TREATMENT OF FEMALE STRESS URINARY INCONTINENCE, OUR EXPERIENCE

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Aim of the study
Stress urinary incontinence (SUI) is a common problem worldwide. The aim of this study is to describe the surgical technique, and middle-term results of the adjustability single incision TOT sling (Altis) for the surgical treatment of stress urinary incontinence.

Materials and methods
The patient-reported cure rate, objective cure rate, operative time, postoperative pain, lower urinary tract injuries, groin pain, postoperative voiding difficulties, de novo urgency, vaginal tape erosion, and other related data on both surgical methods were evaluated. INCLUSION CRITERIA: patients with genuine SUI and patients with SUI plus concomitant procedures as prolapse. EXCLUSION CRITERIA: patients with ISD and or neurogenic incontinence. PROCEDURE: There are four components that make up the Altis Single Incision Sling System: the introducers, the sling, the anchors and the tensioning suture. The anchors are placement into the obturator membrane with the introducers as a set for the inside-out approach. The sling is 7.75cm and spans from obturator to obturator. Extending from the sides of the sling is a size 1 PP monofilament suture that is attached to the sling body. The suture extending from the sling and through the dynamic anchor or the movable anchor is designed for two way adjustability. The dynamic anchors holding force and suture design prevents sling movement during the tissue in-growth period. This also eliminates the need for a locking mechanism. Following the procedure, the excess suture is cut and discarded.

Results
30 patients with a mean age of 55 years (from 36 to 79) Follow-up period: 24 months. SUCCESS RATE: (83%) Improved rate: 4% Failure rate: 3% Mean operating time of sling procedure alone: 11 minutes COMPLICATIONS: 3 patients had mesh extrusion solved with estrogens, no voiding difficulties and no dysuria.

Discussion
SIMS-Altis is safe and effective in the treatment of female stress urinary incontinence. The results of the study suggest that the adjustability single incision sling (Altis) can be considered a minimally invasive TOT with no-needles and maintaining the same cure rate than our TOT cases at 2 years follow up. Compared with TVT-O/TOT surgery, SIMS-Altis surgery has the same high objective cure rate and patient-reported cure rate and low incidence of perioperative complications, in addition to its short operative time and low incidence of groin pain. Its long-term efficacy needs further observation.
TRANSOBTURATOR TAPE: OVER 10 YEARS FOLLOW-UP

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Aim of the study
The aim of this study is to assess the outcomes in incontinent patients who underwent TOT with a 10-year minimum follow-up.

Materials and methods
This is a single-center prospective study on women who underwent TOT for stress urinary incontinence (SUI) or stress predominant mixed urinary incontinence. The pre-operative evaluation included: history; urogynaecological examination; cough stress test; urodynamics; UDI-6 and IIQ questionnaires for symptoms; the King's Health Questionnaire (KHQ) for QoL. In Sept.-Oct. 2017 all patients who had undergone TOT before 2007 were recalled for follow-up. They completed the same pre-op questionnaires and the Patient Global Impression of Improvement (PGI-I): success was defined as ‘very much better’ or ‘much better’ on the PGI-I scale. The primary outcome was the SUI cure rate. Secondary outcomes included improvement in QoL, effect on urinary symptoms and late adverse events. Institutional Review Board Committees approved this study; participants gave informed consent. Statistical analysis: McNemar chi-square test for continuous non-parametric variables, the Fisher’s exact test for categorical variables and the t-test for continuous parametric variables. We considered p<0.05 to be statistically significant.

Results
From January 2003 to December 2007, 136 consecutive patients underwent TOT. Thirteen patients were lost to follow-up, so we report data on 123 patients. Of these 32 (26.1%) had SUI grade 1 according to the Ingelmann-Sundberg scale, 67 (57.5%) had SUI grade 2 and 24 (19.5%) had SUI grade 3. Mean age was 58.3+9.94; median parity was 2; mean BMI 27.22+2.76; 87 patients (70.2%) were menopausal. At a mean follow-up of 145 months (121-181 months), 77 patients (62.6%) were subjectively cured for SUI. Of the 46 failed patients 31 (25.2%) had SUI grade 1, 9 (7.3%) had SUI grade 2, and 6 (4.9%) had SUI grade 3. Only 10 of the failed patients underwent further SUI surgery: 8 underwent TVT and 2 underwent bulking agent therapy. Urgency reduced statistically significantly (from 67.5% to 38.3%, p<0.005), as did urgency urinary incontinence (from 56.9% to 31.7%, p<0.005). De novo urgency occurred in 7.3% of cases. Voiding symptoms increased from 8.9% to 18.7% (p=0.37). De novo voiding symptoms appeared in 14.6% of patients. All domains of the KHQ except general health and sleep saw statistically significant improvements. We had 5 cases of partial mesh extrusion, requiring tape revision; none became incontinent.

Discussion
Our study demonstrates that TOT can be considered safe and effective with good long-term outcomes. At a follow-up of ten or more years, also if cure rates are lower than in shorter-term studies, however, at 62.6%, they may still be considered satisfactory. It is difficult to ascertain if this decline, 10 years or more after surgery, is due to long-term treatment failure or to general factors like age or another pathology.
IS OUTPATIENT ADMINISTRATION OF INTRAVESICAL ONABOTULINUMTOXIN A FEASIBLE? EFFICACY, TOLERABILITY AND SAFETY ASSESSMENT FROM A SINGLE CENTRE EXPERIENCE

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Aim of the study
Overactive bladder syndrome (OAB) and neurogenic detrusor overactivity (NDO) are common conditions deeply affecting quality of life. Intravesical onabotulinumtoxin A (BTX-A) has been increasingly used to treat unresponsive OAB and NDO. It is usually administered in inward setting by means of rigid cystoscopy, under anesthesia, resulting time-consuming and causing a significant burden for patients and health facilities. We retrospectively assessed efficacy, tolerability and safe profile of outpatient intradetrusor administration of BTX-A.

Materials and methods
Antimicrobial prophylaxis and antiplatelet/anticoagulant suspension were required. Complete medical history, urodynamic test, 3-days bladder diary, 24h pad test, ICIQ-SF questionnaire were collected. Local anesthesia with intravesical lidocaine was provided in patients with preserved bladder sensibility. Using flexible cystoscopy and an adjustable tip needle, BTX-A 100U in OAB and 200U in NDO patients were administered. VAS score (visual analogue scale) and operative time were recorded. 2-, 12- and 24-weeks follow-up data were compared to baseline recordings. If urinary tract infections (UTI) were clinically suspected, urinalysis and urine culture were performed. We used T-Student and chi-square to compare baseline data, 2way ANOVA for repeated measures and McNamar test to evaluate treatment effect, Log Rank test to compare time variables, Kaplan-Meier curve to evaluate retreatment.

Results
28 with NDO and 8 from idiopathic OAB, were treated from September 2016 to October 2017. Median VAS score was 2, mean time for the procedure was 17.6 minutes. 7 patients were discharged with catheter, in 6 cases (16.6%) because of haematuria. Hospitalization for cloth retention was required in 2 cases (5,5% of the whole cohort, 33% of all the patients with haematuria). 2 and 12-week UTI rates were 22.2% and 19.4%. No patient had to begin intermittent catheterization after procedure. Functional and subjective outcomes showed improvements at week 2, steady at week 12, with no significant worsening after 24 weeks. In particular, we found significant variations for: daily voids (F=6.116; p=0.01), bladder functional capacity (F=14.739; p<0.001), pad test (F=14.050; p<0.001), ICIQ-SF (F=32.826; p<0.001). Median time to repeat treatment was 40 weeks.

Discussion
Outpatient administration of BTX-A under local anesthesia is generally well accepted. This procedure significantly improved bladder diary and urinary incontinence episodes. We found an incidence of haematuria higher than reported in literature, although it was often mild and requiring hospitalization only in 5.5% of the cases. This discrepancy can be explained by the different definition of haematuria and the usual BTX-A administration as inward patients. UTI rate was coherent with literature. Outpatient intravesical administration of BTX-A is an effective and safe procedure in both OAB and NDO. The main advantage of this technique is to reduce economic and logistical burden for patients.
ONABOTULINUMTOXINA DETRUSOR INJECTION IMPROVES FEMALE SEXUAL FUNCTION IN WOMEN WITH IDIOPATHIC WET OVERACTIVE BLADDER SYNDROME

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Aim of the study
The correlation between changes in sexual function and improvements in LUTD in patients treated with OnabotulinumtoxinA (onaBoNT-A) detrusor injection is unclear and limited only to women with neurogenic OAB. Aim of this study was to evaluate the impact of OnabotulinumtoxinA (onaBoNT-A) injection on sexual function in women undergoing this treatment for idiopathic wet overactive bladder (OAB).

Materials and methods
This is a pilot three-center observational study including women affected by idiopathic wet overactive bladder refractory to standard conservative treatments and underwent onaBoNT-A injection. Sexuality was assessed using the Female Sexual Function Index (FSFI) Italian version. A 3-day voiding diary, OAB screener questionnaire (OAB-S), and the international consultation on incontinence questionnaire short form (ICIQ-sf) were completed before and 3 months after onaBoNT-A injection to evaluate OAB symptoms.

Results
All the 32 enrolled patients were evaluable and included for statistical analysis. Mean age was 53 y.o. (26-68 y.o.). None of the women had previous pelvic surgery. These patients received 100U of onaBoNT-A. Significant improvement of many FSFI domains was found. Only desire and pain domains had no significant improvements. The FSFI total score showed a significant improvement (P 0.0008). Table 1 shows the results of the FSFI before and after treatment with onaBoNT-A injection. Clinical efficacy has been documented by voiding diaries, OAB-s scores, and ICIQ-sf scores (table 2). Correlation between UUI episodes and FSFI total score was statistically significant (r= -0.73; p=0.04) while no significant correlation was found between number of micturition and FSFI total score. Correlations between urinary symptoms and the FSFI before and after treatment with onaBoNT-A injection are listed in table 3. We documented a significant correlation between the reduction of episodes of UUI and improvement of FSFI total score. Voiding diaries and questionnaires on urinary symptoms showed a significant improvement after onaBoNT-A injection. The most relevant urinary symptom reducing the sexual function was urge urinary incontinence. The positive effect exerted by onaBoNT-A injection on urinary symptoms may have had a positive impact on the psychological status of the patients. Hence, women with a better control on OAB symptoms may have had a more gratification in the sexual intercourse. A greater self-confidence in sexual intercourse related to a better control of urinary leakages can explain the FSFI domains improvement.

Discussion
Women underwent OnaBoNT-A detrusor injection to treat wet OAB, showed an improvement in sexual function due to the significant correlation between the improvement of urinary urge incontinence and a better gratification of sexuality.
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P80  INFLUENCE OF RENAL TRANSPLANTATION ON PROSTATE CANCER PATIENTS SURVIVAL
GLANULAR ARTERIOVENOUS MALFORMATION IN PAEDIATRIC AGE

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Aim of the study
Arteriovenous malformations (AVMs) of the glans penis are vascular anomalies of blood vessels, with pathological shunts between arteries and veins, proximal to the normal capillary bed. AVMs on glans penis, are very uncommon disease in paediatric age. In most frequent cases, the children and/or parents may describe the growing lesions with age. The diagnosis is based on physical examination and sometimes on ultrasonography with Doppler exams. We report two cases of AVMs treated with surgical therapy.

Materials and methods
Case 1. A six-year-old boy presented with venous dilatation and tortuosity in the foreskin of the left site of glans penis, which was recognized at age 3. There were no history of trauma or urinary disfunction. On inspection, 2 vessels were found on the glans. One of these was dilated (5 mm diameter), tortuous and pulsatile on the ventral left side of the penis: the other, midly dilated and pulsatile near the urethral meatus. The foreskin was adherent without ulceration or bleeding. Two testes of appropriate size were palpable in the scrotum. Eco-color Doppler showed a small blush elastic swelling on the left side of the glans near the external urethral meatus of about 5 mm without indicators of vascular Doppler signals. These alterations are compatible with a low-flow venous malformative vascular anomaly. Successively, he underwent microsurgical excision with glanduloplasty and urethral meatoplasty and histological examination. The definitive histological examination confirmed a AVMs.

Case 2. An eight-years–old boy and his parents presented to the urology outpatient clinic with complaints of a blue oval lesion which has been present since birth on glans penis, which is about 1 cm. In radiological Doppler assessment, an excessive vascularization in the lesion was found and these findings were compatible with AVMs. He underwent a multidisciplinary approach: no sclera-embolization and pharmacology treatment were considered valid alternatives in this case. A pelvic magnetic resonance has ruled out the involvement of pelvic, perineal and cavernous sites; abnormal flow signals were found at the glans lesion. He underwent uretrocistoscopy that showed extension of the vascular malformation in the left side of the distal urethra, treated by laser holmium folgoration lower energy as preliminary treatment. A second approach was done after 3 months with complete surgical excision of the 5 mm residual lesion. The definitive histopathological exam it was diagnostic of AVMs.

Results
All patients were evaluated preoperatively by ultrasonography and Doppler scan of the glans. Complete surgical excision of the AVM was obtained, utility tourniquet and bipolar low energy diathermy. During follow up at 3 and 6 months, no recurrence lesions we found.

Discussion
AVMs of the glans are very uncommon, recognized by typical macroscopic presentation. The progressive grow up of the lesion and the risk of haemorrhagic complications required early treatment with complete surgical excision.
PERSISTENT OBSTRUCTION HYDRONEPHROSIS AFTER PYELOPLASTY. WHAT TO DO?

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Aim of the study
The pyeloplasty sec. Anderson-Hynes remains the gold standard for treating stenosis of the ureteral joint. The aim of our study was to review children with persistent hydronephrosis after pyeloplasty (PLP).

Materials and methods
We performed a retrospective study of patients undergoing pyeloplasty from January 2006 to December 2015. Patients in follow-up were followed by ultrasound and postoperative control renoscintigraphy. We evaluated the onset of persistent hydronephrosis and the presence of symptoms.

Results
537 patients underwent PLP. All had pre-perinatal diagnosis. Indications for the intervention of PLP were: average calycopiel dilatation of 3.5 cm (range 2.5 - 7.5) and an obstructive pattern of renoscintigraphy with MAG3. Of 537 operated patients, 17 (3.2%) showed persistent hydronephrosis with an average anteroposterior diameter of 3 cm (range 2 - 5), in all cases obstructive to postoperative renoscintigraphy. Renal function was normal in 13 patients at postoperative scintigraphy. Of 17 patients, 15 were asymptomatic, 1 presented with renal colic and 1 urinary tract infection. We treated these patients with an endoscopic GPU calibration using a balloon catheter, which demonstrated a stenosis of the previous anastomosis in 3 patients, which was dilated with disappearance of the same, in the same procedure. At the end of the procedure a JJ catheter was placed, removed after about 4 weeks. 3 patients (18%) were operated to re-do pyeloplasty (2 symptomatic, one for loss of function at control scintigraphy). No stenosis was demonstrated in 14 patients. At a mean follow-up of 38.8 months (7 years - 5 months), 11 patients undergoing follow-up, maintaining stable renal function, are currently followed by serious ultrasounds that have shown a reduction in pelvis dilatation over time.

Discussion
The endoscopic calibration / dilation of the pieloureteral joint is a simple and minimally invasive procedure and can be considered as a first diagnostic / therapeutic approach in patients with persistent hydronephrosis. It is interesting to perform further studies to identify predisposing factors that can predict this condition.
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URETEROCELE: MINIMALLY INVASIVE ENDOSCOPIC TREATMENT

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Aim of the study

Ureterocele, often associated with renal duplex system, may represent an uncommon cause of pyeloureteral obstruction with possible severe consequences on kidneys and urinary tract in young children. Early decompressive treatment is advocated to reduce the risk of febrile urinary infection and renal damage. Endoscopic techniques have been proposed using diathermic electrode. We adopted laser energy to release the obstructed ureterocele.

Materials and methods

From January 2012 to December 2017, we performed endoscopic multiple punctures at the ureterocele basis in infants. Holmium YAG laser 0.5 Joule energy was utilized by 272 micron fiber, through 8-9.8 ch paediatric cystoscope under short general anesthesia. Foley catheter was removed after 18-24 hours. Renal ultrasound was performed at 1,3,6 and 12 months after surgery. Voiding cystourethrogram and DMSA Scan were done at 6 months.

Results

A total of 64 endoscopic procedures were performed in a 6 years period: 41 were classified as ectopic and 23 orthotopic ureteroceles. Mean age at surgery was 19.7 months (1-168). Immediate decompression of the ureterocele was obtained. No bleeding or other complications occurred. Twelve patients (18%) required further surgery at 1-5 years follow up: 7 ureteral reimplantation for reflux, 5 laparoscopic heminephroureterectomy for dysplastic hydronephrotic upper renal moiety.

Discussion

Endoscopic decompression of ureterocele should be considered as first line treatment in young infants and children. In our experience, resection of the ureterocele sac or wide section of its wall should be avoided. Multiple punctures by laser energy is a really minimally invasive treatment that allows immediate decompression and reduce the risk of further aggressive surgery.
ROBOT-ASSISTED KIDNEY TRANSPLANTATION WITH REGIONAL HYPOTHERMIA USING GRAFTS WITH MULTIPLE VESSELS: RESULTS FROM THE EAU ROBOTIC UROLOGY SECTION (ERUS) WORKING GROUP


Aim of the study
Kidney transplantation using grafts with multiple arteries and/or veins is technically demanding and may be associated with increased risk of postoperative complications or suboptimal graft function. To date, no studies reported on robot-assisted kidney transplantation (RAKT) using grafts with multiple vessels (GMV). The aim of the study is to report our experience with RAKT using GMVs from living donors, focusing on technical feasibility and early postoperative outcomes.

Materials and methods
We reviewed the multi-institutional, prospectively collected EAU Robotic Urology Section (ERUS) - RAKT database to select consecutive patients undergoing RAKT from living donors using GMVs between July 2015 and January 2018. We defined GMVs as those with ≥2 renal arteries and/or ≥2 renal veins. Patients undergoing RAKT using grafts with single vessels (GSV) served as controls. All transplant teams at the 8 European Centres included in the ERUS-RAKT Group were highly experienced in living donor nephrectomy, robotic urologic surgery and open kidney transplantation. In case of GMVs, specific ex vivo vascular reconstruction techniques were adapted from the open KT experience, have been employed before introduction of the graft into the recipient. Conversion rate, intraoperative outcomes and early (30-days) postoperative complications and functional results were the main study endpoints. Multivariable logistic regression analysis evaluated potential predictors of suboptimal renal function at 1 month (estimated glomerular filtration rate [eGFR] <45 ml/min/1,73m2).

Results
Overall, 148 RAKTs were performed. 21/148 (14,2%) patients underwent RAKT using GMVs. Median times to complete arterial, venous and uretero-vesical anastomoses, as well as the overall rewarming time, did not significantly differ between RAKTs using grafts with single or multiple vessels. Likewise, overall operative time, console time and warm ischemia time did not differ among the study groups. On the contrary, total ischemia time was significantly higher for RAKTs using GMVs (112 vs 88 min, p = 0,004), driven by a significantly longer cold ischemia time (50 vs 34 min, p=0,003). Overall complication rate and early functional outcomes were similar among the groups. No major intra- or postoperative complications were recorded in the GMV cohort. At multivariable analysis, use of GMVs was not significantly associated with suboptimal renal function at 1 month.

Discussion
RAKT using GMVs from living donors is technically feasible and achieved a low postoperative complication rate and favorable short-term functional outcomes, comparable to those of RAKT with GSVs. Larger studies with longer follow-up are needed to confirm our findings.
Kidney transplantation from uncontrolled donors after circulatory death: A single-center preliminary results of a prospective study

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Aim of the study
In response to the increased shortage of organs for transplantation, kidneys from donors after circulatory death (DCD) are increasingly used for kidney transplantation (KT). However, uncontrolled DCD (uDCD) are not widely accepted mainly due to the increased risk of primary non-function (PNF), delayed graft function (DGF) and poor graft survival rates. Herein we report our preliminary experience with KT from uDCDs.

Materials and methods
From November 2016 to March 2018 19 kidneys from uDCDs have been procured and transplanted in our centre (17% of the overall transplant activity). Eligibility criteria for KT recipients were defined by the National Transplantation Centre (CNT). Demographic, surgical and follow-up patient data were prospectively collected. All donors were submitted to ExtraCorpororeal Membrane Oxygenation (ECMO). Bench surgery and renal wedge biopsy were performed before connecting the graft to the hypothermic machine perfusion (HMP) over at least 2 hrs. Perfusion parameters were monitored. Kidneys with vascular resistances above 0.3 mmHg/ml/min were discarded. Graft function was assessed using the estimated glomerular filtration rate (eGFR, ml/min/1.73m² CDK-EPI 2009). PNF was defined as the absence of graft function and DGF as the need of dialysis session during the first week, with subsequent recovery of renal function.

Results
Overall, 19 KTs were performed from 11 uDCDs (Maastricht IIA). Mean donors (SD) age was 50 (10,8) yrs. Mean (SD) serum creatinine (SrC) and eGFR were 1,17 (0.3) mg/dl and 76,3 (15,2) ml/min, respectively. Median (IQR) ECMO, warm ischemia time (WIT) and HMP times were 420 (327-495), 143 (131,5-160,7) and 600 (540-915) min, respectively. Median (IQR) flow registered by HMP was 102 ml/min (86,5-150). Mean (SD) minimum resistance was 0,2 (0,1). Two kidneys, from the same donor, showed a WIT 90 min higher than the conventional time accepted for KT. Of 19 KT recipients, 79% were male and 21% female. Mean (SD) age was 50,2 (10,8) yrs. One patient was preemptive. Median (IQR) dialysis time was 22,5 months (14-35). Mean (SD) cold ischemia time (CIT) was 16.8 hrs. In 16 patients KT was performed with an open approach, while in 3 with a robotic approach. Mean (SD) SrC and eGFR at 1, 3 and 6 months after KT were 3.5 (2.5), 2 (0.9), 1.9 (0.8) mg/dl and 31 (17), 42 (21), 56 (26) ml/min, respectively. One patient died for severe hepatic failure, with no significant morphological graft alterations. 3/19 (16%) patients underwent graft nephrectomy due to vein, arterial thrombosis and rejection. DGF and PNF were recorded in 6/15 (40%) and 3/15 (20%) patients, respectively.

Discussion
Our experience confirms that uDCD program may expand the pool of organs for KT. However, DGF, PNF and complications rates were not negligible in this patient population despite standardized operative protocols and strict selection criteria regarding WIT and HPM parameters. Larger studies with longer follow-up are needed to confirm feasibility and safety of KT using uDCDs.
EVALUATION OF INFLAMMATORY MARKERS IN OPEN VERSUS ROBOTIC ASSISTED KIDNEY TRANSPLANTATION FROM LIVING DONOR

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Aim of the study
Kidney transplantation (KT) is the treatment of choice for patients with end stage renal disease (ESRD). The standard approach in KT still remains open surgery. However, the robotic technique has been recently standardized. The ability to assess functional results in an early, non-invasive manner in transplant recipients could have promising effect on eventual outcomes. The main objective is to evaluate the changes of serum concentrations of neutrophil gelatinase-associated lipocalin (NGAL), interleukin-6 (IL-6) and C-reactive protein (CRP) after open kidney transplantation (OKT) compared with robot-assisted kidney transplantation (RAKT).

Materials and methods
Thirty patients with ESRD underwent pre-emptive kidney transplantation between January and December 2017. Functional results and inflammatory markers (NGAL, PCR, IL-6) measurements were collected in a prospective, consecutive and non-randomized database. The patients were examined as established: T0 (baseline), T1 (one hour after the surgery), T2 (6 post-operative hours), T3 (12 post-operative hours), T4 (24 post-operative hours), T5 (48 post-operative hours), T6 (3 post-operative days), T7 (5 post-operative days). NGAL, PCR and IL-6 concentrations has been analyzed by ELISA technique. Serum creatinine and estimated glomerular filtration rate (eGFR) were evaluated at post-operative day 1, 3, 7. An unpaired t-test was performed with p < 0.05 considered statistically significant.

Results
The two groups observed were homogeneous. IL-6 presented a significant increase in both groups RAKT (p=0.0001) and OKT (p=0.0001) when compared with the baseline. There was a significant difference mean level of IL-6 between RAKT and OKT in T1 and T3 in the individual time point measurements. There was a significant increase of CRP in both groups RAKT (p=0.0002) and OKT (p=0.0007) when compared to baseline. In the individual time point measurements, significant differences in the mean level of CPR were found in T3 and T5. A significant decreased was found in both RAKT (p=0.0003) and OKT (p=0.0004) in NGAL values when compared with minimal value to baseline. In the individual time point measurements, significant differences in the mean level of NGAL were found in T3, T4 and T6. Statistical significant differences were found in minimal value of NGAL between the two groups (RAKT vs OKT: 152.52±37.36 vs 194.72±66.8; p=0.040). There were no significant differences in serum creatinine and eGFR at post-operative days 1, 3, 7 in open and robotic group respectively. Moderate significant correlation were found between inflammatory markers and creatinine levels at each time point in both groups. There were no cases of delayed graft function in the series analyzed.

Discussion
We found significant difference in terms of systemic response between RAKT and OKT. Furthermore, in both open and robotic group, graft functional outcomes are similar.
Aim of the study
Urolithiasis is a rare complication of renal transplantation and there is little evidence to lead treatment. We present our experience in treating allograft lithiasis with the aim of demonstrating the prevalence of renal graft stones (RGS) and their treatment.

Materials and methods
Between November 1983 and December 2017 we performed 2115 kidney transplantations in our center. We retrospectively reviewed our experience of treatment in urolithiasis in patients with renal allograft over 34 years. We analyzed data by the prevalence per decade, including perioperative procedures (preoperative assessment, anastomosis type and urinary drainage) and long term follow up (time to presentation of lithiasis, clinical presentation, size, site, treatment type, stone composition, renal function and survival). The data were described using mean and standard deviation or median and interquartile range (RIQ) for quantitative variables; qualitative and categorical variables were expressed in percentage.

Results
Fifty-one (2.4%) patients have developed lithiasis in the renal graft during follow-up. Mean size of lithiasis was 9 ± 6.5 mm, mean number of lithiasis was 2 ± 1. Distal ureter was the most frequent location of lithiasis (49.01%) followed by lower calyx (17.6%) and renal pelvis (7.8%). Pretreatment urinary diversion was carried out in 21 (41.1%) patients, using nephrostomy in all cases. Treatment modalities were ESWL (43.1%), active surveillance (25.4%), retrograde URS (17.6%), antegrade URS (3.9%), PCNL (3.9%), ureteral reimplantation (3.9%) and urine alkalisation (2%). During a median follow-up of 72 months, overall stone-free rate was 52.9%. No significant differences were observed between mean serum creatinine levels before lithiasis diagnosis and serum creatinine after treatment (Cr before lithiasis diagnosis: 117.3 ± 32.39 vs Cr post-treatment: 123.03 ± 65.97; p=0.764). Likewise, no significant differences were found in serum creatinine levels after lithiasis treatment when patients were stratified according to the type of treatment (Cr non-surgical management: 113.64 ± 54.98 and Cr surgical management: 135 ± 58.18; p=0.239). There were no cases of graft loss.

Discussion
Urolithiasis in kidney transplanted patients is a rare complication. The treatment is safe and effective. At long-term follow-up we described stable graft function and no significant effect on the graft survival.
INFLUENCE OF RENAL TRANSPLANTATION ON PROSTATE CANCER PATIENTS SURVIVAL

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Aim of the study
Questioning the effects of a renal transplantation and previous insufficiency on the outcome of patients with prostate-cancer, we retrospectively looked at 55 men who were treated between 27th of April 1988 and 31st of December 2016 in the NTZ Halle.

Materials and methods
Based on the course of disease we formed two groups. The patients in Group I (n=38) first had a renal transplantation and subsequently developed prostate cancer. Group II (n=17) includes patients who got a renal transplant after being diagnosed with prostate cancer. The patients were between 40 and 74 years old at the time of the cancer diagnosis (mean age 62.5 ± 7.4 years) and the 1-, 3- and 5-year survival rates were analysed.

Results
The patients of group I, who developed prostate cancer under immunosuppression after renal transplantation have a lower 1-, 3- and 5-year survival rate than people at the same age from general population without such a pre-existing illness. The risk of death in group I five years after being diagnosed with prostate cancer is 4.6 times as high as in the general population. The patients of group II, who were treated with a renal transplantation after the diagnosis prostate cancer also have a lower 1-, 3- and 5-year survival rate than people at the same age from general population. So the risk of group II to be dead five years after the cancer diagnosis is 3.4 times as high as in the same aged general population.

Discussion
In summary, the risk of being dead five years after prostate cancer diagnosis is in both groups higher compared to the healthy general population. The immunosuppression might have a negative effect on the outcome of the patients. In the same way you can assume that a failure of renal function reduces the survival time.
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LOW RISK PROSTATE CANCER IN THE CONTEMPORARY MAGNETIC-RESONANCE ERA: ARE WE EXCLUDING TOO MUCH PATIENTS SUITABLE FOR ACTIVE SURVEILLANCE?


Aim of the study
Currently used active surveillance (AS) criteria incorrectly exclude some patients eligible for AS and misclassify some who harbor significant prostate cancer (csPCa). Multiparametric magnetic resonance (mpMRI) has emerged as a novel tool that reduces disease misclassification. We analyzed mpMRI results in a cohort of patients unsuitable for AS and submitted to radical prostatectomy (RP) at our center.

Materials and methods
We reviewed our PCa dataset and selected patients submitted to RP between 2012 and 2017. All patients were not eligible for AS because they did not respect one or more PRIAS criteria. Overall, 567 men underwent a 1.5-T mpMRI before RP. CsPCa was defined as GS≥6 and/or extra-prostatic disease at RP. Prostate findings at mpMRI were considered positive for csPCa if PI-RADS score≥4 and negative if ≤3. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were calculated for mpMRI in patients not eligible for AS because not respecting 1, 2, 3 and 4 of PRIAS criteria (PSA density was not available for each patient and was not used in our analysis).

Results
Overall, 344 (60.6%) patients were excluded from AS because not meeting only one (1-out patients) PRIAS criterion; 44 (12.7%), 12 (3.5%), 65 (19%), 104 (30%), 82 (24%) and 37 (10.8%) due to PSA>10 ng/ml, cT>2a, GS 3+4, 3, 4 or 5 positive cores, respectively. At pathological evaluation, 123 (35.7%) patients had a non-csPCa, of whom 71 (58%) had also a negative mpMRI. Overall, sensitivity, specificity, PPV and NPV of mpMRI in 1-out patients with regard to csPCa were 84%, 52%, 76% and 65%, respectively. After excluding patients with GS 3+4 and 4 or 5 positive cores, the NPV of mpMRI significantly increased to 72%. Moreover, 183 (32.3%) patients didn’t respect two (2-out patients) criteria (12 possible combinations. Prostate specimens revealed 37 (20.2%) non-csPCa, of whom 16 (43.3%) had also a negative imaging. Overall, the PPV and NPV of mpMRI in 2-out patients were 86.5% and 60%, respectively. After excluding any single combination that includes GS 3+4 or 4/5 positive cores, only 32 patients and 13 non-csPCa were available for final analysis. In this setting, the NPV of mpMRI reached the 89%. Thirty-five (6.2%) subjects were 3-out patients (10 possible combinations). Of them, only 3 (8.5%) had a non-csPCa and everyone showed a PI-RADS 3 lesion at mpMRI. No one of the 5 (0.9%) 4-out patients (3 possible combinations) had a non-csPCa.

Discussion
A significantly number of patients with non-csPCa are considered not suitable for AS when PRIAS criteria are used. A negative mpMRI can help identify most of them, avoiding possible side effects related to active treatment. However, the NPV of mpMRI in 1-out and 2-out cohorts, suggest the need to perform a confirmatory biopsy before chose management strategy.
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THE ROLE OF MAGNETIC RESONANCE IMAGING FOR EARLY RECLASSIFICATION OF PATIENTS UNDERGOING ACTIVE SURVEILLANCE FOR PROSTATE CANCER (ROMAS PROJECT): A MULT-INSTITUTIONAL PRELIMINARY EXPERIENCE


Aim of the study
To evaluate the impact of multiparametric MRI in the early reclassification of patients with clinically significant prostate cancer (PCa) in active surveillance (AS) protocol.

Materials and methods
From May 2015 to March 2018, 71 very low and low risk PCa patients were included in our AS protocol. The inclusion criteria were: 35-75 year-old men; diagnosis of PCa within 8 weeks; PSA≤10 ng/ml; Clinical T1c or T2 assessed with DRE and TRUS; Gleason Score=6; < 3 positive cores; at least 12 biopsy cores taken; PSA density less or equal to 0.2; ASA score ≤ 3; central revision of the biopsy core confirming the presence of indolent PCa. Patients were randomized (1:1) in two groups: Group 1 (n=38) received a mpMRI at 3 months from the beginning of AS, and then were scheduled for AS according to the PRIAS criteria; Group 2 (control group, n= 33) did not receive mpMRI, and were scheduled for traditional PRIAS AS. Patients in both groups had a PSA dosage every 3 months and underwent digital rectal examination (DRE) every 6 months. In group 1, patients with at least one PI-RADS ≥3 lesion at mpMRI underwent a Fusion biopsy (FB); patients with negative mpMRI (namely PI-RADS≤2 lesion at mpMRI) in group 1 and patients included in group 2 underwent a confirmation biopsy 12 months after the beginning of the protocol and subsequent prostate biopsy at 48 and 72 months. In case of reclassification (both due to upgrading and to upsizing) patients were scheduled for radical treatments (including radical prostatectomy or primary radiotherapy).

Results
Table 1 shows the clinical characteristics of the entire patient population. No significant differences between the two groups were found. Table 2 reports the percentage of reclassified patients at 3 and 12 months. Of the 36 patients who underwent mpMRI at 3 months, 10 (28%) had at least one significant lesions (7 men had PI-RADS=3 and 3 men had PI-RADS=4). Those individuals underwent a subsequent targeted FB. Eight of these patients (22.2%) were reclassified: 7 (87.5%) men due to upgrading (2 with Gleason score [Gs] 4+4, 4 with Gs 4+3 and 1 with Gs 3+4) and 1 patient due to upsizing (>2 positive cores with Gs 3+3). At 12-month random re-biopsy, 2/18 patients in Group 1 (11%) and 7/24 patients in Group 2 (29%) were reclassified. At a median follow up of 12 months, 5 (14%) patients in group 1 underwent surgery after reclassification due to mpMRI performed at 3 months while only 1 (2.8%) men was referred to surgery due to reclassification at re-biopsy at 12 months; in control group, 5 (21.8%) men were scheduled for surgery after reclassification at 12 months re-biopsy.

Discussion
Despite no statistical differences between the two groups in terms of rates of reclassification at 12 months due to limited number of patients included, mpMRI seems to be able to achieve a higher early reclassification rate of patients who can no longer stay in AS because of clinically significant PCa. A larger study population and longer follow up may help to achieve more accurate results.
THE IMPORTANCE OF NEGATIVE BASELINE MULTIPARAMETRIC MRI TO REDUCE THE RATE OF EARLY RECLASSIFICATION IN LOW-RISK PROSTATE CANCER PATIENTS MANAGED WITH ACTIVE SURVEILLANCE


Aim of the study
Despite excellent oncological outcomes, active surveillance (AS) is still associated with high rates of early reclassification. The question whether these patients experience rapid progression or initial misclassification is still debated. Moreover, only few series focused on the role of baseline multiparametric-mRI (mpMRI) in patients candidate to AS. We analyzed the characteristics of patients on AS who experienced early reclassification and tried to identify the role of mpMRI in this setting.

Materials and methods
Between 2009 and 2016, 240 low-risk prostate cancer (PCa) patients were included in our AS program according to the PRIAS criteria (cT1/T2a; PSA<10 ng/ml; PSA density <0.2; Gleason score <7; < 3 positive cores). Of these, 131 (48.5%) underwent mpMRI which showed a PIRADS score <= 2 before inclusion in the AS program. Patients were followed with PSA every 3 months and biopsy performed 12, 24 and 36 months after the initial biopsy. We evaluated the rate of both early (<=12 months) and overall reclassification during follow-up (defined as progression on biopsy parameters in Gleason grade > 6 or in the number of positive cores > 2). The rate of early reclassification was analyzed in the overall cohort as well as according to the mpMRI status at study entry (yes vs. no). Uni- and multivariable logistic regression analyses targeted the predictors of early reclassification. Finally, uni- and multivariable Cox regression analyses were used to predict the risk of overall reclassification during follow-up after adjusting for covariates.

Results
Median patient age and PSA was 65 yrs and 6.0 ng/ml, respectively. Median PSA density was 0.11 ng/ml/cm3. Median number of positive cores at initial biopsy was 1 (IQR:1,2). At a median followup of 36 months, 107 patients (39.6%) were re-classified and switched to active treatment. Three- and 5-year treatment-free survival was 57 and 50%, respectively. Early reclassification was seen in 43 men (15.9%), and occurred in 13 (9.9%) vs. 30 (21.6%) patients with and without previous mpMRI, respectively (p<0.001). At multivariable analyses, after adjusting for age, PSA, PSA density and number of positive cores at initial biopsy, previous mpMRI represented the only independent predictor of early reclassification (OR:0.4, p=0.01). Interestingly, at uni- and multivariable Cox regression analyses, previous mpMRI did not represent an independent predictor of reclassification during follow-up (p>0.5).

Discussion
A significant proportion of patients included in AS experience early reclassification. These rates are significantly lower in patients who had a negative mpMRI before inclusion in AS which may then be useful as baseline test for AS. Our data also indirectly suggest that patients with early reclassification might experience initial misclassification rather that rapid progression.
UTILITY OF MPMRI/TRANSRECTAL US FUSION CONFIRMATORY BIOPSY IN MEN WITH A PREVIOUS DIAGNOSIS OF PROSTATE CANCER AMENABLE TO ACTIVE SURVEILLANCE


Aim of the study
Prostate multiparametric MRI (mpMRI) and subsequent mpMRI/transrectal US fusion biopsy (FB) could potentially improve the risk stratification at repeated biopsy during active surveillance (AS) of prostate cancer (PCA) patient. The aim of the present study is to compare the diagnostic accuracy of mpMRI/transrectal US fusion FB to standard transrectal random biopsy (RB) in the setting of confirmatory/per protocol biopsy during AS.

Materials and methods
From November 2016 to February 2018, 47 patients under AS for NCCN very low or EAU/NCCN low-risk pCa had a positive mpMRI (PIRADS v2 ≥3) and subsequently underwent mpMRI/transrectal US FB with Hitachi RVS system and concurrent transrectal 24-cores RB at a single academic institution. The two biopsy procedures were performed by two separate operators, keeping the RB operator unaware of the results of mpMRI and the location of the FB. All MRI scans were performed at our institution by two dedicated uro-radiologists or reviewed by one of the 2 dedicated uro-radiologist and PIRADS re-assigned if performed elsewhere. Each core was processed with sandwich technique in a single biobox and examined by a single dedicated uro-pathologist. Clinically significant PCA (csPCA) was defined as in the PROMIS trial (i.e. Gleason score ≥4 + 3 or a maximum cancer core length 6 mm or longer). Statistical analyses were performed with SPSS v.24.0 software. Continuous variables were reported as median and interquartile range (IQR). K statistic was used to assess the Gleason score concordance between FB and RB.

Results
Median age at biopsy was 66 year (IQR 60-71) and median total PSA was 6.1 ng/ml (IQR 4.5-9), with a median prostate volume at US of 62 ml (IQR 38-89). PIRADS score was 3 in 18%, 4 in 69% and 5 in 13% of the patients, respectively. Overall PCA presence was reconfirmed in 76% of the cases. Specifically, in 17 patients both FB and RB were positive (36%), while 5 were positive at FB only (11%) and 14 at RB only (30%). Stratifying by PIRADS score, overall PCA detection was 61% in PIRADS 3, 81% in PIRADS 4 and 82% in PIRADS 5. As far as csPCA, 25 CspCa were diagnosed (53%). Specifically, 10 CSpCa were correctly identified by FB only, 9 with both methods, and 6 with RB only. Therefore FB alone would have missed 6/25 csPCA (24%) while SB alone would have missed 10/25 csPCA (40%), of which 6/10 would have been diagnosed as non-csPCA and 4/10 would have been undiagnosed by RB. Stratifying by PIRADS score, csPCA detection was 50% in PIRADS 3, 52% in PIRADS 4 and 66% in PIRADS 5. Finally, Gleason score did not show a good concordance between FB and RB, with a k value of 0.32.

Discussion
mpMRI with FB provide an added diagnostic value to RB in the detection of any and csPCA in men under AS for PCA undergoing repeated biopsy. The present data support the adoption of FB in conjunction with RB in this setting of patients.
MPMRI AND TARGETED PLUS SATURATION CONFIRMATORY BIOPSY FOR ACTIVE SURVEILLANCE ELIGIBILITY: OUTCOMES ON A CASE SERIES FROM A SINGLE ACADEMIC CENTER

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Aim of the study
Active surveillance (AS) is recommended for prostate cancer (PCa) with Gleason Score (GS) 3+3 on random biopsy. Confirmatory assessment can include multiparametric Magnetic Resonance Imaging (mpMRI) with targeted biopsy when indicated. The aim of our study is to assess the value of mpMRI and MRI targeted plus systematic saturation biopsy in identifying high grade PCa among men with low risk diseases on systematic biopsy.

Materials and methods
Fourty-nine men diagnosed with PCa GS 6 3+3 were considered. All patients met inclusion criteria for the enrollment in an AS management. Four to 6 months after the standard 12 cores biopsy, all patients underwent mpMRI with MRI targeted biopsy (if a PIRADS 3 lesion was found) and/or standard saturation biopsy, for an overall amount of 30 to 34 cores. The primary end point of the study is to assess the rate of GS upgrading at the confirmatory biopsy; the analysis of variables affecting this primary event was considered a secondary endpoint. All data were inserted in a statistical database and analyzed with SPSS for Windows. PSA, PSA density, percent of core involvement, lesion volume, prostate volume, PIRADSv2 score were considered as continuous variables and analyzed with t test for unpaired samples; correlation and chi square test were used for categorical variables.

Results
89,8% of the patients have a positive mpMRI (44/49). Four patients (10,2%) had a negative mpMRI and none of them experienced GS upgrading at saturation systematic biopsy. 22,7% (10/44) of the cases with a positive mpMRI were upgraded to a GS 3+4 PCa. Total PSA, PSA density, prostate volume and lesion volume were not related to GS upgrading. PIRADS score was the only variable significantly higher in case of GS upgrading (4 +/- 0,81) compared to the cases without upgrading (3,38 +/- 0,84) (p=0,02). Considering the zone of the MRI-detected lesion, GS upgrading was evident in 28% of PIRADS 3 or 4 lesions with a peripheral location; GS upgrading was evident in 5,2% of PIRADS 3 or 4 lesions with a central or transitional location (p=0,05).

Discussion
A mpMRI performed before confirmatory biopsy in men on AS is worth to detect lesion/s suspect for clinically significant PCa. The confirmatory biopsy with both saturation and fusion biopsy (if a PIRADS 3 is detected) may upgrade to a clinically significant PCa GS 3+4 an overall rate of 22,7% of cases initially classified as insignificant PCa.
THE IMPACT OF PROSTATE MRI-BASED TRANSPERINEAL BIOPSIES (M-TPBX) ON AN ACTIVE SURVEILLANCE (ACTS) PRACTICE IN A TERTIARY REFERRAL CENTRE

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Aim of the study
Classic ActS involves diagnosis by transrectal prostate biopsy (TRUSBx), regular PSAs and annual repeat Bx. Since, TPBx and MRI have been introduced into initial assessment and ActS. We are presenting the impact of M-TPBx as initial and repeat test on our ActS outcomes.

Materials and methods
Our prospective service evaluation database identified patients having undergone target (TB) + systematic (SB) M-TPBx as part of their ActS <1 year (group 1a) or >1 year (group 1b) after diagnosis by TRUSPBx. Group 2 included patients opting for ActS after diagnosis by M-TPBx. For Group 1 we assessed the upgrade (=increase in ISUP grade) rates of M-TPBx according to MRI-PIRADS 1+2 (negative), 3 and 4+5 and in 3 and 4+5 we also assessed those rates for TB or SB alone or in combination TB+SB. For group 2 we report rates of conversion to intervention on a year-by-year basis and the reason.

Results
Please see the following tables:
- Table 1 Characteristics of patients
- Table 2 Upgrade rates in Group 1
- Table 3 Conversion-to-intervention rates per years of Acts in Group 2.
- Table 4: Reasons for conversion to intervention in Group 2.

Discussion
Target cores and target zone systematic cores may be enough to detect upgrades to more significant prostate cancer. In patients who undergo a M-TPBx after initial TRUSBx a PIRADS 4+5 score predicts a high risk (53-56%) of pathology upgrade. A PIRADS 3 MRI may indicate a very low risk of significant upgrade and one may consider to avoid a further biopsy. In patients initially diagnosed using M-TPBx, conversion-to-intervention rates up to 4 years are low compared to published 30-40% for traditional ActS, suggesting a better selection of patients, with mpMRI being pivotal in triggering conversion-to-intervention. However, numbers and follow-up years are still low.
MULTIPARAMETRIC MAGNETIC RESONANCE (MPMRI) OF THE PROSTATE DURING ACTIVE SURVEILLANCE FOR LOW-RISK PROSTATE CANCER: TIME TO REDUCE THE NUMBER OF FOLLOW-UP BIOPSIES?


Aim of the study
Multiparametric-magnetic resonance imaging (mpMRI) of the prostate has been employed in active surveillance (AS) protocols. The possibility to spare follow-up biopsies in the setting of mpMRI non-suspicious for clinically significant prostate cancer (csPCa) has been proposed. The aim of our study is to evaluate pathological outcomes of men enrolled in an AS program and submitted to repeated mpMRIs during time.

Materials and methods
From 2006 to 2018, 455 patients were enrolled in our AS program. All patients met PRIAS criteria for low-risk PCa and were scheduled to surveillance-biopsies, and repeated 1.5-T mpMRIs of the prostate. If a suspicious lesion (i.e. PI-RADS ≥3) was seen at repeated mpMRI, 2-3 cores from the target area were additionally taken with a cognitive approach. Radiological upgrading was defined as a switching from a lower to a higher PI-RADS score at repeated mpMRIs. Imaging upstaging was calculated as significant increase in the maximum diameter of the lesion (i.e. ≥2 mm). Pathological progression was defined as Gleason Score upgrading at repeated biopsies and/or at radical prostatectomy. Sensitivity, specificity, positive predictive (PPV) and negative predictive value (NPV) were evaluated for radiological upgrading, imaging upstaging, both of them (upgrading + upstaging) and overall radiological progression (upgrading or upstaging).

Results
Overall, 177 (40%), 71 (16%), 23 (5%) and 5 (1%) men were submitted to 2, 3, 4 and 5 repeated mpMRIs during AS, respectively. Median time of persistence in AS was 36 (21-60) months. Overall, 2 (1%), 29 (17%), 46 (26%) and 100 (56%) patients has a PI-RADS score 5, 4, 3 and ≤2 at first mpMRI, respectively. During AS, 54 (30%), 58 (32.5%), 35 (20%) and 77 (43.5%) men developed radiological upgrading, upstaging, both of them and overall imaging progression, respectively. After a median time follow-up of 29 (13.25-50) months, 34 (20%) men were switched to active treatment. Moreover, 21 (62%) patients showed a pathological upgrading at repeated biopsies and/or at radical prostatectomy. Of the latter, 14 (66.6%), 12 (57%), 11 (52.5%) and 15 (71%) developed radiological upgrading, upstaging, both of them and overall imaging progression, respectively. Overall, radiological upgrading showed a PPV of 26% (14/54) and a NPV of 94% (116/123). PPV and NPV of imaging upstaging were 21% (12/58) and 92.5% (110/119), respectively. Moreover, the combination of both upgrading + upstaging showed a PPV of 31.5% (11/35) and a NPV of 93% (132/142). Finally, PPV and NPV of overall radiological progression, were 20% (15/77) and 94% (94/100), respectively.

Discussion
During AS, the possibility to spare repeated biopsies in patients without radiological upgrading and/or imaging upstaging should be taken into account, since only 6-8% of them harbour a csPCa. However, patients showing radiological progression should not be directly switched to active treatment because of the relatively low PPV of repeated mpMRIs.
Magnetic Resonance Imaging and Ultrasound Fusion Biopsy in Follow-up of Patients in Active Surveillance Protocol

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Aim of the study
To evaluate the role of Magnetic Resonance Imaging (MRI) and Ultrasound Fusion Target Biopsy in follow-up of patients (pts) undergoing Active Surveillance (AS) protocol for prostate cancer (PCa).

Materials and methods
We prospectively evaluated 144 pts undergoing confirmatory or follow-up biopsy according to PRIAS protocol, from June 2016 to March 2018. All patients were submitted to mpMRI on a 3T magnet with a 32-channel surface coil, using triplanar high-resolution T2-w, axial DWI (b values 25,500,1000,2000 s/mm²), and 3D T1-w dynamic contrast-enhanced sequences after injection of paramagnetic contrast agent. Pts with negative (−) mpMRI subsequently underwent systematic random biopsy. Pts with positive (+) mpMRI (PI-RADS-V2 score 3) underwent trans rectal free hand targeted fusion prostate biopsies (3 cores) + systematic random biopsies (12-16 cores), performed with Esaote Virtual Navigator System. The primary objective of the study was detection of clinically significant (cs) Pca (Gleason score 3+4). Descriptive statistics and chi-square test were used to calculate differences between proportions. Receiver Operating Characteristics (ROC) curve was used to show the predictive accuracy of target vs systematic biopsies on csPca detection, according to PIRADS score.

Results
49 pts had mpMRI (−); out of 95 pts with mpMRI (+), 30 (32%) had PI-RADS 3, 47 (49%) PI-RADS 4, and 18 (19%) PI-RADS 5 lesions. At target + random sextant biopsy, PCa was diagnosed in 80 pts (84%), while significant disease was found in 48 pts (51%). Targeted biopsies detected 69/80 (86%) PCa and 40/48 (83%) csPca. In 6/48 (12.5%) pts csPca was detected in targeted biopsies only, while in 8/48 (17%) cases csPca was discovered by sextant biopsies only. Overall detection rate of significant PCa was 33%, 51%, and 67% respectively for PIRADS 3, 4 and 5, respectively (p <0.001). Target biopsies detected csPca in 16%, 38%, and 61% in case of PIRADS 3, 4 and 5 respectively (p<0.001). Predictive accuracy for csPca (ROC curve analysis) was 57% for random biopsies and 75% for target biopsies. In the mpMRI (−) group, PCa was detected at random biopsies in 26/49 (53%), but only 6/49 (12%) pts had csPca.

Discussion
mpMRI and Ultrasound Fusion Biopsy allows accurate detection of csPca in pts undergoing AS. However, 17% of csPca could be missed by target biopsies only. Moreover, in case of mpMRI (−) 12% of pts were detected with csPca at random biopsy.
ANXIETY LEVELS AT DIAGNOSIS AND AFTER 6 MONTHS IN LOCALIZED LOW-RISK PROSTATE CANCER WHO CHOOSE RADICAL TREATMENT OR ACTIVE SURVEILLANCE: RESULTS OF THE START STUDY GROUP


Aim of the study
Active surveillance (AS) for localized low-risk prostate cancer (LRPCa) is a treatment strategy of close monitoring with conversion to curative treatment if progression occurs. Some papers report that anxiety surrounding disease progression could play a significant role in influencing long term adherence to AS protocols. Aim of our study was to evaluate the difference in terms of anxiety in men with LRPCa who choose AS instead of radical treatment (radical prostatectomy [RP] or radiotherapy [RT]). Furthermore, we evaluated if anxiety levels changed after 6 months of follow-up.

Materials and methods
Data of patients enrolled in the multicentric START study group (by Piedmont and Valle D’Aosta oncological network) until the 15th of March 2018 were evaluated. The questionnaire used to measure anxiety was the Hospital Anxiety Depression Scale (HADS). Anxiety scores range from a minimum of 7 (no anxiety) to a maximum of 21 (maximum value of anxiety); a score between 8-10 indicates a borderline level of anxiety, above 10 a pathological value of anxiety. The difference between the 6-months anxiety score and the baseline score was analyzed. Statistical analysis was performed comparing means with the T test and the linear regression model adjusted for age and baseline anxiety value.

Results
The sample analyzed was composed of 330 patients. 256 patients (77.6%) chose AS, 55 patients (16.7%) RP, whilst less than 19 patients (6%) chose RT at baseline. The mean (SD) age of patients in AS was 69.7 years (+7.0) and 22% of patients had a Charlson’s Score > 2. The mean age of patients who underwent RP and RT were 67.5 (+7.4) and 73.2 (+5.4) years respectively; Charlson’s score were > 2 in 9.1% and in 12.5% of patients respectively. The average baseline anxiety score (available on 310 patients) did not differ in the three groups: 11.7 (2.4) for AS, 11.5 (2.0) for RP and 11.4 (2.1) for RT (p=NS). After 6 months, 204/310 (65.8%) anxiety questionnaires were completed; the gap between the 6-month and baseline scores showed a slight average increase in anxiety in all three groups, equal to 0.2 for AS, 0.7 for RP and 1.8 for RT (p=NS). Subsequent analyses were conducted comparing the 2 most represented groups (AS and RP). Figure 1 shows the distribution of anxiety change after 6 months (T6-T0) in the AS and RP groups. The difference of anxiety change between the two groups was negligible (0.5) and not statistically significant (t = 1.04, p=0.30). The regression model, adjusted for age and baseline anxiety, did not show any difference in change between the two groups (beta = 0.11, standard error=0.38, p=0.77).

Discussion
In patients with LRPCa, anxiety rates were very similar at the moment of choice between AS and RP and did not change after 6 months. A longer follow-up is needed to assess any medium-term difference.
ONCOLOGICAL OUTCOMES AND MANAGEMENT CHANGES OVER A 13 YEARS EXPERIENCE ON ACTIVE SURVEILLANCE FOR LOW-RISK PROSTATE CANCER. RESULTS OF A SINGLE HIGH-VOLUME CENTER


Aim of the study
With the increased diagnosis of low risk prostate cancer (PCa), active surveillance (AS) has become a viable option to reduce overtreatment of patients. We reported 12 years experience with long-term follow-up of a single high-volume center AS protocol, analyzing changes in clinical practice during time and oncological results.

Materials and methods
Four-hundred-forty-two men with a low-risk PCa were enrolled in AS between January 2004 and December 2017 at our center. Until 2012, only men respecting PRIAS criteria were included; later on other criteria were added: a third positive biopsy core or a single positive 3+4 Gleason score (GS) sample. Moreover, confirmatory or follow-up multiparametric MRIs of the prostate (mpMRI) were performed. Follow-up consisted of regular PSA tests, digital rectal examinations, repeated mpMRIs (140 men underwent more than one mpMRI) and biopsies. Kaplan-Meier analyses quantified progression free survival (PFS) in patients submitted/or not to mpMRI at the AS begin. Cox- regression analyses tested independent predictors of any cause discontinuation and biopsy-progression (Bp) (i.e. upgranding and/or volume progression) during AS. Finally, logistic regression analyses were used to predict clinically significant PCa (csPCa: i.e. GS 4+3 and/or extraprostatic extension and/or pN+) at pathological evaluation.

Results
Median time follow up was 52 months [24-83]. Median time of persistence in AS was 36 months [23-58]. Overall PFS rates at 1, 3, 5 and 10 years were 91%, 73%, 52% and 29% respectively. Patients submitted to confirmatory mpMRI showed a significantly higher PFS and a lower Bp at 3 (85% and 90% vs. 75% and 80%) and 5 years (70% and 85% vs. 40% and 65%), respectively (all p<0.05). After a median time of 23 [14-42] months, 157 (35.5%) men were switched to active treatment. Seventy-seven (49%), 34 (22%) and 37 (24%) and 9 (5%) patients exit AS due to Bp, PIRADS score 5, patient choice or PSA >10ng/ml respectively. Overall, 132 (84%) men were treated with robot assisted radical prostatectomy at our center and 36 (27%) of them showed a csPCa. Twelve (12%) patients experienced biochemical recurrence and 7 (6%) underwent adjuvant or salvage RT. No patients died due to PCa. At multivariable Cox-regression analyses, a higher number of positive cores [OR 1.420; 95% CI:1.091-1.849; P=0.009] at diagnostic biopsy and a confirmatory negative mpMRI [OR 0.51; 95% CI: 0.311-0.839; p=0.008] were independent predictors of progression to active treatment during AS. Moreover, only confirmatory negative mpMRI was associated to Bp over time [OR 0.48; 95% CI:0.232-0.993; p=0.048]. No clinical parameter has been found to predict cSPCa at final histology.

Discussion
Long-term follow up of a single institution AS program shows similar oncological results of those previously described by large European and American cohorts. However, the inclusion of mpMRI at the beginning of the protocol seems so confer a better PFS and a longer stay in AS.
CHIRURGICA MUSCLE-INVASIVE BLADDER CANCER: SURGICAL TREATMENT

P91 FAST TRACK PROTOCOL APPLIED TO PATIENTS TREATED WITH RADICAL CYSTECTOMY AND INTESTINAL URINARY DIVERSION: AN UPDATE OF A TWO YEAR PROSPECTIVE RANDOMIZED STUDY IN A HIGH-VOLUME CENTER

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P100 NEO-BLADDER FUNCTIONAL OUTCOMES AFTER RADICAL CYSTECTOMY PERFORMED IN A SINGLE CENTER INSTITUTION, DESCRIPTION OF RESULTS IN TRADITIONAL SURGERY VESCICA ILEALE PADOVANA (VIP) AND FLORENCE ROBOTIC INTRACORPOREAL NEO-BLADDER (FLORIN)
FAST TRACK PROTOCOL APPLIED TO PATIENTS TREATED WITH RADICAL CYSTECTOMY AND INTESTINAL URINARY DIVERSION: AN UPDATE OF A TWO YEAR PROSPECTIVE RANDOMIZED STUDY IN A HIGH-VOLUME CENTER


Aim of the study
Radical Cystectomy (RC) with urinary diversion represents a challenging surgical procedure and it is affected by relevant perioperative mortality and morbidity. In order to improve perioperative outcomes and to lower the length of hospital stay, several Fast Track (FT) protocols have been introduced over years. The aim of this study is to evaluate perioperative outcomes of patients who underwent our Fast Track protocol at a single, tertiary Centre.

Materials and methods
We prospectively collected data from patients who underwent RC with intestinal urinary diversion at our institution between January 2016 and January 2018. Patients were randomized in two groups: FT vs standard protocol. Primary outcomes were: post-operative vomiting, time from surgery to first flatus, time to defecation, post-operative pain, 30-days complication rates and hospitalization. Differences in categorical and continuous variables were analyzed using the chi squared test and the Mann-Whitney U-test, respectively.

Results
Overall 130 patients underwent RC with intestinal urinary diversion at our institution during the study period. 43 patients (36%) followed the FT protocol and 83 (64%) the standard preparation. No significant differences were found in terms of age, gender, BMI, Charlson comorbidity index, clinical stage, urinary diversion type, pathologic stage and nodal status between the two groups. Patients in the FT group had lower operating time (275 min vs. 300 min P = 0.02), faster time to flatus (2 vs. 3 days P = 0.02) and shorter hospitalization (13 vs. 17 days p=0.01). No significant differences were found concerning the other postoperative outcomes between the two groups. Overall 30-days complication rate was higher in the FT group (51,1% vs. 31,3%, P = 0,04). When considering only the major complications (Clavien ≥3) no significant differences were found between the two groups.

Discussion
Bladder Cancer is a complex surgical approach and is affected by consistent mortality and morbidity. Our Fast Track Protocol allowed to shorten the time to flatus and reduce the hospitalization. However, no further postoperative advantages were found. A more consistent caseload may be necessary to evaluate the real benefits of the FT protocol and probably identify some predictors of FT failure, in order to lead to a better selection process of patients.
COMPARISON OF PERIOPERATIVE OUTCOMES BETWEEN OPEN AND ROBOTIC RADICAL CYSTECTOMY: A POPULATION BASED ANALYSIS

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Aim of the study
Radical cystectomy represents the standard of care for muscle invasive bladder cancer (MIBC). Due to its novelty the use of robotic radical cystectomy (RARC) is still under debate. We examined intraoperative and postoperative morbidity and mortality as well as impact on length of stay (LOS) and total hospital charges (THCGs) of RARC compared to open radical cystectomy (ORC).

Materials and methods
Within National Inpatient Sample (NIS) (2008-2013), we identified patients with non-metastatic bladder cancer treated with either ORC or RARC. We relied on inverse probability of treatment weighting (IPTW) to reduce the effect of inherent differences between ORC vs. RARC. Multivariable logistic regression (MLR) and multivariable Poisson regression models (MPR) were used.

Results
Of all 10 027 patients, 12.6% underwent RARC. Between 2008 and 2013, RARC rates increased from 0.8 to 20.4% [Estimated annual percentage change (EAPC): +26.5%, CI: +11.1 to +48.3; p=0.035] and RARC THCGs decreased from 45 981 to 31 749 United States Dollars (EAPC: -6.8%, CI: -9.6 to -3.9; p=0.01). In MLR models RARC resulted in lower rates of overall complications (OR: 0.6; p <0.0001) and transfusions (OR: 0.44; p <0.0001). In MPR models, RARC was associated with shorter LOS [relative risk (RR) 0.91; p <0.0001]. Finally, higher THCGs (OR: 1.09; p <0.0001) were recorded for RARC.

Discussion
RARC is related to lower rates of overall complications and transfusions rates. In consequence, RARC is a safe and feasible technique in select muscle invasive bladder cancer patients. Moreover, RARC is associated with shorter LOS albeit higher THCGs.
ROBOTIC RADICAL CYSTECTOMY WITH ILEAL NEOBLADDER: RETROSPECTIVE SERIES EVALUATION OF SINGLE TERTIARY CENTER EXPERIENCE


Aim of the study
Aim of the study is to evaluate peri and postoperative complications in patients undergoing robotic radical cystectomy with pelvic lymphoadenectomy (RARC) with of extra- (eRARC) or intracorporeal (iRARC) ileal neobladder, in a single high-volume center.

Materials and methods
We retrieved data of patients who underwent RARC from January 2010 to December 2017. 491 total cystectomies were performed, of which 405 (82%) open (ORC) and 86 (18%) RARC. Median age was 60 years (38-74); median BMI was 26 (20-44). The following urinary diversions were performed: 8 (9%) ileal conduits and 78 (91%) ileal neobladder, of which 45 (52%) eRARC and 33 (39%) iRARC. Median hospital stay for RARC group was 11 days (6-97) and 30% of patients received neoadjuvant chemotherapy (nChT). Patients undergoing eRARC and iRARC had respectively a median age of 64 (45-73) and 58 years (38-74), a median BMI of 26 (20-36 and 24-44), received nChT in 8% and 57% of the cases, and had a median hospital stay of 12 (6-75) and 17 (7-97) days respectively. Mean surgical time was 450 minutes for the RARC and 440 and 410 minutes respectively for the eRARC and the iRARC. Final pathology is reported in Table 1.

Results
Perioperative complication rate (≤30 days) for RARC group was 70%. In particular, for eRARC e and iRARC, it was 66% and 76% respectively. The rate of minor complications (Clavine-Dindo 1-2) was 50%, 53% and 46% for RARC, eRARC and iRARC respectively. Severe complications rate (Clavien-Dindo 3-4) was 20% for RARC and 11% and 30% for eRARC and iRARC respectively. There were no deaths (Clavien-Dindo 5) in our series. Median intraoperative blood loss was 500 ml for RARC and 600 ml and 400 ml for eRARC and iRARC respectively. Transfusion rate was 44%, 44% and 42% for RARC, eRARC and iRARC respectively. The rate of late complications (>30 and <90 days) was 6% (5 patients) for RARC and 4% and 9% for eRARC and iRARC, respectively. One (1.5%) had polmonary embolism (Clavine-Dindo 2) after iRARC. 4 patients had late serious complications of which: 1 (1.5%) after eRARC had urethral-neobladder anastomosis stenosis treated endoscopically and 3 (4.5%), who underwent iRARC, had stenosis of ureteral neobladder anastomosis treated with positioning of percutaneous nephrostomy and anterograde DJ stenting. Complication are reported in details in Table 1.

Discussion
On the basis of our experience, e e iRARC, are a feasible and relatively safe procedure, whose complication rate is similar of ORC’s one. This finding, at this point of our learning curve, seems encouraging for further improvement.
LAPAROSCOPIC RADICAL CYSTECTOMY AND URINARY DIVERSION: RESULTS AND COMPLICATION OF 100 CASES

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Aim of the study
Laparoscopic radical cystectomy (LRC) with intra or extracorporeal urinary diversion is still considered as investigational procedures, for which no advantages could be shown as compared to open surgery. However, since there is now a continuous flow of reports on minimally invasive cystectomy and this technique is now approaching standardization. We describe our experience with this procedure on 100 patients, focusing on the results and the complications.

Materials and methods
From March 2006 to December 2017, 100 Patients (63 men and 37 women) underwent LRC with extracorporeal urinary diversion for transitional cell carcinoma of the bladder. 34 patients had orthotopic neobladders (15 VIP, 17 Y, 1 Camey-II and 1 Reddy), 46 ileal conduit (Bricker and Wallace) and 20 ureterostomies. 2 patients underwent a prostatic capsule and seminal-sparing cystectomy. Median age was 69 years old. Follow-up was obtained until March 2018 with a median of 35 months and a completeness of 91%.

Results
The mean total operative time was 350 minutes for the LRC including extended pelvic lymphadenectomy. The mean blood loss was 400 ml. Median ASA Score was 3. 52% of the patients had complications of type I by Clavien-Dindo, such as fever and pain. The transfusion rate was 38% (Clavien II). 47% of patients had complications of Clavien IIIa (wound dehiscence 13.3%, abdominal pain 13.3%, dyspnea 11.1%, pain in the leg 6.7%, pelvic lymphocele 2.2% and two (2%) had EGDS because of hematemesis). One patients (1%) had urinary leakage due to accidental removal of a ureteral stent, managed surgically; eight (16%) underwent laparotomy: five because of leakage from the intestinal anastomosis and three because of retroperitoneal hematoma (Clavien IVb). 4.4% had respiratory failure (Clavien IVa). Two patients (4%) had multi-organ dysfunction (Clavien IVb) and one (2%) patient died in the postoperative period due to fecal fistula and septicemia (Clavien V). In only one case the procedure for cystectomy needed conversion to laparotomy. The histopathological analysis revealed pT0 in 20% of patients, pT2 in 57.6% and pT3 in 22.4%. All patients had negative surgical margins. Extended lymphadenectomy (18 lymph-node average) detected lymph node metastasis in 19 patients. After a median follow-up of 35.8 months (range: 3-96.4), 16 patients (16%) showed a recurrence of disease. In particular, 5 patients (31.25%) developed a local recurrence, 6 patients (37.5%) showed an upper urinary-tract recurrence, while in 5 cases (31.25%) a widespread metastasis was diagnosed. At last follow-up, 12 patients (12%) died for cancer-specific disease.

Discussion
Our experience shows that Laparoscopic-assisted radical cystectomy is feasible, safe, and reproducible procedure. However, it is technically challenging and must be confined to centers with long experience in laparoscopy.
ONCOLOGIC OUTCOMES OF ROBOT ASSISTED VS OPEN RADICAL CYSTECTOMY: RESULTS FROM A HIGH-VOLUME REFERRAL CENTRE


Aim of the study
Radical cystectomy (RC) is the gold standard treatment for muscle invasive bladder cancer and high-risk, BCG refractory, non-muscle-invasive disease. Historically, this procedure is performed with an open approach. Since its introduction in 2003, robot assisted radical cystectomy (RARC) is becoming more and more popular. Even though, oncologic outcomes from large cohorts with a long follow up are still scarce. The aim of this study is to evaluate and compare the oncologic outcomes of patients with bladder cancer who underwent open radical cystectomy (ORC) and RARC.

Materials and methods
Clinical, pathologic and survival data of patients who underwent RC for Bladder cancer at Karolinska Institutet between 2006 and 2016 were retrospectively collected. Differences in categorical and continuous variables were analysed using the chi-squared test and the Mann-Whitney U-test, respectively. Outcomes of interest cancer-specific survival (CSS), and overall survival (OS), were plotted using Kaplan-Meier survival curves.

Results
Overall, 817 patients underwent RC within the study period. ORC and RARC were performed in 347 (42.5%) and 470 (57.5%) patients, respectively. No significant differences in term of age, BMI, clinical stage and operating time were found between the two groups. Patients who underwent RARC had higher ASA score (p<0.001) and were more likely to receive neoadjuvant chemotherapy (p<0.001). Pelvic lymph node dissection (p<0.001) and neobladder reconstruction (p<0.001) were more frequently performed in the RARC group. After a median follow up of 35 months, 139 (40%) and 132 (28%) patients died for bladder cancer in the ORC and RARC group, respectively (p=<0.001). The estimates cancer specific survival rates at 5 years were 60% and 72 % in the ORC and RARC, respectively (p=0.12).

Discussion
Within limitations related to different populations and peri-operative variables, our large single institution study found that RARC provides at least similar oncologic outcomes as compared to ORC.
EARLY COMPLICATIONS RATE VS PREOPERATORY PARAMETERS IN PATIENTS SUBMITTED TO RADICAL CYSTECTOMY AND URINARY DIVERSION

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Aim of the study
Open radical cystectomy (ORC) is a complex procedure with high risk of perioperative complications and readmission rates. The aim of our study is to evaluate demographics of patients undergoing ORC and urinary diversion and relate them to surgical outcome at 30-90 days using prospectively a standardized methodology.

Materials and methods
We analyzed 425 consecutive patients underwent ORC at our Institution from Dec 2009 to June 2017 in order to analyze temporal trends of baseline parameters. Between them, we selected 145 patients in a 2-years period (Jan 15-Jun17) in order to relate these parameters to early complication rate, reducing confounding factors due to the length of the enrolment period. All patients were treated following a standardized protocol. Complications were classified acc. Clavien-Dindo and related to patients characteristics, intra and post-operative parameters.

Results
Throughout the period from 2009 to 2017, baseline characteristics of the population was stable with a 4.8 M:F ratio, a 68.74 y.rs mean age (median 69.4± 10.3) and a 26.5 mean BMI (median 26.4± 3.4). The 145 patients selected for early complication analysis overlapped the general population (4.18 M:F ratio, mean age 69.25 y.rs, 26.51 mean BMI). Median ASA score was 2 with 40% of patients having ASA score ≥3. Median ACCI was 6, with 82.76% of patients having ACCI>4 and 33.8% ACCI>6. Among this group of patients, 70.34% received a Wallace diversion, 20% an orthotropic ileal bladder (VIP) and 8.27% an ureterocutaneus diversion. In 2 patients ORC was associated to bilateral nephroureterectomy. Mean length of hospital stay (LOS) was 18.54 days (median 16 ±8.88): 18.04 in patients undergoing Wallace and 20.89 in those undergoing VIP. Among patients submitted to VIP diversion, those living within 60Km from the hospital had a mean LOS of 19.31 days while those living further of 22.78 days. Re-admission rate was 5.5% and 2.76% at 30 and 90-days after discharge. Complications were observed in 56 patients (38.62%) during hospital stay: 27 (48.2%) were Clavien 3-4 and none 5. Clavien-Dindo 3-4 did not relate to preoperative characteristics and were linked to ileum resection for urinary diversion. Post-operative ileum was observed in 16 patients (11%) requiring surgery in 62.5% of cases; 60% had a previous abdominal surgery. 7.58% of patients had wound complication with 60% having ACCI>6. Among patients re-admitted at 30-90 days, 37.5% and 50% had a Clavien-Dindo 3-4 respectively. All patients readmitted at 90 days had a preoperative ACCI>6.

Discussion
Among our global population baseline characteristics did not vary over time. In our 2015-2017 subset, early Clavien-Dindo 3-4 did not relate to preoperative parameters, while pre-operative ACCI>6 was related to wound problems. Distance between patients’ residence and hospital influenced LOS. A longer LOS may reduce, in high risk patients, 30-90 days readmissions and Clavien-Dindo 3-5 complication rate. Fragile Patients are at risk for 90-days hospital readmission.
QUALITY ASSESSMENT ACCORDING TMD 2017 PARAMETERS IN PATIENTS SUBMITTED TO RADICAL CYSTECTOMY AND URINARY DIVERSION

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Aim of the study
Open Radical Cystectomy (ORC) is a complex procedure with high risk of postoperative complications. In 2017 a Multidisciplinary Conference designed specific quality and effectiveness indicators for assessing ORC outcomes within a multidisciplinary approach (TMD). The aim of our study is to evaluate the impact of TMD quality parameters in evaluating Patients submitted to ORC at our Institution.

Materials and methods
We prospectively collected records of 145 consecutive patients who underwent ORC between Jan 2015-June 2017. Complications were classified acc. Clavien-Dindo and related to medical history, ASA score, Age Adjusted Charlson Comorbidity Index (ACCI), operative time, transfusions rate, type of urinary diversion, pre and post-operative blood exams, TNM staging, mobilization time, nasogastric tube removal, free diet restarting. Medical and nurse records during hospital stay, at 30 and 90 days following discharge were compared. Collected parameters were matched with the 9 TMD Consensus Conference Radical Cistectomy quality parameters.

Results
Our population had 4.18 M:F ratio with a 69.25 years mean age (median 71±10.41) and 26.5 mean BMI (median 26.30±3.64). ASA score was ≥3 in 40% of Patients. Median ACCI was 6, with 82.76% of Patients having ACCI>4 and 33.8% >6. 70.34% of patients received an external urinary diversion acc. Wallace, 20% an orthotopic ileal bladder (VIP) and 8.27% an ureterocutaneostomy. In 2 patients ORC was associated to bilateral nephroureterectomy. Mean hospital stay (LOS) was 18.54 days (median 16±8.88) with 5.5% and 2.7% 30 and 90-day re-admission rate. We observed 29 complications Clavien 1-2 (51.8%) and 27 (48.2%) Clavien 3-4 with no Clavien 5. Clavien 3-4 did not relate to preoperative or operatory parameters but to ileus resection for urinary diversion. Post-operative ileum was observed in 11% of patients, requiring surgery in 62.5% of cases; all these patients received a Wallace or VIP diversion and 60% had a previous abdominal surgery. 7.58% of patients had wound complication, associated to ACCI>6 in 60% of cases. A significant difference in Patients’ mobilization was observed between medical and nurse records (p=0.006). Among 30 and 90 days re-admissions we observed a 37.5% and 50% of Clavien 3-4 complications. Introducing these data in the TMD grid, our activity matches 7/9 quality parameters.

Discussion
In our experience ORC matches positively 7/9 TMD 2017 parameters. The unmet parameters were application of ERAS protocol and LOS >20 days in ≥20% of our Patients, both mainly caused by organization problems and lack of interaction with the outpatients facilities in frail patients. Our prospective analysis reports a mismatching between medical and nurse records and a difficulty in adherence to ERAS protocol calling for a higher degree of interaction between healthcare providers. Fragile Patients with ACCI>6 are at risk for longer LOS and 90-days readmission. A tailored hospitalization time may reduce readmissions rate and help to respect TMD parameters.
RADICAL CYSTECTOMY IN PATHOLOGICAL T4A AND T4B PATIENTS: IS THERE ANY SPACE FOR SUB STRATIFICATION?

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Aim of the study
According TNM staging, pathological T4a and T4b are comprehensive of the invasion of prostate stroma, seminal vesicles, uterus or vagina and pelvic or abdominal wall, respectively. However, due to the paucity of patients that harbored pT4 disease at radical cystectomy (RC) in literature at the time, few data are available on the perioperative and oncological outcomes of specific organ invasion among pT4 population.

Materials and methods
The study relied on 1,247 consecutive BCa patients treated with RC at a single institution between January 1990 and December 2012. Anova and chi-square trend tests were used to analyze differences of the clinical and pathological characteristics of the cohort and the specific invasion of the organ. Univariable and multivariable Cox regression analyses were used to stratify pT4a and pT4b according specific site of invasion and subsequent survival after RC in overall population and according specific gender.

Results
Overall, 180 (14.4%) and 37 (3.0%) patients harbored pT4a (prostate and SVI: 68 (38%), prostate: 63 (35%), SVI: 19 (10.5%), Uterus: 16 (8.9%), Vagina: 12 (6.7%) and pT4b (pelvic wall: 27 (72.9%), abdominal wall: 10 (27.1%), respectively. No differences were recorded between pT4a vs. pT4b and the risk to incur in LNI, LVI, positive STSM or CIS. However, pT4b patients were more likeably to be male instead women (19.1% vs. 5.4%, p<0.04). Considering specific site of invasion, LNI rates were higher in SVI 34.5% if compared to 10.3% (prostate), 8.0% (Uterus), 9.2% (Vagina), 9.2 % (pelvic wall), 4.6 % (abdominal wall) (p<0.01). No differences were recorded considering CIS, LVI or positive STSM. The median follow-up in pT4 patients were 60 months. At Multivariable Cox regression, when patients were sub stratified according pT4a, concomitant invasion of SVI and PCa were a significant predictor of worse mortality than patients that harbored a prostatic invasion. Conversely, uterus and vaginal invasion had similar survival outcomes as well pelvic wall and abdominal invasion.

Discussion
Our study described differences in survival related to specific invasion site in pT4 patients, confirming therefore poor survival expectancies in this subgroup class. The seminal vesicles invasion in particular appears as a marker of lymph nodal invasion in patients affected by local advanced BCa treated with RC.
DELAYING RADICAL CYSTECTOMY AFTER NEOADJUVANT CHEMOTHERAPY FOR MUSCLE-INVASIVE BLADDER CANCER HAS A DETRIMENTAL IMPACT ON SURVIVAL OUTCOMES: A SINGLE-CENTER EXPERIENCE

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Aim of the study
A delay in undergoing cystectomy (RC) after a diagnosis of muscle-invasive bladder cancer (MIBC) has been associated with adverse oncological outcomes. However, the impact of postponing RC in patients receiving neoadjuvant chemotherapy (NAC) has been poorly investigated. We aimed to assess whether the recovery period (RP) from NAC termination to RC affects survival outcomes in patients with MIBC referring at an academic tertiary care center.

Materials and methods
We retrospectively reviewed 197 patients treated with NAC and RC at a single center (Mayo Clinic, Rochester, MN) between 1999 and 2015 for cT2-cT4N0M0 bladder cancer. We collected clinical characteristics including age, Charlson Comorbidity Index (CCI), site of NAC delivery, NAC regimen and number of cycles, dates of initiation and termination of systemic treatment and RP. Retrieved pathological data included tumor grade, tumor and nodal stage and the presence of lymphovascular invasion (LVI). Organ-confined bladder cancer was defined as ≤pT2/pN0 disease; extravesical disease was defined as ≥pT3/pN0 or T(any)/pN+. Complete pathological response to NAC was defined as pT0, pN0 disease after RC. Descriptive statistics tested the association between RP and clinicopathologic variables. Overall (OM) and cancer specific mortality (CSM) were analysed by Kaplan-Meyer estimation according to RP time (weekly increments from 4 to 13). Cox regression analyses were used to test the risk factors associated with OM and CSM.

Results
The median (range) follow-up for all patients was 20.76 (0.3 – 105.5) months. The median (IQR) time from the termination of NAC to RC was 6.85 (5.1-9.4) weeks. Patients with CCI ≥1 had longer RP as compared to those with CCI=0 (8.57 vs. 6.85 weeks; p=0.018). Overall, the 3-year OM-free and CSM-free survival rates were 54.9% and 59.4%, respectively. Patients with RP >10 weeks had significantly lower survival outcomes than those with a RP ≤10 weeks. 3-years OM-free survival rates were 61.6% and 36.1% for patients with RP ≤10 weeks and >10 weeks, respectively (p=0.007). Similarly, 3-years CSM-free survival rates were 66.3% and 40.5% for patients with RP ≤10 weeks and >10 weeks (p=0.008). At MVA, older age, clinical tumor stage ≥T3, extravesical disease, incomplete response to NAC, LVI, earlier year of surgery (all p<0.022) achieved independent predictor status for OM, after accounting for pN+ status. Similarly, RP >10 weeks (HR 2.11; p=0.017) was independent predictor for CSM, after accounting for the same variables.

Discussion
Delaying RC >10 weeks after NAC termination was associated with adverse OS and CSS in patients with MIBC. RP was longer in patients with a higher rate of health significant comorbidities. Efforts should be made to limit surgery delay in the clinical practice.
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NEO-BLADDER FUNCTIONAL OUTCOMES AFTER RADICAL CYSTECTOMY PERFORMED IN A SINGLE CENTER INSTITUTION, DESCRIPTION OF RESULTS IN TRADITIONAL SURGERY VESCICA ILEALE PADOVANA (VIP) AND FLORENCE ROBOTIC INTRACORPOREAL NEO-BLADDER (FLORIN)

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Aim of the study
The Radical Cystectomy (RC) represent the gold standard treatment for muscle invasive diseases, about 30% of all BC patients. The type of urinary diversion performed after RC and its functionality deeply influence the quality of life (QoL) of survived patients. A well functioning orthotopic neobladder allows preserving physical and functional integrity of the patient. The intra corporal urinary diversion (ICUD) with ileal neobladder reconstruction after Robotic Assisted Radical Cystectomy (RARC) is a valid alternative to open surgery. Aim of this observational study was to describe functional results of RARC Florence Robotic Intracorporeal Neobladder (FloRIN) and "Padovana ileal neobladder" (VIP) performed in traditional open surgery.

Materials and methods
We prospectively observed the neobladder functionality in survived patients, treated at our institution, that reached the sufficient consolidation state (>6 months after surgery). From February 2016 to April 2018, 20 patients (15 VIP + 5 Florin) underwent urodynamic examination and 16 FloRIN were asked to answer a telephonic questionnaire about functional outcome. Continence was defined as 0-1 pad/day, number of pad used on daytime and night-time were considered separately. The urodynamic exam followed the International Continence Society (ICS) standards with analysis of uroflowmetry and post voidal residual (PVR), cystomanometry, pressure flow study and urethral pressure profile. We also investigated the need of CIC and the presence of obstructive LUTS.

Results
The results are summarised in table 1. Sex ratio was 10 men and 5 women among V.I.P., 17 men and 4 women among FLORIN. The continence rate, assessed with urodynamic exam and by oral questionnaire, ranged 60% among VIP patients and 71% among FloRIN; obstructive LUTS were present in 13% and 5% of patients respectively. One patient in each group need intermittent catheterization due to significative urine retention. The median number of pad used per day was 2,1 among VIP and 1,6 among FloRIN patients, in the night time the median number of used pad was 1,7 for VIP and 1,6 for FloRIN reservoirs. The 20% of patients in the VIP group and the 9,5% in the FloRIN group need a micturition regimen shorter than two hours to avoid urine leakage. Also neobladder characteristic assessed with urodynamic evaluation are described in table 1: the neobladder cystometry showed a median Cystometric Capacity of 274 ml and 295 ml respectively. Perception of neobladder filling, referred as sovrapubic weight, was signaled at 191 ml among VIP patients and at 220 ml among FloRIN patients. Median Qmax at flowmetry was 16,5 ml/sec for VIP and 18.4 for FloRIN; significant PVR was present in 20% of VIP and in 22% of FloRIN.

Discussion
Our observations demonstrates that FloRIN neobladder is a safe and feasible procedure. The functional outcomes confirm the capacity to minimize the invasisvity of RARC and restore an early and effective pelvic floor competence.
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THE USE OF TENACULUM FORCEPS IN ROBOT-ASSISTED MILLIN’S SIMPLE PROSTATECTOMY

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Aim of the study
To present our results after Robot-assisted simple prostatectomy (RASP) using the new Tenaculum forceps.

Materials and methods
We retrospectively evaluated clinical results of patients with moderate/severe Lower Urinary Tract Symptoms (LUTS) (International Prostate Symptoms Score (IPSS) ≥ 8) due to severe benign prostatic enlargement (BPE) (prostate volume (PV) ≥ 100 ml) treated with RASP at our center between June 2016 and January 2018. Symptoms and uroflowmetry parameters were assessed at baseline and 3 months after surgery. Prostate volume (PV) was evaluated at baseline by means of transrectal ultrasound. With the robot in a four-arms configuration and through an extra-peritoneal approach, the simple prostatectomy was performed replicating the original technique described in 1945 by Millin. The new robotic tenaculum forceps was used to retract the adenoma and expose the surgical planes for the enucleation. Retrigonization was often performed at the end of the procedure. Operation time (OT), estimated blood loss (EBL), post-operative complications, catheterization days and length of hospital stay were recorded. Prostate specific antigen (PSA) levels, uroflow parameters and LUTS were assessed at baseline, 6 and 12 months after surgery. PV was estimated before surgery by means of transrectal ultrasound scans.

Results
Overall, 39 patients were enrolled with a median age of 68 years (IQR: 59/73) and a median PV of 123 ml (IQR: 104/146). Mean OT and EBL were 147±24 min and 259±97 ml, respectively. The urinary catheter (UC) was usually removed on postoperative day 3 and patients dismissed on day 4. Two patients required a delay in catheter removal (day 6) and hospital dismissal (day 7) because of a post-operative leakage from the prostatorraphy. No major (Clavien-Dindo grade ≥ 3) complications were reported. At a median followup of 19 months (IQR: 6/26) a remarkable improvement in the International Prostate Symptoms Score (-17; IQR: -9/-21) and maximum flow (+19.3±7 ml/sec) was reported. A PSA reduction of -9±4 ng/dl was also observed. No acute urinary retentions, bladder neck contractures or urethral strictures were reported in the study period.

Discussion
Robotic retropubic simple prostatectomy can be regarded as a safe and efficient option to treat patients with large prostates. In our hands, the robotic tenaculum forceps allows more efficient tractions on the prostatic adenoma, that are crucial to correctly identify the surgical plane for its enucleation.
Aim of the study
to present our preliminary results after transvesical robot-assisted simple prostatectomy (RASP).

Materials and methods
from January 2018 onwards, a consecutive series of patients undergoing RASP at our center were prospectively enrolled. Only patients with a prostate volume (PV) ≥ 100 ml were included. Other inclusion criteria were either chronic urinary retention or maximum flow (Qmax) ≤12 ml/s AND moderate/severe Lower Urinary Tract Symptoms (LUTS) (International Prostate Symptoms Score (IPSS) ≥ 8) not responsive to ≥ 6 months of combined medical treatment. Patients with a clinical suspicion of lower urinary tract cancer, neurologic/acontractile bladder or previous history of urological surgery were excluded. All the procedures were performed by an expert surgeon (GD), according to the Freyer’s technique. Operation time (OT), estimated blood loss (EBL), post-operative complications, catheterization days and length of hospital stay were recorded. PV, prostate specific antigen (PSA) levels, uroflow parameters and urinary symptoms were assessed at baseline and 1 month after surgery.

Results
Overall, 11 patients were enrolled with a median age of 60 years (IQR 49/69.5). At baseline, PV was 115 ml (IQR: 97.5/122.5) and Qmax was 8 ml/s (IQR: 6.11/10.64); 5 patients were permanently catheterized due to chronic urinary obstruction. Mean OT and EBL were 101.51±24.25 min and 138.28±54.7 ml, respectively. Most of the patients were dismissed on post-operative day 3 and had the catheter removed on day 6. No Clavien-Dindo ≥ 3 complications were observed. At 1 month, the mean Qmax was 24.5±9.6 ml/s and a significant improvement of IPSS (15.34±4.9 vs 5.15±2.04; p = 0.002) was reported.

Discussion
According to our experience, robot-assisted Freyer’s simple prostatectomy is a safe and efficient option to treat patients with huge prostates.
ROBOT-ASSISTED “PURE” ADENOMECTOMY FOR LARGE PROSTATE ADENOMA: IS IT THE WAY TO SOLVE THE BLADDER OUTLET OBSTRUCTION AND MAINTAIN A NORMAL SEXUAL FUNCTION?

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Aim of the study
The expansion of the indications of robotic technology let robot-assisted simple prostatectomy enter in the scenario of the surgical treatment of large benign prostatic hyperplasia (BPH). In this video we present our technique of Robotic-Assisted “urethral-sparing” Simple Prostatectomy, that we named “pure adenomectomy”.

Materials and methods
Since August 2017 15 patients with large BPH (prostate >80mL), significant Bladder Outlet Obstruction (BOO) and indication for BPH surgery were enrolled in this study. Patients found with significant median lobe at trans-rectal ultrasonography were excluded. Demographic and perioperative variables, early (within 30 days) functional results were recorded and analysed. Surgical technique. A transperitoneal, six ports approach was chosen. After the prostate gland is prepared, a transversal, anterolateral incision of the capsule is made halfway between the Dorsal Venous Complex (DVC) and the bladder neck. The cleavage plane between the surgical capsule and the adenoma is identified anteriorly and gently dissected at the level of prostate apex bilaterally. Once the left lobe is mobilized a median longitudinal incision is made at the level of anterior commissure. The urethra is medialized by suction device and gently dissected from the left lobe. At the end of this step the left lobe is removed. The procedure is repeated for the right lobe. Thus the urethra is spared inside the prostatic lodge. A hydro-distention test is performed to verify the urethral and bladder neck integrity. Prostatic capsule is thenbarbed sutured.

Results
Robot-assisted “pure” adenomectomy was completed in 12 patients. In these patients mean age was 65 years, mean prostate volume was 130 cc, 2 patients had urethral catheter due to urinary retention. Operative time was 95 minutes; blood losses were 200mL. No intraoperative complications occurred. Bladder irrigation was stopped 24 hours after surgery in all the cases. Catheterization time and hospital stay were 3 and 4 days, respectively. No complications at catheter removal. All the patients who were sexually active before the intervention (8) resumed their activity within 2 weeks after surgery with ejaculation maintained in all patients. At 1 month time point the “trifecta outcome” (combination of International Prostate Symptom Score <8, Qmax >15 mL/s, and no perioperative complications) was reached in all patients.

Discussion
The Robot-Assisted “Pure” Adenomectomy seems to be safe and effective in the treatment of large prostatic adenomas. In our preliminary experience, this procedure seems to represent the way to solve the bladder outlet obstruction and maintain a normal sexual function. Further studies with larger population and longer follow up are needed to confirm these preliminary findings.
MONOPOLAR TRANSURETHRAL ENucleATION OF PROSTATIC ADENOMA (mTUEPA): TECHNIQUE AND RESULTS AFTER 250 CASES

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Aim of the study
To describe the evolved technique and our results after 250 monopolar Transurethral Enucleations of Prostatic Adenoma (mTUEPA).

Materials and methods
from March 2015 to January 2018, 250 patients underwent mTUEPA at our centre because of lower urinary tract symptoms (LUTS) due to benign prostatic enlargement (BPE). Symptoms and uroflowmetry parameters were assessed at baseline and 3 months after surgery. Prostate volume (PV) was evaluated at baseline by means of transrectal ultrasound. mTUEPA is a retrograde enucleation of the prostatic adenoma performed by means of a standard monopolar resectoscope, with angled and straight loops. In order to maintain a constant pressure of 17 cm of H2O in the bladder, either a 26 Ch Iglesias resectoscope with continuous irrigation or a suprapubic Korth cannula were used. For enucleation purpose, the prostatic adenoma is divided in 3 lobes, median, left and right. Three grooves are obtained with a conventional cutting loop at 4, 8 and 12, o’clock positions. Incising the mucosa just above the veru montanum, the almost avascular cleavage plane between the median lobe and the prostatic parenchyma is identified and developed, combining blunt dissection and pinpoint cauterization. Once the median lobe is enucleated, it is pushed inside the bladder and the procedure is repeated on the lateral lobes. A Richard Wolf (Knittlingen, Germany) morcellator is used to morcellate the enucleated adenoma. A three ways 18-20 Ch transurethral Foley catheter is left in place at the end of the procedure for continuous irrigation.

Results
Median preoperative PV was 78 gr (IQR: 59/94). Operation time was 121.5 min (IQR: 88/152). Overall, 6/250 (2.4%) patients required blood transfusion after surgery. Eight (3.2%) complications Clavien-Dindo Grade IIIb occurred. Significant improvements in terms of LUTS (International Prostate Symptoms Score: 14.1±4.3 vs 4.8±5; p < 0.001) and uroflow parameters (Maximum flow: 8.3±2.8 vs 25.1±9.3 ml/s; p < 0.001) were observed as early as 3 months after surgery.

Discussion
mTUEPA is a safe and effective technique, merging the principles of laser enucleation and the advantages of mechanical enucleation with standard monopolar TURP equipment.
MODIFIED EN-BLOC GREENLEP TECHNIQUE: DESCRIPTION AND EARLY RESULTS


Aim of the study
The prostate en-bloc enucleation with GreenLight laser (GreenLEP) was first described by Gomez Sancha in 2015. As many other enucleation techniques, GreenLEP is a challenging endoscopic procedure and requires a long learning curve. We describe a modification of this technique aiming to simplify the development of anterior dissection and to ease the learning curve of the procedure.

Materials and methods
The procedure starts with vaporization of tissue between the two lateral lobes at 12 o’clock, from the bladder neck to the apex just proximal to the external sphincter. An hemi-circumferential incision is carried out starting from the right lateral aspect of veru montanum, delimitating the apex of the right lobe and reaching the incision made at 12 o’clock. Mechanical enucleation of the right lobe is carried out using the tip of the scope to develop the virtual space between surgical capsule and adenoma. The dissection is aimed ventrally and the bladder is entered at 10 o’clock. At this point the tissue between the lateral dissection and the 12 o’clock channel previously created is mechanically dissected/vaporized and the anterior aspect of the right lobe is dissected free from the surgical capsule, proceeding from the bladder neck to the apex. The same steps are carried out on the left side. Final steps follow the standard en-bloc GreenLEP procedure, with the incision of crista urethralis, the development of the posterior plane, the division of bladder neck at 6 o’clock delivering the adenoma “en bloc” into the bladder. The procedure ends with morcellation of the adenoma in the bladder.

Results
From April 2016 to April 2018 two surgeons treated 48 patients with the modified en-bloc GreenLEP technique, with the following mean preoperative values: age 71 years (55-91), IPSS 23 (15-30), PVR 36 ml (15-140), Qmax 9 ml/s (4-15), PSA 6 ng/ml (0,5-16,9), prostate volume 103 cc (50-170), adenoma volume 65 cc (30-100), hemoglobin 14,5 g/dl (10,5-17,1), ASA score 2,3 (2-4). Mean operative time was 104 minutes (40-150), laser time 21 minutes (9-48), energy delivered 116.883 J (41.000-255.000). Mean post-operative values were: weight of removed tissue 51 g (24-140), hemoglobin 12,8 g/dl (9,1-15,4), hospitalization 4 days (3-8), time of catheterization 3,5 days (3-8). No patient needed blood transfusions, one had fluid retention following capsular perforation, one needed early endoscopic revision for hemostasis. At 6 months of follow up (40 patients) mean values were: IPSS 6 (2-11), PVR 27 ml (0-49), Qmax 17 ml/s (12-40), PSA 2,5 ng/ml (0,3-6).

Discussion
Our modification of en-bloc GreenLEP technique as described by Gomez Sancha makes the procedure more systematic, gives additional landmarks helping the surgeon orientation during the enucleation and simplifies the anterior dissection. We think that with this modification the learning curve of this challenging procedure could be easier and shorter.
NEW TECHNOLOGIES FOR OLD PROCEDURES WHEN FIREFLY TECHNOLOGIE IMPROVES ROBOTIC BLADDER DIVERTICULECTOMY

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Aim of the study
Several techniques have been described to aid in the intra-operative identification of the bladder diverticula. The video shows the peculiar advantage of using Firefly Fluorescence Imaging da Vinci System during bladder diverticula detection and dissection.

Materials and methods
Patient is placed in the lithotomic position and 30° Trendelenburg. Supraumbilical camera trocar is inserted with the Hasson technique. We use a four-arm robotic approach and a 5 to 6 ports placement consisting of: one 8-mm camera port, three 8-mm robotic ports and one to two assistant ports. The robotic ports run parallel at 14 cm from the pubic bone. Pneumoperitoneum is established at 12 Hg mm. The bladder is accessed via a transperitoneal route. We perform a flexible cystoscopy with the Firefly Fluorescence Imaging System on for the diverticulum detection. The peritoneum over the bladder is then incised to expose the diverticulum. We use this near-infrared technology also as a guide in the diverticulum dissection. Using sharp and blunt dissection, the diverticulum is resected to its neck. Completion of diverticulectomy and hydraulic tightness test. Drainage placement in the Retzius space and peritoneum reconstruction.

Results
Several approaches have been described for intra-operative diverticulum identification and its dissections: Parra used a cystoscopic transillumination of diverticulum; Das proposed the use of a Foley 50 mL balloon inserted in the diverticulum, while Nadler used a balloon catheter, made from a surgical glove, placed in the diverticulum and bloated with 180 cc saline solution. We present our technique in which transperitoneal bladder diverticulectomy is performed under the Firefly guidance that provide real-time, image-guided identification of key anatomical landmarks.

Discussion
In our experience, intra-operative use of Firefly Fluorescence Imaging da Vinci System makes identification and dissection of the diverticulum rapid, safe and effective with no additional cost, even in disadvantageous anatomic conditions such as lateral-posterior diverticula.
ASSOCIATION BETWEEN ADHERENCE TO MEDITERRANEAN DIET AND PROSTATE CANCER RISK

PROSTATE CANCER DIAGNOSIS REPORT TO THE PATIENT MAY INDUCE SUBJECTIVE URINARY AND SEXUAL SYMPTOMS WORSENING

URYINARY STEROIDAL PROFILE AS INNOVATIVE AND NOT EXPENSIVE TOOL IN DIFFERENTIAL DIAGNOSIS BETWEEN BENIGN PROSTATE HYPERPLASIA AND PROSTATE CARCINOMA

THE ROLE OF METABOLIC SYNDROME IN HIGH GRADE PROSTATE CANCER: DEVELOPMENT OF A CLINICAL NOMOGRAM

LIQUID BIOPSY BY PROSTATE-DERIVED TUMOR CELLS ENRICHED FROM SEMINAL FLUID (SF): THE SEMEN PROSTATE CANCER TUMOR ELEMENTS (SPECTRE) PROJECT

PROSTATE PHASE ANGLE MEASURE ASSOCIATED TO PSA LEVEL (PROSTATE PSA PHASE-INDEX) AS A PREDICTOR OF PROSTATE CANCER: PRELIMINARY RESULTS FROM A PILOT STUDY (PROSFINGER)

POSITIVE ASSOCIATION BETWEEN PREOPERATIVE TOTAL TESTOSTERONE LEVELS AND RISK OF POSITIVE SURGICAL MARGINS BY PROSTATE CANCER: RESULTS IN 476 CONSECUTIVE PATIENTS ONLY TREATED BY RADICAL PROSTATECTOMY

PSYCHOLOGICAL DISTRESS, ANXIETY AND DEPRESSION IN MEN UNDERGOING PROSTATE BIOPSY FOR PROSTATE CANCER DIAGNOSIS: RESULTS FROM A PRELIMINARY STUDY

POSITIVE PROSTATE 68GAPSMA-PET/CT CORRELATES WITH DETECTION OF CD45-/PSMA+ NON-SPERM EPITHELIAL CELLS OBTAINED BY LIQUID BIOPSY OF SEMINAL FLUID IN PATIENTS WITH PROSTATE CANCER (PCA)

ASSESSMENT OF THE DIAGNOSTIC ACCURACY OF MICRO-ULTRASOUND FOR THE DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER: RESULTS FROM A SINGLE-INSTITUTIONAL PRELIMINARY EXPERIENCE
ASSOCIATION BETWEEN ADHERENCE TO MEDITERRANEAN DIET AND PROSTATE CANCER RISK

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Aim of the study
Prostate cancer (PCa) is the second most frequently diagnosed cancer and the sixth leading cause of death from cancer worldwide. Countries following a Mediterranean-type dietary pattern, have been reported to have lower PCa incidence and mortality compared to other European regions. We aimed to evaluate whether there was an association between Mediterranean diet adherence and PCa in a sample of southern Italian individuals.

Materials and methods
A population-based case–control study has been conducted from January 2015 to December 2016 in a single institution of the municipality of Catania, southern Italy (Registration number: #41/2015) (19, 20). The study protocol has been previously reported. Patients with PCa (n=118) were matched with 238 controls randomly matched by age, BMI, and smoking status. Dietary data was collected by using two food frequency questionnaires (FFQs) specifically developed and validated for the Sicilian population.

Results
Regarding difference in consumption of individual key food groups included in the Mediterranean diet paradigm between cases and controls, PCA cases were found to consume lower amount of vegetables than controls (175.57 g/d vs. 237.77 g/d; p<0.01); other differences emerged were related to alcohol intake (12.37 g/d vs 5.07 g/d; p<0.01), cereals (311.20 g/d vs. 191.20 g/d; p<0.01), and meat consumption (82.00 g/d vs. 65.50 g/d; p<0.01). However, no statistically significant differences between cases and controls were found regarding fruit, legumes and olive oil consumption. The Mediterranean diet score was inversely associated with likelihood of having PCa in a linear manner in both adjustment models. Specifically, individuals in the highest group of adherence had 78% less likelihood of have PCa and 14% less likelihood for each point increase of the score. When exploring the association between all individual key food groups included in the Mediterranean diet paradigm and likelihood of having PCa, individual with the highest intake of meat and dairy products resulted individually associated with PCa compared to those with the lowest intake, while vegetable consumption was inversely associated. No other dietary variables were individually associated with PCa.

Discussion
In our cohorts of Italian men, we observed that high adherence to the Mediterranean diet was inversely associated with likelihood of having PCa cancer.
PROSTATE CANCER DIAGNOSIS REPORT TO THE PATIENT MAY INDUCE SUBJECTIVE URINARY AND SEXUAL SYMPTOMS WORSENING


Aim of the study
No previous studies demonstrated the connection between psychologically-induced urinary and sexual symptoms variations prior and after prostate biopsy. Aim of the study was to determine the psychological effects of prostate biopsy and prostate cancer diagnosis counselling on subjective urinary symptoms and sexual function.

Materials and methods
From September 2017 to January 2018, 86 patients, mean age 68.5(±7.19), with clinical suspicion of prostate cancer were consecutively enrolled in this study. All the patients had undergone to accurate clinical history collection, digital rectal examination and total PSA level determination. Questionnaires on urinary symptoms (IPSS) and sexual function (IIEF5) and QoL (SF12) were also administered. Transrectal ultrasound guided biopsy was performed with at least 16 cores. Questionnaires were then re-administered prior the counseling regarding the biopsy pathological result communication, then after two weeks to evaluate the impact of cancer diagnosis on symptoms and after one month to investigate stabilization of symptoms. Data analysis was performed by using T test and Variance analysis.

Results
Mean baseline IPSS score was 11,13 (±7,1), and mean IIEF-5 score 13,75 (±8,9). Mean IPSS score raised to 14,48 (±8,4), and mean IIEF-5 score decreased to 11,79 (±8,1) after the biopsy but prior of the pathological diagnosis result counseling (IPSS-p=0.059; IIEF-p= 0.12). To evaluate the psychological impact of prostate cancer (PCa) diagnosis on urinary symptoms and sexual function, patients were divided in two different subgroups: patients with PCa had as mean IPSS score 11,74 (±7,6), and mean IIEF-5 score 11,5 (±8,3) while patients without PCa had mean IPSS score 12,53 (±7,1), and mean IIEF-5 score 12,57 (±7,7). Differences between the two questionnaires in the two subgroups in comparison to baseline data were p= 0.2 for IPSS and p=0.7 for IIEF 5 scores in PCa group; p=0.20 for IPSS and p=0.37 for IIEF in the no-cancer group. One month after the biopsy the subgroup of patients with PCa demonstrated a persistently raised IPSS score (12,02 ±8,0), and a decreased IIEF 5 score (10,23 ±7,5) in comparison to baseline (IPPS p=0.26, IEEF p=0.12). Moreover the no-PCa subgroup demonstrated a complete recovery of baseline values (IPSS 11,53 ±7,6 p=0.98; IIEF score of 13,9±8,4 p=0.98) Quality of life also significantly worsened after the pathological diagnosis counseling in patients with diagnosis of PCa but not in patients with no-cancer.

Discussion
Prostate biopsy may lead to urinary symptoms and sexual function worsening due to psychologically induced mechanisms that still need to be totally clarified. Similarly, the same results have been observed after pathological diagnosis of prostate cancer (the same symptoms persist also after a month from pathological diagnosis) although patients with pathological results of no-cancer improved their scores values from the counseling day to one month after the biopsy without adjunctive treatments or therapies.
Aim of the study
The relationship between benign prostate hyperplasia (BPH)/prostatic carcinoma (PCa) and hormonal profile is well documented. PCa and BPH have often similar elevated PSA (in particular for 4-10 ng/ml range) and no specific symptoms. Despite the fact that novel blood and urine test are available, they are not routinely used due to the lack of clinical validated data. In the present study we evaluated the utility of a urinary steroidal profile (USP) in BPH and PCa diagnosis.

Materials and methods
The USP evaluated during this study provides the dosage of 23 androgenic markers (18 androgens, testosterone, dihydrotestosterone and the principal phase I metabolites, plus 5 specific urinary steroidal ratios). This panel of exams are routinely evaluated in sportive doping control. The K-PLS (Kernel partial least square) regression approach over the USP of 242 subjects (20-80 yrs age range) and the R² equal to 0.75 confirms the hypothesis of age as bias factor in the evaluation of the USP. Focusing over the 60-80 yrs range in which is more frequent prostatic diseases, the regression coefficient falls to 0.16, this should be used as unbiased reference age range. A cohort of 150 patients affected by BPH (PSA values ≤ 4ng/mL or PSA > 4 ng/mL with negative biopsy), and 130 subjects with histologically proved PCa were enrolled. Subsequently, USP model based on the PLS discriminant analysis (PLS-DA) was performed in order to distinguish between benign and malignant prostatic disease.

Results
In the scatter plot the red dashed line represents the “ideal” USP cut off to discriminate BPH from PCa (blue and red points, respectively). The AUC (area under curve) of the ROC (Receiver Operating Characteristic) curve was 0.92. Sensitivity and specificity were 86% and 85%, respectively (Fig. 1).

Discussion
The USP classification model showed a significant discrimination between BPH and PCa in the 60-80 yrs age range. Further studies are necessary to evaluate the performance of this new and not expensive diagnostic tool.
THE ROLE OF METABOLIC SYNDROME IN HIGH GRADE PROSTATE CANCER: DEVELOPMENT OF A CLINICAL NOMOGRAM

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Aim of the study
Metabolic syndrome (MetS) is associated with an increased risk of aggressive prostate cancer (PCa). However, MetS has not yet been included in the available nomograms used to predict the risk of high grade PCa. The aim of our study was to develop a clinical nomogram for the prediction of high grade PCa.

Materials and methods
A consecutive series of men undergoing prostate biopsies were enrolled in a single center. Indications for prostate biopsy included abnormal prostate specific antigen level (PSA>4ng/ml) and/or abnormal digital rectal examination (DRE). Patients with PSA≤50ng/ml were excluded from the analysis. Demographic and clinical characteristics of the patients were recorded. Metabolic syndrome was defined according to the adult treatment panel III. A nomogram was generated based on the logistic regression model used to predict high grade prostate cancer defined as Epstein Gleason grade ≥3 (ISUP 2014).

Results
Overall 762 patients were enrolled. Mean age was 68±8 years, mean BMI was 27±5.6 and mean PSA was 6.4±6ng/ml. Overall 298/743 (40%) presented PCa and out of them 87/298 (12%) presented high grade disease (Grade ≥3). Patients with high grade disease presented higher MetS rates when compared to patients with low grade disease (56%:49/87 vs 33%:69/210, p=0.001). On multivariate analysis age (OR=1.04,95%CI: 1.01-1.08), DRE (OR=1.90,95%CI: 1.07-3.36), PSA (OR=1.06,95%CI: 1.02-1.10) and MetS (OR=2.02,95%CI: 1.17-3.5) were predictors of high grade disease. Calibration plot showed good calibration of the nomogram in the 10-50% probabilities. The nomogram predicting high grade PCa risk presented a predictive accuracy of 0.68.

Discussion
Metabolic syndrome is highly prevalent in patients at risk of prostate cancer and it increases the risk of high grade prostate cancer. Our nomogram offers the possibility to include metabolic status in the assessment of patients with prostate cancer to identify men who are at risk of high grade disease. External validation is warranted before its clinical implementation.
LIQUID BIOPSY BY PROSTATE-DERIVED TUMOR CELLS ENRICHED FROM SEMINAL FLUID (SF): THE SEMEN PROSTATE CANCER TUMOR ELEMENTS (SPECTRE) PROJECT


Aim of the study
There is a growing trend towards exploring the use of a minimally invasive liquid biopsy (LB) for prostate cancer (PCa). The potential clinical applications of LB are broad, encompassing screening, diagnosis, prognosis, treatment response, early detection of recurrence/metastasis, and biological PCa stratification. The development of a non-invasive LB might represent a significant innovation in the field of PCa especially if it were capable of replacing the use of invasive biopsy, which has limited detection rate and it is associated with complications. Our hypothesis is that the identification of PCa by specific genetic alterations on prostate-derived cells enriched from seminal fluid (SF), can be effectively used for non-invasive early screening/diagnosis of PCa: the Semen Prostate Cancer Tumor Elements (SPECTRE) project.

Materials and methods
To set up a protocol for the recovery and molecular analysis of non-sperm epithelial cells from semen, enriched in PCa cells, we used, as a proof-of-concept, a two spike-in approaches. Semen samples were obtained from healthy donors and spiked with different amount (10, 100, 1000) of LNCaP cells (a human prostate adenocarcinoma cell line with a well-defined phenotype). In the first approach, semen samples (n=4) were stratified, after liquefaction, on a discontinuous Percoll gradient, and, after centrifugation, the non-sperm epithelial cells from the medium layer were isolated, washed, and stained. In the second approach, semen samples (n=4) were directly washed after liquefaction and stained. In parallel, 6 samples were processed to evaluate basal levels of prostate-derived cells in semen. Staining was performed with the following titrated reagents: 7AAD (cell viability), Syto-16 (nuclear staining), CD45 (leucocyte antigen), PSMA (prostate specific antigen), and EpCAM (epithelial specific antigen) and cells were analyzed and sorted using the FACSAria III flow cytometer (BD Biosciences).

Results
Using the first approach we were able to recover only 29.4% ± 0.6% of the spiked LNCaP cells (7AAD-/Syto16+/CD45-/PSMA+/EpCAM+), while with the second approach the recovery increased to 70.4% ± 10.8%. The confirmation that the recovered cells were indeed enriched in LNCaP was obtained by identification of a specific genetic lesion, a 1-bp insertion within exon 9 of the JAK1 gene (NM_002227.3: c.1282_1283insC), characterizing the LNCaP cell line. The basal number of prostate-derived cells in healthy donors ranged between 3*10^3 and 17.7*10^3/μl.

Discussion
Our preliminary results, based on spike-in experiments and flow cytometry isolation, indicate that PCa cells can be retrieved from semen and cancer-specific genetic alterations may efficiently detected starting from a heterogeneous cell population. These findings may represent the proof-of-concept for a revolutionary non-invasive diagnosis of PCa.
Aim of the study
Each biological material has specific bioelectrical properties and Phase Angle (PA) is an impedance derived qualitative index of their conductivity able to discriminate poor cellularity and fluid overload associated to several pathological conditions. The PROSFINGER® study aimed to explore bioelectric impedance localized PA of the prostate in association to PSA level and its predictive value in Prostate Cancer (PC) diagnosis.

Materials and methods
A pilot test has been conducted measuring prostate PA during rectal exploration (PROSFINGER modified glove and BIA Device - 101 anniversary Akern s.r.l.) in patients undergoing prostate biopsy. Patients were grouped according to histological differences (PC and BPH) and compared to healthy controls using one-way ANOVA test followed by ROC curves. The PA was than multiplied to PSA level in order to identify a cut-off discriminating between Prostate Cancer and healthy tissue (Prostate PSA Phase Index – PPP-Index).

Results
We have obtained PA and PSA values from 30 PC, 29 BPH and 18 healthy controls. Mean PA value was 8.6°, 9.5° and 6.3°, respectively for PC, BPH and Healthy Controls. Mean PSA level was 8.4, 6.8 and 1.1 ng/ml, respectively for PC, BPH and Healthy Controls. PPP-Index was statistically relevant defining a fair correlation to PC for value > 100 compared to BPH and healthy controls (PPP-Index <100; AUC 0.729; p 0.001).

Discussion
These preliminary findings are very encouraging as the PPP-Index seems to provide more accuracy in discriminating between pathological and healthy tissue. Further studies are required to validate the role of PA and PPP-Index in prostate cancer screening.
Aim of the study
To evaluate preoperative total testosterone (TT) as a predictor of positive surgical margins (PSM) in prostate cancer (PCA).

Materials and methods
In period ranging from November 2014 to July 2017, preoperative TT was measured in 476 PCA patients undergoing only radical prostatectomy (RP) and including all risk classes. Surgical margins were stated negative, focal positive (single and less than one millimeter) and multifocal positive (more than 1). The risk of TT and clinical factors associated with the risk of PSM (focal or multifocal versus negative) was evaluated by the multinomial logistic regression model.

Results
Overall, PSM were detected in 149 cases (31,3%), which included 99 patients with focal cancer invasion (20,8%) and 50 subjects with multifocal cancer invasion (10,5%). In univariate analysis, PSM associated with higher median levels of TT and prostate specific antigen (PSA) than controls. Multifocal PSM associated with higher rates of high risk PCA (42%) than focal (22,2%) or control cases (18,3%). In multivariate analysis, TT was the only independent factor positively associated with the risk of focal PSM when compared to controls (odd ratio, OR = 1,002; P = 0,035). TT (OR = 1,003; P = 0,002) and high risk PCA (OR = 1,002; P = 0,047) were independent factors, which positively associated with the risk of multifocal PSM when compared to controls. Risk models were computed.

Discussion
In a large and contemporary cohort of patients elected to primary RP, TT was an independent positive factor associated with the risk of focal and multifocal PSM. TT associate with aggressive PCA biology.
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PSYCHOLOGICAL DISTRESS, ANXIETY AND DEPRESSION IN MEN UNDERGOING PROSTATE BIOPSY FOR PROSTATE CANCER DIAGNOSIS: RESULTS FROM A PRELIMINARY STUDY

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Aim of the study
To evaluate psychological impact of prostate biopsy in men tested for a possible diagnosis of prostate cancer.

Materials and methods
96 men aged 50-75 years with a raised PSA level (≥3 ng dl) undergoing an outpatient transrectal ultrasound guided prostate biopsy (TRUS-Bx) with local anesthesia were enrolled for this study. Hospital Anxiety and Depression Scale (HADS) and Impact of Event Scale (IES) were used to assess anxiety, depression and distress levels. Patients were also asked to grade on a VAS of 0-10 the pain felt during biopsy. In addition, a specific questionnaire was designed to evaluate side effects biopsy-related (pain, fever, shivers, hematuria, hematochezia and hemoejaculate). Questionnaires were administered at three time-points: at biopsy, at 7 days after biopsy and after receipt of biopsy result.

Results
A total of 52 men (54.2%) correctly completed HADS and IES questionnaires. The mean age of the sample was 64.3 years and the mean value of PSA was 5.8. HADS and IES scores show higher levels of anxiety and distress especially at the time of biopsy, with 22.8% of patients reporting high distress and 17.5% anxious symptoms. VAS scores significantly correlate with anxiety and distress levels (P<.001). Results underline a significant increase in anxiety and distress at the time of the biopsy in younger patients and with higher levels of PSA (P<.001). Moreover, anxiety and distress were greater in men experiencing the following side effects biopsy-related at 7 days: pain (P<.001), hematuria (P<.001), hematochezia (P<.001) and hemoejaculate (P<.001). Finally, anxiety, depression and distress levels remain high at 30 days after biopsy among men who had received a prostate cancer diagnosis.

Discussion
According to the results of our study, prostate biopsy seems to be a stressful event for patients and can associate with high levels of anxiety and distress. More specifically, patients experiencing higher levels of anxiety and distress report higher levels of pain during the biopsy procedure. In addition, problematic biopsy-related symptoms increase distress experience and may influence willingness to undergo further biopsies. For this reason, it is important to identify patients with psychological distress who may benefit from an adequate counseling about biopsy procedure and from a possible biopsy in operating room.
Aim of the study

Prostate Specific Membrane Antigen (PSMA) presents high expression in PCA cells and has been considered an attractive target for molecular imaging. $^{68}$GaPSMA-PET/CT showed high detection rate of nodal and bone metastases and, recently, was tested for diagnosis of primary PCA. Seminal fluid (SF) might contain prostate-derived PSMA positive tumour cells in men with PCA and serve as diagnosis. In order to investigate the clinical reliability of $^{68}$GaPSMA-PET/CT for identification of primary PCA we tested the hypothesis that it correlates with detection of CD45-/PSMA+ non-sperm epithelial cells obtained by liquid biopsy of SF in patients with PCA.

Materials and methods

This is a nested analysis combining data from two observational, longitudinal, prospective studies. Patients with primary PCA detected by $^{68}$GaPSMA-PET/CT software assisted fusion biopsy (Protocol ICH/382/2016), who received an indication to radical prostatectomy (RP), had a sample of SF one month after the biopsy and just before the RP (Protocol ICH/1791/2017). The prostate-derived cells from semen (non sperm epithelial cells) were sorted using the fluorescence-activated cell sorting (FACSAria III - BD Biosciences, San Jose, USA) and the CD45 negative/PSMA positive (CD45-/PSMA+) served as markers of interest. The primary endpoint was to determine the relationship between $^{68}$GaPSMA-PET/CT results and detection of CD45-/PSMA+ non-sperm epithelial cells in SF.

Results

Seven patients over 59, who had received a diagnosis of PCA by $^{68}$GaPSMA-PET/CT software assisted fusion biopsy and were scheduled for radical prostatectomy (RP), collected SF. The FACS procedure sorted non-sperm epithelial cells and CD45-/PSMA+ cell, as well, in SF of all the patients with positive imaging, but not in negative ones. Figure 1 presents the SF cytology of CD45-/PSMA+ sorted cells (arrow) and CD45+/PSMA- ones.

Discussion

Our findings, by the first, showed a potential correlation between the $^{68}$GaPSMA-PET/CT, PCA and cancer-specific markers detected by SF liquid biopsy. These findings may represent the proof-of-concept to improve the role of $^{68}$GaPSMA-PET/CT for primary PCA diagnosis in a selected population and to further investigate the prostate cancer tumor elements by liquid biopsy of the SF.
ASSESSMENT OF THE DIAGNOSTIC ACCURACY OF MICRO-ULTRASOUND FOR THE DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER: RESULTS FROM A SINGLE-INSTITUTIONAL PRELIMINARY EXPERIENCE


Aim of the study
Prostate cancer is the most prevalent cancer among European men. While mpMRI has demonstrated promising results to visualize prostate cancer, results have been inconsistent and still miss a significant portion of cancers. Micro-ultrasound is a new ultrasound-based imaging modality with resolution down to 70 microns, a 300% improvement over conventional ultrasound. This study reports on our first two weeks after introducing micro-ultrasound into our prostate biopsy clinic.

Materials and methods
The first 78 patients at our institution imaged with the ExactVu micro-ultrasound system were retrospectively included. All patients were presenting for prostate biopsy due to abnormal DRE or elevated PSA. The PRI-MUS protocol1 was used to locate targets on micro-ultrasound, and these targets were compared to biopsy pathology. PRI-MUS 3+ lesions were targeted, and GS 7+ pathology was considered positive.

Results
Mean age of patients was 63.4 ± 7.6 years with PSA 8.9 ± 5.9 ng/mL. 792 biopsy samples were taken from the 78 patients. Micro-ultrasound targets provided high sensitivity with 96% of patients (22/23) with GS 7+ disease having at least 1 positive target. Negative predictive value was 92% with 11/12 patients with no micro-ultrasound targets receiving a benign diagnosis after systematic biopsy. Positive predictive value and specificity were lower (33% and 20%), likely due to over-targeting while we become more comfortable with the new tissue detail this modality offers. Retrospective analysis on the single false negative patient revealed a clear PRI-MUS 4 lesion missed during the case. Including this retrospective lesion brings the sensitivity and NPV up to 100%.

Discussion
Micro-ultrasound is a promising new imaging modality with high sensitivity to detect prostate cancer. Our initial results suggest the system is easy to use, future work will outline our learning curve as we continue to improve our specificity and begin to make comparisons to mpMRI.
P111 IMPACT OF ADVANCED PATERNAL AGE ON THE OUTCOMES OF THE INTRACYTOPLASMIC SPERM INJECTION (ICSI) IN OVUM DONATION CYCLES

P112 MALE REPRODUCTIVE HEALTH IS A KEY DETERMINANT OF UNHEALTHY AGING: RESULTS FROM A LONGITUDINAL COHORT STUDY

P113 BODY MASS INDEX AND AGE CORRELATE WITH ANTIOXIDANTS SUPPLEMENTATION EFFECT ON SPERM QUALITY: A DOUBLE BLIND PLACE CONTROLLED TRIAL ON PATIENTS WITH VARICOCELE & OLIGOASTHENOTERATOZOOSPERMIA

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P118 P53, RELIABLE MARKER OF SPERM FERTILIZATION POTENTIAL? (ECOFOODFERTILITY PROJECT)

P119 MALE INFLAMMATION-BASED PROGNOSTIC SCORES DO NOT IMPACT INTRACYTOPLASMIC SPERM INJECTION OUTCOMES OF OVUM DONATION CYCLES

P120 NOVEL METHOD OF HISTOPATHOLOGICAL FINDINGS AFTER TESTICULAR SPERM EXTRACTION IN PATIENTS WITH NON-OBSTRUCTIVE AND OBSTRUCTIVE AZOOSPERMIA

P121 MICROSURGICAL TREATMENT OF OBSTRUCTIVE AZOOSPERMIA: YET CURRENT IN THE PMA ERA? RESULTS OF A MULTICENTER STUDY
IMPACT OF ADVANCED PATERNAL AGE ON THE OUTCOMES OF THE INTRACYTOPLASMIC SPERM INJECTION (ICSI) IN OVUM DONATION CYCLES


Aim of the study
The aim of our study was to assess the impact of paternal age on the oocyte-donation outcomes in ICSI cycles, using a more standardized oocyte quality model.

Materials and methods
We retrospectively included in the study 278 couples. Inclusion criteria were: infertility couple from almost one year, presence of normal or sub-fertile seminal parameters in almost two seminal analyses, a percentage of overall oocyte survival after thawed greater than 85%. Baseline characteristics were collected, including recipient age, male age, height and weight with body mass index (BMI) count, smoking and drinking status, drug consumption, previous diseases or surgery, history of cryptorchidism, medication, and comorbidities. All men underwent a physical examination, endocrine evaluation at baseline, genetic profile and a complete assessment of relevant communicable diseases. The outcome measures included fertilization rate (FR), cleavage rate (CR) and pregnancy rate (PR). All patients were categorized in two groups by male’s age: group 1 < 45 years; group 2 > 45 years. To investigate the impact of paternal age on the outcomes of ICSI, cycles were divided arbitrarily into two groups (A-B) according the percentage of FR. Group A consisted of patients with FR ≤ 70% and Group B > 70%.

Results
This analysis included 1724 frozen oocytes. After warming, 1642 oocytes survived, resulting viable and mature. Median overall oocyte survival rate was 100% (range 85-100%). Baseline characteristics of the study cohort are depicted in Table 1. Median male age was 44 years (range 31-70 years). Group 1 (> 45 years) included 166 men, group 2 (> 45 years) 112 men. Recipients had a median age of 42 years (range 29-50 years). “2-pronuclear” FR was 72.6% (SD ± 0.20). CR was 93% (SD ± 0.16). Clinical pregnancy was obtained in 110/278 patients (overall PR of 39.5%). Overall, fertilization rates significantly decreased with advancing male age (Table 2). Indeed, male age shown a significant difference between groups A and B: the median male ages of the group A and the group B were 45.0 (41.5-49.0) and 42.0 (39.0-45.0) years, respectively (p < 0.01). How shown in Table 3, using the multivariate logistic regression analysis, the advanced male age confirmed a strong correlation with FR (OR 0.87; p < 0.01). CR and PR were not related significantly with paternal age (p= 0.417, p= 0.70 respectively). Moreover, comparison between the two age groups (group 1 and group 2, Table 4) and ICSI outcomes confirmed an association with FR (80 % and 67% respectively; p < 0.01).

Discussion
This study has provided further confirmatory evidence of the significant role of paternal age in determining the outcomes of ICSI when the oocytes are young and healthy. Accordingly, it would be recommended to be paid to the advancing male age when counselling older couples underwent an ovum donation program.
MALE REPRODUCTIVE HEALTH IS A KEY DETERMINANT OF UNHEALTHY AGING: RESULTS FROM A LONGITUDINAL COHORT STUDY


Aim of the study
A severe male infertility factor has been associated with both lower health status and increased mortality in men from infertile couples. Little is known about the evolution of the health status in infertile men over time. We sought to inquire reproductive factors associated with health status decrease in infertile men.

Materials and methods
This is a cohort study enrolling 645 infertile men evaluated at baseline between 2003 and 2010. Infertility was defined according to the WHO definition. Health-significant comorbidities were scored with the Charlson Comorbidity Index (CCI). Patients were followed-up yearly recording any worsening in their health status until 2017. Cox regression models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) of CCI score increase including as covariates age, BMI, CCI, azoospermia, FSH, and duration of infertility.

Results
Mean patient age was 37 years (interquartile range, IQR 34-40), median BMI 25 (IQR 23-27), 30 (5%) men had a CCI ≥1, and median duration of infertility was 24 months (IQR 13-30). Median follow-up was 9 years (IQR 7-11). 186 men (29%) saw an increase of their CCI score of at least 1 point. The most frequent reason for CCI upgrade was cancer, i.e. 43 solid tumors and 5 lymphomas. Compared to patients without a CCI increase, patients with a CCI increase had a higher proportion of CCI ≥1 (9% vs. 3%, p=0.001) and a higher proportion of azoospermia (32% vs 20%, p=0.001) at baseline. Azoospermic men had an increased risk of developing comorbidities at multivariable analysis (HR 1.88, 95% CI 1.31 - 2.69; p=0.001); along with a basal CCI ≥1 (HR 2.61, 95% CI 1.57 - 4.36; p<0.001), and with a longer duration of infertility (HR 1.02, 95% CI 1.01-1.03; p=0.008) azoospermic men were at higher risk of developing comorbidities during follow-up at multivariate analysis, after accounting for the aforementioned confounders.

Discussion
At almost 10-years follow-up, a decrease of the overall health status is observed in a consistent proportion (29%) of infertile men, with most of them developing cancer. Azoospermic men (i.e. the most severe form of male infertility) showed the worst health status decrease, and should be strictly followed-up regardless of their fertility status.
Aim of the study
Between known causes, varicocele is considered as the first cause of male infertility; a general prevalence of 15% in the healthy male population and 40% in infertile men, is reported. Sperm is vulnerable to lack of energy and excess amount of reactive oxygen species, which can impair its function, leading to immotility, acrosomal reaction impairment, DNA fragmentation and cell death. For this reason is required that essential nutrients are available for spermatozoa when they develop, capacitate and acquire motility. To evaluate, utilizing a randomized double-blind placebo controlled trial, the effect of supplementation with selected naturally compounds on subjects with oligoasthenoteratozoospermia with or without varicocele and history of difficulty conceiving. Results have been interpreted dividing the population in two age and body mass index (BMI) classes.

Materials and methods
This trial investigated the effect of 6 months of supplementation with l-carnitine, acetyl-l-carnitine and other micronutrients on sperm quality in 104 subjects with oligo- and/or astheno- and/or teratozoospermia with or without varicocele. Spermogram evaluation was done at the beginning of treatment and at the end. In addition to what presented in the statistical report as main analyses (sperm count, concentration, motility and morphology), which were the ones forecasted by the study protocol, the present post-hoc analyses were carried-out on the sample categorized by age and BMI. The analyses were performed considering two age classes (patients below and above 35 years old) and two BMI classes (patients below and above 25 of BMI).

Results
In 94 patients who completed the study, sperm concentration was significantly increased in supplemented patients compared to the placebo (p = .0186). Total sperm count also increased significantly (p = .0117) in the supplemented group as compared to the placebo group. Both, progressive and total motility were higher in supplemented patients (p = .0088 and p = .0120, respectively). As for the single classes of age, a significant difference was observed in the <35 years class for the total motility (p = .0385). As for the single classes of the BMI, a significant difference was observed in the BMI <25 class for the total sperm count (p = .0295), for the progressive motility (p = .0220) and for the total motility (p = .0385). As for the analyses on the combined classes (age & BMI), a statistical significance was observed in the total motility (p = .391).

Discussion
The present post-hoc analysis highlighted that the supplementary product seems to be more effective in subjects aged less than 35 years and with a normal weight (i.e. below 25 BMI). Oxidative stress is a cause of male infertility with significant negative effect on semen parameters and varicocele is an additional cause of poor sperm quality. In conclusion, supplementation with metabolic and antioxidant compounds could be efficacious when included in strategies to improve fertility.
THE IMPACT OF SEMEN INFECTIONS OVER SPERM PARAMETERS IN PRIMARY INFERTILE MEN - RESULTS OF A REAL-LIFE, CROSS-SECTIONAL STUDY


Aim of the study
Urogenital tract infections are usually considered a potentially treatable cause of male infertility (MI). Clear data about the negative impact of infections on semen parameters and MI still lack. We assessed the prevalence of urogenital infections and their impact on sperm and hormonal parameters in a homogeneous cohort of 2464 Caucasian-European men presenting for primary couple infertility at a single institution.

Materials and methods
Demographic, clinical and laboratory (including the hormonal profile) data of the entire cohort were analyzed. Health-significant comorbidities were scored with the Charlson Comorbidity Index (CCI; categorized 0 vs. ≥1). Semen analysis was based on 2010 WHO reference criteria. Only patients assessed with semen culture tests were included in the analysis. Hypogonadism was defined as a total testosterone level <3.0 ng/ml. Descriptive statistics and logistic regression models tested the association between sperm infection and clinical, seminal, and hormonal characteristics in the entire cohort.

Results
Overall, 1662 patients (67.5%) underwent sperm cultures. Of them, semen cultures were positive in 271 patients (16.3%). Most commonly identified bacteria were Ureaplasma spp. and Enterobacteriaceae spp. (32.9% and 14.8%, respectively). A concomitant infection with 2+ agents was reported in 15.1% cases. Patients with a positive semen culture had higher mean (SD) BMI [26.1 (4.0) vs. 25.6 (3.3)], lower ejaculate volume [2.99 (1.6) vs. 3.35 (1.8) ml], lower inhibin B levels [98.1 (74.8) vs. 115.9 (83.3) pg/ml], were more frequently active smokers compared to those without semen infections (all p≤0.02). No significant correlations were found between the different infectious agents and sperm parameters. Azoospermia (NOA+OA) was more frequently reported in patients with positive vs. negative semen cultures (27.7% vs. 17.0%, X²=16.29; p<0.001); semen infections were more frequently found in NOA patients (X²=17.84; p<0.001) but not in OA men (p=0.8). At multivariate analysis, a positive semen culture achieved independent predictor status for azoospermia (NOA+OA; OR 2.50, p<0.001) and for NOA (OR 2.59, p<0.001), after accounting for CCI status, genetic abnormalities, history of cryptorchidism and hypogonadal status.

Discussion
Semen infections are highly prevalent in Caucasian-European men presenting for couple’s infertility; of them, intracellular microbial agents are even more frequent. Nonetheless, NOA is more frequently found in patients with a positive semen culture.
TIME TO FIRST INFERTILITY DIAGNOSIS AND SPERM RETRIEVAL RATE: RESULTS AFTER 30 CONSECUTIVE MICRO TESE IN NOA PATIENTS

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Aim of the study
Data available in the literature are still lacking about a possible correlation between time to first infertility diagnosis, age and sperm retrieval rate. In this prospective study we reported results after m-TESE retrieval in NOA patients from a non academic centre. Aim of our study was to find if there was a correlation between time to first infertility diagnosis and sperm retrieval rate.

Materials and methods
Complete data of 110 consecutive Caucasian males, suffering from primary infertility, were collected between January 2013 and October 2017. All patients were referred to our center for TESE, conventional (c-TESE) or microscopic (m-TESE); all procedures were performed by the same surgeon (AS). In September 2016 we started performing m-TESE. In our study we considered 30 consecutive NOA pts. Variables included were sperm retrieval rate, demographic data, cause of infertility, time to first infertility diagnosis, serum levels of hormones, histological findings. Univariate and multivariate logistic regression analyses were used to assess correlation between time to first infertility diagnosis and sperm retrieval rate.

Results
Thirty consecutive NOA pts with a median (range) age of 37 (26-53) years were included in the present study and submitted to m-TESE. Considering serum hormone median (range) levels were: FSH 12.7 mUI/mL (range 1.2-62.2), LH 6.5 mUI/mL (1.6-38.6), prolactin 12.1 ng/mL (4.5-22.4), total testosterone 4.49 ng/mL (1.0-10.4). All pts were checked for genetic abnormalities and Y chromosome microdeletions were detected in 10% of pts (3/30), while CFTR gene mutation in 6% (2/30 pts). Interestingly, mean time to first infertility diagnosis was 46.7 months (12-200). Positive sperm retrieval rate (p-SRR) for NOA group was 48.4%. Consensual testicular biopsy was performed in all NOA pts: severe hypospermatogenesis was found with maturation arrest in 6/30 pts (20%), Sertoli Cell Only Syndrome in 6/30 pts (16%), testicular atrophy in 6/30 pts (16%). At univariate and multivariate logistic regression analyses statistically significant correlation was found between p-SRR and time to first infertility diagnosis (respectively OR 2,8; I.C. 1.2-4.6 and OR 1,4; I.C 1.02-2.7, all p <0.01) but not with age at surgery (P=0,3).

Discussion
Micro-TESE in NOA pts is a valid option even in older patients. In contrast with literature, age does not represent an absolute contraindication to surgery even if surgery is indicated as soon as possible in patients coming for primary infertility. Time to first infertility diagnosis is still delayed with a consecutive important effect on sperm retrieval rate.
Aim of the study
Few studies of the post-TESE endocrinologic course have been reported in the current literature. In this prospective study we report the occurrence of hypogonadism after testicular sperm retrieval in no obstructive azoospermia (NOA) patients treated in a non academic centre.

Materials and methods
Complete data of 110 consecutive Caucasian males, suffering from primary infertility, were collected between January 2013 to October 2017. All patients were referred to our center for TESE, conventional (c-TESE) or microscopic (m-TESE); all procedures were performed by the same surgeon (AS). We reported hormone profiles before surgery and 3 months after the procedure. Moreover, we divided the population in order to find a possible correlation between type of procedure and postoperative hypogonadism. Descriptive statistic was used to describe population features. Chi-square and ANOVA test were used to examine the differences in categorical and continuous variables, respectively.

Results
A hundred and ten pts with a median age of 37 (range 26-53) years were included in the present study. Regarding the cause of primary infertility, 70 out of 110 pts (49.2%) were NOA. Considering NOA pts serum preoperative hormone levels were: FSH level median 12 mUI/mL (range 1.2-62.2), median LH 6.5 mUI/mL (1.6-38.6), median prolactin 12.1 ng/mL (4.5-22.4), median total testosterone 4.49 ng/mL (1.0-10.4). Total sperm retrieval rate (SRR) for NOA group was 48.4%. Consensual testicular biopsy was performed in all pts. 3 months post operative hormone levels were: FSH level median 12.7 mUI/mL (range 1.4-62.8), median LH 6.9 mUI/mL (2.1-39.5), median prolactin 12.4 ng/mL (4.9-22.8), median total testosterone 4.12 ng/mL (1.0-9.8). At Chi Square analysis no statistically significant differences (all p > 0.2) were found between hormone profiles before and 3 months after surgery. The technique (c-TESE or m-TESE) does not impact on the post operative serum testosterone concentration (p= 0.1).

Discussion
In our study TESE procedures did not cause a significant decrease of post operative hormone profiles, specially for testosterone level. Post operative serum testosterone concentrations are similar between patients in the c-TESE and m-TESE groups. No pts demonstrated symptoms of low testosterone level.
OXYSTEROLOLS PROFILING IN HUMAN SPERM IDENTIFIES 25-HYDROXYCHOLESTEROL AS A MARKER OF SPERM FUNCTION


Aim of the study
Cholesterol is a main lipid component of sperm cell that is essential for sperm membrane fluidity, capacitation, and acrosomal reaction. The main objective of the present study was to identify and quantify, for the first time, the different species of oxysterols in human semen from normozoospermic, oligoasthenoteratozoospermic and asthenozoospermic patients. The secondary aim was to investigate the potential role of oxysterols in sperm pathophysiology.

Materials and methods
To investigate the profile of human sperm oxysterols in subjects with normal and altered sperm characteristics, we recruited 150 consecutive subjects aged between 18–50 years-old. Therefore we investigated 134 semen samples from the same number of patients, aged 34.5±7.5. Patients were classified according to the sperm parameters: Group 1≥50th percentile (33 normozoospermic men), Group 2≤5th percentile (32 oligoasthenoteratozoospermic men), Group 3 only progressive motility ≤5th percentile (25 asthenozoospermic men) and Group 4 (44 patients with varicocele). Oxysterols were determined by GC–MS using deuterium-labeled internal standards. Oxysterols analyzed included seven autoxidation- and five enzymatically-generated oxysterols.

Results
25-HC resulted the most abundant oxysterol in normozoospermic subjects, and turned out to be the only one that differed significantly (p<0.0001) among the 4 groups. It was higher in normozoospermic group (21.63±18.47 ng/mL, mean±SD) than oligoasthenoteratozoospermic (2.59±2.93, ng/mL, mean±SD), asthenozoospermic (5.59±3.17) and varicocele (13.48±11.81, ng/mL, mean±SD) group. Furthermore, 25-HC positively correlated with the spermatozoa number (r=0.72, p<0.0001). We detected Cholesterol 25-hydroxylase, the enzyme responsible for 25-HC production, in human spermatozoa at the level of the neck and the post acrosomal area. Upon incubation with spermatozoa, 25-HC induced calcium and cholesterol transients in connection with the acrosomal reaction. Our results support a role for 25-HC in sperm function.

Discussion
In conclusion, to the best of our knowledge, this is the first study providing evidence for the feasibility of detection and quantitation of oxysterols in human semen samples. We found in spermatozoa the presence of cholesterol 25-hydroxylase and its preferential accumulation in the neck and the post acrosomal area. 25-HC was able to induce calcium ions and cholesterol depletion in the acrosomal region, in an extent comparable to that of a capacitating medium. These finding offers the opportunity to identify a new molecular player involved in pre-fertilization processes.
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P53, RELIABLE MARKER OF SPERM FERTILIZATION POTENTIAL? (ECOFOODFERTILITY PROJECT)


**Aim of the study**
Frequently seminal fluids with normal parameters of evaluation, according to the WHO laboratory manual for examination and processing of human semen (2010), show variations on the capacity to fertilize oocytes and also the quality of obtained embryos is very variable. Protein p53 is well known as “The guardian of genome”; it changes its concentration in human spermatozoa DNA in relation to the damage of the latter. It has been suggested that the role of the p53 ancestral gene was to ensure the integrity of the genomic germline and the fidelity of the development process. The aim of this study is to evaluate if different concentrations of p53 protein in human spermatozoa could influence embryo quality and pregnancy rate and possibly representing a potential predictive marker of sperm quality for successful fertilization.

**Materials and methods**
From July 2013 to June 2017 we have examined retrospectively 79 couples with 2-5 years of infertility history. Male partners of examined couples had an average age of 27±7,5 years, sperm concentration of 33,8±6,2 mil/ml, progressive motility of 41,4±8,3 and a typical morphology of 16,5±3,5 according to Kruger’s method. We have divided the couples on the basis of p53 levels: Group A: 0,35-1,65 ng/mil (21 males); Group B: 1,66-3,57 ng/mil (32 males); Group C: 3,58-14,53 ng/mil (26 males). We have evaluated the number of embryos at stage of 6-8 cells, obtained at the third day of embryo development, in these three different groups. In order to evaluate the concentration of p53 protein, we first proceeded to a DNA extraction with forensic method and then to a quantification p53 protein with ELISA-immunoenzymatic assay, expressed in ng/million of spermatozoa.

**Results**
We have observed different percentage of embryo development at stage of 6-8 cells in the third day and different pregnancy rate (PR): Group A: 101 embryos at 6-8 cells/ 147 total number of obtained embryos in this group (68,4%) and PR= 52,38%. Group B: 128/240 (53,5%); PR= 37,50%; Group C: 79/216 (36,1%); PR= 7,69%. These results support the hypothesis that an high concentration of p53 in human sperm DNA is associated to a low percentage of embryos able to reach the stage of 6-8 cells in the third day of development and also to a lower pregnancy rate. So p53 levels can be considered as a predictive value to embryo development and pregnancy rate.

**Discussion**
p53 protein is a sequence-specific transcription factor that responds to a wide variety of stress signals (environmental insults and bad lifestyle) as we are investigating within the ecofoodfertility project. Particularly quantitative research of p53 could be considered as a novel biomarker of sperm quality, able to predict the success of ART techniques, and could open a new road for infertility diagnosis.
MALE INFLAMMATION-BASED PROGNOSTIC SCORES DO NOT IMPACT INTRACYTOPLASMIC SPERM INJECTION OUTCOMES OF OVUM DONATION CYCLES


Aim of the study
Inflammatory pathologies have been shown to generate adverse effects on the sperm quality, accounting for 15% of cases of male infertility. The aim of our study is to investigate the relationship between male inflammation scores, such as the neutrophil-to-lymphocyte ratio (NLR), the monocyte-to-eosinophil ratio (MER), the platelet-to-lymphocyte ratio (PLR), and seminal parameters and to assess their role in predicting success of intracytoplasmic sperm injection (ICSI) outcomes, in a group of couples undergoing an ovum donation program.

Materials and methods
One hundred ten infertile couples presented to ARTs Centre, from January 2016 to December 2017. NLR, MER, PLR, seminal parameters, fertilization rate (FR), cleavage rate (CR), pregnancy rate (PR) were evaluated. Men were divided into two groups: Group A consisted of patients with FR ≤ 70% and Group B comprised those with FR > 70%.

Results
In all, FR 74.5%, CR 90.0% and PR was 41.8%. Group A included 43 patients, Group B 67 men. Group A shown a median NLR of 1.55, PLR of 106.09, MER of 2.33. Group B reported a median NLR of 1.64, PLR of 109.0, MER of 2.76. We found no statistically differences between two groups with respect to NLR, PLR and MER (p=0.90, p=0.70, p=0.96, respectively). The age-adjusted linear regression analysis demonstrated only a relationship between NLR and sperm motility count (r= -0.02; p< 0.05). Using the univariate logistic regression analysis, we found no associations between NRL, PLR, MER and the ICSI outcomes.

Discussion
This study, although it is one of the first to investigate this field, demonstrated that NLR, MER and PLR were not related with FR, CR and PR. We do not recommend the use of these markers to detect abnormal seminal panel and to predict successful ICSI outcomes.
NOVEL METHOD OF HISTOPATHOLOGICAL FINDINGS AFTER TESTICULAR SPERM EXTRACTION IN PATIENTS WITH NON-OBSTRUCTIVE AND OBSTRUCTIVE AZOOSPERMIA


Aim of the study
We defined ‘testicular pool’ as the testicular solid tissue consisting of the residual seminiferous tubules after stretching, centrifugation and extracting the spermatozoa, since during processing of testicular sperm extraction (TESE) samples only the supernatant with free spermatozoa is utilized. The objective of this study is to assess whether testicular pool can be used for histological analysis and if it gives more accurate information that the standard testis biopsy.

Materials and methods
Between January 2017 and January 2018, this single centre, prospective study included 30 azoospermic men, underwent a conventional bilateral TESE. Six samples were excised from each testicle and transferred to embryologist. One additional biopsy was randomly taken from each testis for histology. After processing, testicular pool was also sent for histology. The histology showed: Normal Spermatogenesis (NS), Hypospermatogenesis (HYPO); Maturation Arrest (MA), Sertoli-Cell-Only-Syndrome (SCOS), tubular atrophy (TA).

Results
20/30 patients (66.6%) presented non-obstructive azoospermia (NOA), 10/30 (33.3%) obstructive azoospermia (OA). Mean male age was 41.5 years, female age 37.3 years, male BMI 25.26. All OA had undergone a previous unsuccessful testicular fine needle aspiration. Successful sperm retrieval (SSR) was 93.3%. Mean sperm concentration was 0.13 x 106/ml; sperm motility 0.67%; straws cryopreserved 5.86. Histology of testicular biopsy revealed NS in 6/30 (20%), HYPO and TA in 14/30 (46.6%), MA in 4/30 (13.3%), SCOS in 6/30 (20%). In 2/30 (6.6%) with MA and in 6/30 (20%) with SCOS, the embryologist found SSR with cryopreservation. In 22/30 (73.3%), testicular pool confirmed the histological pattern depicted by the standard testicular biopsy. In 8/30 cases (26.6%), in which a conflict between histology of single biopsy and SR was found, testicular pool confirmed the embryological data about SR. No case of GCNIS described.

Discussion
Testicular pool proved to be easily analysable, practical, manageable and more accurate in prediction of sperm retrieval, when compared to standard testicular biopsy.
MICROSURGICAL TREATMENT OF OBSTRUCTIVE AZOOSPERMIA: YET CURRENT IN THE PMA ERA?
RESULTS OF A MULTICENTER STUDY


Aim of the study
In male infertility, the current challenge is to properly reconcile new and old techniques taking into account cost-benefit and scientific evidence for both. The aim of our work was to evaluate if microsurgical reconstruction of the seminal pathway in patients with proximal obstruction can still be considered an effective treatment for infertile men suffering from obstructive azoospermia in the light of new medically assisted procreation techniques.

Materials and methods
From 1995 to 2016, at the Urological Clinic of the University of Trieste and the University College London Hospital (UCLH), 242 patients with obstructive azoospermia underwent microsurgical treatment of recanalization of the seminal pathways. Among these patients, 161 patients underwent Vasoepididimostomy (EDV), 72 at vasovasostomy (VV) and 9 at VV + EDV. The average age was 41 (+/- 7.9). Patients were subdivided according to the type of microsurgical reconstruction performed. Patients previously undergoing unsuccessful attempts at microsurgical reconstruction, patients with infertile or poorly motivated female partners to have a child and patients undergoing recanalization after retention pain vasectomy were excluded from the study. The primary objective of the study was to evaluate the rate of patency of the seminal pathways and the pregnancy rate.

Results
In patients undergoing EDV and VV, the success rate in terms of patency of the anastomosis was 75% and 42%, respectively, while the pregnancy rate of 55% and 13%. The patency of the cumulative anastomosis was 48% (109/185) and the general pregnancy rate of 19% (30/161). In the 92 patients who underwent "vasectomy reversal" the mean time interval between vasectomy and microsurgical reconstruction (IT) was 12.2 years (SD: 12.2 ± 6.41; 1 - 27). In this category of patients the results were inversely proportional to the average time spent by vasectomy.

Discussion
According to the literature, our results confirm that microsurgical reconstruction of the seminal pathways remains a valid therapeutic option with an excellent cost / benefit ratio in patients with obstructive azoospermia. The best results are in previously vasectomized patients and are inversely proportional to the time elapsed.
BPH AND MALE FUNCTIONAL UROLOGY

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NOCTURIA IN MALES WITH LUTS: PREVALENCE AND COMPARISON BETWEEN INTERNATIONAL PROSTATE SYMPTOM SCORE (IPSS) AND FREQUENCY-VOLUME CHARTS. AN OBSERVATIONAL, PROSPECTIVE DOUBLE-CENTRE STUDY


Aim of the study
Nocturia is a common complaint with a huge impact on quality of life (QoL) that causes urologic consultation. At present, frequency volume chart (FVC) is an optimal tool for the evaluation of nocturia, but it is related to patient compliance and burden. The International Prostate Symptom Score (IPSS) is a widely used questionnaire in the outpatient evaluation and quantification of lower urinary tract symptoms (LUTS). Aim of the study was to evaluate the prevalence of nocturia in men complaining LUTS and the role of IPSS in men with nocturia.

Materials and methods
An observational, prospective, double-centre study was performed, recruiting from 09/2016 to 11/2017 461 consecutive male patients with LUTS. The following data were recorded: demographic characteristics, urological history, self-administered IPSS. They were requested to complete a 3-days FVC, indicating bedtime and waking time. The mean number of nightly voids was correlated to: IPSS nocturia score (domain 7), total IPSS score (domains 1-7), IPSS QoL score (domain 8). Statistical analysis was performed using T student, Mann-Whitney test, Bravais-Pearson correlation test (BPct).

Results
162/461 patients (35%) completed both IPSS and 3-days FVC (mean age 70,95±8.04 years). Prevalence of reported nocturia was 86,42%, with a mean number of nocturnal voiding of 1.36±0,98 per night. Fig1 shows distribution of mean episodes of nocturnal voiding per night. The difference in mean episodes of nocturia between IPSS and 3-days FVC is documented in Fig2 (absolute values) and in Tab1 (according to patients age). Tab2 shows the comparison of median IPSS 7, 8 and IPSS total score according to mean number of nocturia episodes on the 3-days FVC. Considering a threshold of 70 years of age, no significant difference was found in episodes of nocturnal voiding between IPSS and mean number of nocturnal voiding at 3-days FVC according to patients age (Tab3). Median IPSS 7 and total IPSS score were higher when the mean number of night voids was >1 (p<0.001). IPSS 8 did not reach any statistical difference (p>0.05). BPct showed a moderate positive correlation (+0.42) between the mean number of nightly voids on the 3-days FVC and IPSS 7.

Discussion
This study showed a high prevalence of nocturia (86,4%) among patients complaining LUTS. Most patients (62,34%) reported a discrepancy between IPSS nocturia score and mean nightly voids in the 3-days FVC, in particular the youngest. The difference was high (>2) in the 28% of the cohort. According with previous data, overestimation of the nocturia episodes in the IPSS was more common than underestimation. Poor correlation between IPSS domain of QoL and nightly voids may suggest that also other factors are correlated to the bother and severity of LUTS. Age did not affect the difference between IPSS and mean number of nocturnal voiding. Therefore, for the evaluation of males with LUTS and nocturia, FVC remains the most important and reliable tool, while IPSS remains, according to our data, almost inaccurate.
NOCTURNAL POLYURIA IN MALES WITH LUTS: PREVALENCE AND ROLE OF THE INTERNATIONAL PROSTATE SYMPTOM SCORE (IPSS) AND UROFLOWMETRY IN THE OUTPATIENT EVALUATION. AN OBSERVATIONAL, PROSPECTIVE DOUBLE-CENTERED STUDY


Aim of the study
Nocturnal Polyuria (NP) is common in males with nocturia and/or lower urinary tract symptoms (LUTS). Nowadays frequency volume chart (FVC) is the best tool for the assessment of NP in the outpatient setting. Aim of the study was to evaluate the prevalence of NP, as well as the relation between NP, International Prostate Symptom Score (IPSS) and uroflowmetry (UF) data in males with LUTS.

Materials and methods
From September 2016 to November 2017, a consecutive series of 461 patients with LUTS were enrolled into a prospective study involving two Urological Departments. For each patient were collected the following data: detailed medical history, UF, sonographic assessment of Post Void Residual urine volume (PVR), a self-administered IPSS and a 3 days-FVC, indicating “bedtime” and “waking time”. Based on 3 days-FVC, frequency (24 hours, day-time, night-time), total voided volume (24 hours, day-time, night-time), and Nocturnal Polyuria index (NPi) were assessed. NP was defined as a NPi > 33% [3]. Severe NP was defined as NPi > 50%. Analyses were performed considering: (i) total IPSS score; (ii) IPSS frequency score (domain 2); (iii) IPSS nocturia score (domain 7); (iv) IPSS bother score (domain 8); (v) peak flow (Qmax) at the UF; (vi) PVR measured after UF. For the statistical analysis we used Kruskal-Wallis test.

Results
162 patients completed both IPSS and 3-days FVC (mean age 70.95 ± 8.04 years). Table 1 shows the prevalence of nocturnal polyuria in different age groups: 89 (54.9%) patients had a NPi>33%, 16 (9.88%) of them had NPi>50%, based on the 3-days FVC. Average NPi was 34.40% ± 11.20. Prevalence was higher among young patients (64.71% in patients with an age less than 65 years). Table 2 shows median IPSS score in each domain considered, Qmax and PVR, stratified according to NPi. Median IPSS domain 7 and total IPSS scores showed statistical difference in the three groups (p 0.001 and < 0.01 respectively). No significant difference was found analyzing median Qmax and PVR. Our data showed a high NP prevalence (> 50%) among males complaining LUTS. In only a minor part of the patients NP was severe (<10%). NP influenced outcomes of median IPSS domain 7 and total IPSS score but not findings of IPSS domain related to quality of life and frequency. UF data (Qmax and PVR) did not change according to NPi. Therefore, NP did not impact the micturition and the bladder emptying.

Discussion
NP was extremely common among males with LUTS. IPSS questionnaire added few information about NP and his role in the specific assessment of NP in an outpatient setting remained uncertain. IPSS questionnaire allowed to assess nocturia episodes (Domain 7) but did not detect NP. Only the use of 3-days FVC may lead to a correct diagnosis. NP did not affect outcomes of UF and PVR.

Aim of the study
Recently, a possible link between metabolic syndrome, smoking and nocturia has been proposed. Aim of our study was to evaluate the relationship between smoking, metabolic syndrome and persistence of nocturia in patients with lower urinary tract symptoms and benign prostatic enlargement (LUTS-BPE) undergoing transurethral resection of prostate (TURP).

Materials and methods
From 2015 onward, a consecutive series of patients with LUTS-BPE undergoing transurethral resection of prostate were prospectively enrolled. Medical history, physical examination and smoking status were recorded. Patients were evaluated using the International Prostate Symptom Score (IPSS), uroflowmetry and transrectal ultrasound prostate volume assessment (TRUS). Blood samples were collected for prostate-specific antigen (PSA) levels, fasting glucose levels, triglyceride levels and high-density lipoprotein levels. Metabolic syndrome (MetS) was defined according to Adult Treatment Panel III (ATP III). Moderate/severe persistent nocturia after TURP was defined as nocturia episodes ≥ 2. Binary logistic regression analysis were used to evaluate the risk of persisting nocturia.

Results
102 patients were enrolled with a median age of 70 years (IQR 65/73), a median BMI of 25 kg/m2 (IQR: 24/28) and a median PSA of 4 ng/ml (IQR 3/8). Preoperatively, median Qmax was 8 (6/10) ml/s, median IPSS was 17 (IQR 13/23) and median TRUS was 59 ml (IQR: 49/82). After TURP moderate/severe nocturia was reported in 43/102 (42%) of the patients. Overall 40/102 (39%) patients presented the MetS and out of them 23/40 (58%) presented a moderate/severe persistent nocturia after TURP (p=0.001). Overall 62/102 (61%) patients were smokers and out of them 32/62 (52%) presented moderate/severe persistent nocturia after TURP (p=0.034). Patients with moderate/severe persistent nocturia after TURP were older (p=0.043) and with larger prostates (p=0.048). On multivariate analysis, prostate volume, metabolic syndrome and smoking were independent risk factors for moderate/severe persistent nocturia after TURP but not predictors of persistent LUTS (Table1).

Discussion
In our single center study MetS and smoking tripled the risk of moderate/severe persistent nocturia after TURP in patients with LUTS-BPE. Although these results should be confirmed, and the pathophysiology is yet to be completely understood, counselling smokers or patients with MetS about the risk of post-operative persistent nocturia is warranted according to our results.
HIGH PREVALENCE OF NOCICEPTIVE PAIN IN PATIENTS WITH PRIMARY BLADDER NECK OBSTRUCTION

T. Camerota, M. Leoni (Pavia)

Aim of the study
Primary bladder neck obstruction (PBNO) is an under-investigated urological condition characterized by incomplete relaxation or over activity of urethral sphincters. The etiopathogenetic mechanisms of this pathology are multifactorial and not adequately investigated. A multidisciplinary investigation and pain evaluation of PBNO patients could increase the comprehension of this disorder including potentially involved extra-urological factors. The aim of this study was to verify if chronic pain can be associated with PBNO symptoms.

Materials and methods
Consecutive male patients affected by PBNO were considered in the present study. A complete clinical pain evaluation and provocative tests were performed to determine a pain diagnosis. Pain assessment was mainly focused on pelvic area and lumbar spine. Moreover, potential sources of pain due to nerve entrapments were assessed both clinically and by ultrasound examination. After a clinical examination, only a suspected diagnosis was made and anesthetic blocks under ultrasound guidance were used as subsequent steps for a correct diagnosis of the involved tissue. The anesthetic block test was considered positive if a >50% pain reduction was obtained. Any confounding factor as neurological disorders, diabetes, previous lower limbs and low back surgery were considered as exclusion criteria. A clinical postural assessment was integrated at the end of the pain examination to evaluate if incorrect posture induced stress on muscles, bones, and joints.

Results
72 male patients with PBNO were evaluated. Pelvic pain was reported in 76% of the enrolled subjects. Pain onset was extremely variable (12.64±10.87 months, mean±SD). Regional pain distribution involved many different area: lumbar muscles or vertebrae, sacroiliac joint, hip, coccyx, pubic bones and pelvic muscles. Myofascial pain or articular pain was prevalent. The most common type of pain was nociceptive (85%), while neuropathic pain with the involvement of iliohyoigastric-ilioinguinal, genitofemoral or pudendal nerve was found only in 5%. A postural impairment (increased lumbar lordosis, abnormal hip elevation, abnormal foot muscle mechanics without morphological abnormalities, sacrum rotation or altered postural control in response to external stimuli) was found in more than 60%.

Discussion
Pain represents a relevant component of the initial clinical presentation of PBNO patients and has a high prevalence in these patients. A complete knowledge of PBNO should include an accurate pain evaluation with the treatment of the underlying disease in order to better manage these complex patients.
Aim of the study
Recently the impact of diet on prostate cancer has been explored, however the role of diet in prostate inflammation has been poorly studied. Aim of our study is to investigate whether there was an association between diet and prostatic inflammation in South Italy.

Materials and methods
A consecutive series of patients with high PSA and/or abnormal DRE were prospectively enrolled in a single center in southern Italy. Dietary data were collected by using two food frequency questionnaires. More specifically we looked at daily intake of: carbohydrates, proteins, lipids, cholesterol and phenolic acids (Present in fruits, vegetables, coffee, tea, and cocoa). Inflammation was assessed histologically and graded according to the Irani score. Association between dietary intake and inflammation was calculated through logistic regression analysis adjusted for age and PSA.

Results
Overall 95 patients with a median age of 68 years (IQR: 63/74) were enrolled. Prostate inflammation was found in 25/95 (26%) patients. Median energy daily intake was 2100 kcal (1829/2577). Median carbohydrate intake was 294g (246/247), median protein intake was 100g (82/125), median lipid intake was 59g (49/78), median cholesterol consumption was 193 mg (157/262) and median phenolic acid consumption was 271 µg (206/471). Patients with moderate/severe prostate inflammation presented lower phenolic acid intake (257 µg vs 300 µg daily, p= 0.120) when compared to patients with low/no inflammation. Patients with prostate inflammation did not differ in terms of carbohydrates, proteins and lipids intake when compared to patients with no inflammation. The multivariate logistic regression showed that patients with lower intake of Phenolic Acid (0.85 95%CI 0.72-0.99, p= 0.045) were at increased risk of prostatic inflammation. A decrease of 100 µg in Phenolic Acid daily intake increases the risk of inflammation by 15%.

Discussion
In our single center cohort study low daily intake of Phenolic acids is associated with an increased risk of inflammation on prostate biopsy. Further larger studies should confirm our results.
DETRUSOR WALL THICKNESS DOES NOT PREDICT A SUCCESSFUL TRIAL WITHOUT CATHETER AFTER ACUTE URINARY RETENTION IN PATIENTS ON MEDICAL TREATMENT FOR BENIGN PROSTATIC HYPERPLASIA


Aim of the study
Alpha-blockers are considered the standard treatment for the management of acute urinary retention (AUR) in patients with benign prostatic hyperplasia (BPH). However, no data are available on the predictors of a successful trial without catheter (TWOC) in patients on treatment with alpha blocker +/- 5 alpha reductase inhibitors (5ARI). Aim of our study to investigate predictors of a successful trial without catheter in these patients.

Materials and methods
A consecutive series of patients, on treatment with alpha blockers (AB) +/- 5 ARI, experiencing AUR were prospectively. Patients were evaluated with clinical history, previous medical treatment, uroflowmetry and PSA were recorded. Patients underwent urinary tract ultrasound to evaluate: hydronephrosis, prostate volume, detrusor wall thickness (DWT), intra-vesical prostatic protrusion (IPP). Concomitant urinary tract infections were evaluated and eventually treated. A TWOC was performed seven days after AUR. A post TWOC uroflowmetry with post void residual urine evaluation was performed. Mann-Whitney, chi square and binary logistic regression analysis were performed. Data are presented as median (Inter-quartile Range).

Results
Overall 126 patients were enrolled with a median age of 72 (65/78) years and a median BMI of 25 (23/26) kg/m2. Median prostate volume was 74 (56/102) ml, median DWT was 5 mm (4.6/10) and median IPP was 5 mm (3.5/12). Hydronephrosis, was found in 24/126 (19%) patients. Overall 89/126 (71%) patients were on AB and 37/126 (29%) were on combination treatment. Overall 68/126 (54%) presented a successful TWOC. Patients with a successful TWOC presented smaller prostates (p=0.001), lower IPSS scores (p=0.001) and lower IPP measures (p=0.001), however no differences in terms of DWT measures were found. On multivariate analysis IPSS and IPP<10mm were predictors of a successful TWOC (Table).

Discussion
Patients with acute urinary retention on treatment with alpha blockers +/- 5 alpha reductase inhibitors still present a 54% probability of a successful trial without catheter. Low IPSS scores and IPP<10mm are predictors of success while DWT couldn't reach the level of an independent predictor. Further studies should confirm our results.
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A COMPARISON OF SCHAEFER, INTERNATIONAL CONTINENCE SOCIETY AND BLADDER CONTRACTILITY INDEX NOMOGRAMS IN THE DIAGNOSIS OF OBSTRUCTION AND DETRUSOR UNDERACTIVITY IN MEN WITH LOWER URINARY TRACT SYMPTOMS


Aim of the study
Aim of the study was to evaluate the correspondence between Schaefer nomograms (Sn), and both International Continence Society nomogram (ICSn) and Bladder Contractility Index (BCI).

Materials and methods
From January 2012 to October 2017, we collected data on 458 men underwent Flow-Pressure study for lower urinary tract symptoms. All urodynamics (UD) were performed according to Good Urodynamic Practice1 and analyzed with Sn, ICSn and BCI. Bladder outlet obstruction (BOO) was defined as Sn obstruction classes ranging from III to VI, and ICSn score <40. Detrusor underactivity (DU) was considered as Sn contractility classes Weak (W)/Very Weak (VW), and BCI score <100.

Results
Among unobstructed patients the concordance between the 2 nomograms was 97.4%. There was a complete concordance of un-obstruction only in Sn class 0, while in class I the concordance reached 70%. Among patients with equivocal diagnosis at ICSn, the Sn class II was the most usual (67.2%). Among patients clearly obstructed at ICSn, there was a complete concordance between the 2 nomograms. Moreover, 74.4% of the patients were in Sn classes III-IV, and 22.4% in classes V-VI. Table 1 resumes data regarding BOO. We found a high correspondence in patients with normal detrusor contractility between the 2 nomograms (96.7%). In case of DU at BCI we found that 96.2% of males were in classes W/VW of Sn. Among males with normal detrusor contractility at Sn, 11% had a diagnosis of DU at BCI. Table 2 reports data on DU. We found a high concordance in patients with normal detrusor contractility between Schaefer and ICS nomograms. Only Sn class 0 was completely associated to diagnosis of un-obstruction at ICSn. Equivocal diagnosis at ICSn corresponded in most of cases at Sn class II. When ICSn documented obstruction, Sn reached a complete correspondence. Correspondence between Sn and BCI was high (96%), but a relevant number of patients with Sn normal contractility class had a diagnosis of DU at BCI (11%).

Discussion
Data showed a high correspondence between Sn and ICSn, and most of the equivocal diagnosis at ICSn corresponded to Sn low obstruction (Class II). Correspondence between Sn and BCI was high but surprisingly with a misleading diagnosis in 1/10 patient. This study evidences how in the clinical practice to achieve a more precise diagnosis of bladder underactivity and/or bladder outlet obstruction it is useful to use all the nomograms.
Aim of the study
Although the surgical treatment for bladder prostatic obstruction (BPO) has proved to be effective in decreasing cervico-urethral obstruction and in reducing the perception of urinary symptoms, some patients refer persistence of symptoms despite clinical parameters’ improvement in the obstruction. Currently, near-infrared-spectroscopy (NIRS) evaluation represents a useful tool in the measure of detrusor oxygenation during the phases of muscular contraction. The aim of the study is to evaluate the NIRS parameters in patients after surgery for BPO.

Materials and methods
86 patients, submitted from January 2015 to December 2016 to surgical treatment for BPO (78 TURP, 8 trans-bladder adenomectomies) were evaluated. Patients were assessed one year after surgery with IPSS, PSA, uroflowmetry, post-urinalysis evaluation and urine test. Eleven patients with persistent symptoms were identified considering a cut off of 10 points in IPSS reduction. These patients were submitted to cystoscopy in order to exclude bladder tumors (1) and to evaluate possible irregularities of the prostatic urethra (1). 9 patients identified represent the group A, and a control group B was selected among the treated patients with LUTS’s improvement. The collection was obtained by guaranteeing, in the same numerical sample, equivalent characteristics in the two groups in patient age, prostate size pre surgery and flowmetric parameters after surgery. The two groups were then evaluated using NIRS.

Results
The difference in IPSS is 7 ± 1.1 points in Group A and 15 ± 1.8 points in Group B. Group A showed a NIRS pattern (downward) suggestive of a significant reduction in oxygenation which remained the same even at a linear regression analysis. Data were evaluated with SPSS and the statistical significance was considered with p<0,05.

Discussion
BPO represents an evolutive pathology. The phase of decompensation of the urodynamic equilibrium is probably linked to ischemia and related to the increased oxidative stress on the detrusor. NIRS has proven to be an effective system for assessing tissue oxygenation status. Evaluation of the data obtained by NIRS demonstrate, in patients with a persistence of LUTS after surgery for BPO, a lower detrusor oxygenation pattern compared to patients in whom surgery proves effective in symptoms’ resolving.
URODYNAMIC STUDIES IN PATIENTS UNDERGONE SEX REASSIGNMENT SURGERY: PRE AND POSTOPERATIVE ASSESSMENT IN MALE TO FEMALE PATIENTS


Aim of the study
Transgender patients with Male to Female (MtF) Gender Dysphoria (GD) require multidisciplinary assessment and management. The Feminizing Hormone Therapy (FHT) and Sex Reassignment Surgery (SRS) are treatment of MtF patients. The FHT includes the use of Progynova® and Androcur® for at least 12 continuous months before SRS. The SRS consists in vaginoplasty and is composed of orchiectomy, penile disassembly, creation of a neovaginal cavity, repositioning of urethral meatus and neoclitorolabioplasty. The creation of the neovaginal cavity partially involves the mechanism of urinary continence because it demolishes the posterior part of the trigonal portion of the striated (external) urinary sphincter. The aim of our study is to assess prospectively the effects of FHT and SRS on lower urinary tract (LUT) function.

Materials and methods
We performed a prospective study of 20 patients who were going to undergo SRS between November 2011 and December 2017 with a minimum follow-up of 9 months. The 20 patients were evaluated preoperative the day before SRS. Only 4 of them were also evaluated postoperative at least 3 months after SRS because the other 16 refuse the follow-up. They considered ended their therapeutic path after SRS. All the patients interrupted Progynova® 30 days before SRS and started it again 15 days after SRS. Androcur® was definitively interrupted after SRS. The pre and postoperative assessment consists of history and physical examination, collection of pharmacological anamnesis and execution of urodynamical studies (UDS). The UDS are composed of post void residual, uroflowmetry, filling cystometry, urethral pressure profilometry.

Results
The filling cystometry showed that the 30% of patients (6/20) presented detrusor overactivity in the preoperative period and a decrease of compliance. These 6 patients reported overactive bladder symptoms without urinary incontinence. The urethral pressure profilometry showed a decrease in the mean Maximum Urethral Closure Pressure (MUCP) from 124 cmH2O to 54 cmH2O that was statistically significant (p=0.03) (paired t test).

Discussion
We think Progynova® promotes the remodelling of urinary bladder wall increasing the collagen to detrusor smooth muscle ratio which may lead to an increase in overactive bladder type symptoms, by reducing bladder compliance (Hanna-Mitchell AT et al. 2016). It might be interesting to do a biopsy of the urinary bladder wall, to confirm the remodelling due to the increase of the collagen to detrusor smooth muscle ratio promoted by FHT. We can speculate the statistically significant decrease in the mean MUCP is correlated with SRS. The creation of the neovaginal cavity partially involves the mechanism of urinary continence because it demolishes the posterior part of the trigonal portion of the striated urinary sphincter. During the surgery, can be clearly observed the posterior portion of the membranous urethra and the bulbar urethra completely exposed to the surrounding muscles.
A PILOT RANDOMIZED TRIAL OF PREOPERATIVE PELVIC FLOOR MUSCLE EXERCISE VERSUS USUAL CARE TO IMPROVE CONTINENCE AND HEALTH RELATED QUALITY OF LIFE AFTER ROBOTIC-ASSISTED RADICAL PROSTATECTOMY (RARP): PRELIMINARY DISAPPOINTED RESULTS

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Aim of the study

Pelvic floor muscle training (PFMT) may represent a valid treatment to improve postoperative urinary continence as well as sexual function. The aim of this study was to carry out a randomised controlled trial in order to determine a causal relationship between PFMT and postoperative functional outcomes in patients undergoing robotic-assisted radical prostatectomy (RARP).

Materials and methods

It was a double-arm, single-centre, pilot randomized control trial; men undergoing RARP with no contraindications to PFMT were consecutively recruited and randomized to a pre- and post-operative PFMT program or usual care (UC). The PFMT prescription began with instructions on how to engage the pelvic floor delivered by the research coordinator trained in PFMT. UC participants did not receive any formal training in PFMT neither pre- nor postoperatively. Intervention efficacy was evaluated at baseline (4–8 weeks preoperatively) and postoperatively at 4, 12, and 26 weeks. Urinary incontinence (UI) was assessed using the 24-hour pad test and the ICIQ-UI SF. Health related quality of life (HR-QoL) was measured using the Short-Form 36 (SF-36); 7-item International Prostate Symptom Score (IPSS-7) was used to assess urological symptoms and quality of life (IPSS-QoL). The 5-item International Index of Erectile Function (IIEF) scale was used to assess erectile function.

Results

From Mar2017 to Sep2017 36 patients were consecutively enrolled and randomized; 22 entered PFMT arm and 14 the UC arm. Preoperatively all patients were continent; 4 weeks after RARP, 86.36% patients in PFMT arm and 85.72 in the UC had UI (p=NS). After 12 weeks 13.64% in the PFMT arm and 14.29% in the UC had UI (p=NS) having pad-test values, ICIQ-UI SF and IPSS scores comparable. Compared to baseline, 4 weeks after surgery, a worsening was observed in the following aspects: IPSS (5.29 vs 9.71, p=0.004), IPSS-QoL (1.29 vs 3.76, p=0.000), SF 36 general health (GH) (93.42 vs 76.05, p=0.000), IIEF-5 (19.85 vs 3.73, p=0.000), role physical functioning (RP) (92.89 vs 72.21, p=0.023) and role emotional functioning (RE) (92.63 vs 75.89, p=0.044). At 12 weeks, we observed an improvement in all aspects analysed although maintaining significant worse scores compared to the baseline for GH (82.29, p=0.000) and erectile function according to IIEF-5 (507, p=0.000). In contrast we observed better body pain scores compared to baseline (70.53) both at 4 (86.37, p=0.01) and 12 weeks (89.86, p=0.03) postoperatively. Four weeks after surgery, Patients in the PFMT arm showed significantly better scores compared to UC patients in the following aspects: physical functioning (90.77 vs 74.63, p=0.04), RP (75.00 vs 55.88, p=0.05) and RE (86.46 vs 53.25, p=0.05).

Discussion

From our preliminary results an early formal PFMT could be able to improve some aspects of patients’ HR-QoL only 4 weeks after RARP, without impact on continence recovery. We need a larger cohort with a suitable number of patients in order to corroborate or confute these preliminary findings.
EFFICACY OF REHABILITATIVE TREATMENTS FOR PRIMARY BLADDER NECK OBSTRUCTION

T. Camerota, M. Leoni (Pavia)

Aim of the study
Primary bladder neck obstruction (PBNO) is a benign under-investigated condition defined as an inappropriate or inadequate relaxation of the bladder neck during micturition. Unfortunately, the exact etiopathogenesis still remains unknown, and no definitive treatment is available. The aim of this study was to verify if rehabilitative treatments focused on posture and pain treatment were also effective to treat chronic voiding symptoms.

Materials and methods
Consecutive patients diagnosed with PBNO by the same urologist at our Institution were enrolled in the present study. Urinary infections, acute bacterial prostatitis, urinary stones, benign prostatic obstruction, and cicatricial urethral strictures were excluded. After PBNO was diagnosed, treatments consisted in behavioral measures, intermittent catheterization (in case of high post-void residual urine), pelvic floor rehabilitation, trigger point injection therapy, and plantar in case of lower limbs dysmetria. No traditional urological treatments (e.g.: alpha blockers, biofeedback, transurethral bladder neck incision, etc.) were proposed to any of the enrolled subjects.

Results
18 patients with PBNO were evaluated. Pelvic pain was reported in a relevant percentage (72%) of the enrolled subjects. Postural impairments were identified in all the subject at imaging examinations (full spine X-ray or pelvic-perineal MRI). Pre-treatment uroflowmetries showed a variable degree of pathologic characteristics (e.g. reduced mean peak and average flow; significant post-void residual urine; pathologic curves). Mean post-treatment volume emptied per single void was 285 mL, mean peak flow rate was 21.89 ± 9.20 mL/s, mean average flow rate was 9.67 ± 3.97 mL/s, mean post-void residual urine was 27.67 ± 62.45 mL. Moreover, there was a significant improvement in morphology of curves: 77% (n. 14/18) presented a normal uroflowmetric pattern, while 17% (n. 3/18) still had plateau flow, 11% (n. 2/18) urinary straining, and only one subject (5%) intermittent stream. When a comparison among pre-treatment and post-treatment uroflowmetries was carried out in each single patient, statistically significant differences were noticed in post-void residual urine (p=0.04) [Fig. 1A], in peak flow rate and in average flow rate (p=0.0028) [Fig. 1B].

Discussion
The absence of a definitive and effective treatment strategy for PBNO reflects the poor knowledge of its etiology. The applied rehabilitative strategy was effective in a significant percentage of the enrolled subjects. An after-treatment improvement was observed both at bladder diaries and uroflowmetries. The results provided with our research sustain the hypothesis that posture may play a role in PBNO. Therefore, we suggest that a comprehensive urologic, postural and pain assessment evaluations with deep pelvic floor muscle examination should be carried out when examining male patients with chronic voiding symptoms.
Functional Outcome of the Adjustable Transobturator Male System (ATOMS): How Device Filling Modify Incontinence and Voiding?

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Aim of the study
We present our experience with the adjustable transobturator male system (A.M.I. ATOMS System) to determine the effects of the device filling on voiding and incontinence.

Materials and methods
15 men with moderate stress urinary incontinence were treated with the ATOMS device between January 2013 and March 2018. The adjustable transobturator male system (A.M.I. ATOMS System) is a sub-urethral sling anchored with a transobturator tape to the ischio-pubic branches and with an inflatable padding placed under the bulbar urethra linked to a scrotal port. Continence (daily pad test/number of pads used) and uroflowmetry parameters (maximum urinary flow rate, average urinary flow rate, voiding volume, residual volume) were evaluated during follow up and eventual device filling. Uroflow outcomes were compared with Pearson's correlation index. Overall success rate (patient's satisfaction), dry rate and device complications were recorded.

Results
Mean follow up rate was 19.5 months (range 2 to 60). Overall success rate was 92% and the dry rate was 84%. Mean number of adjustments during follow up was 4.1 (range 0 to 7) (Fig. 1). 1 patient had the device to be early emptied in order to allow him to pass urine remaining completely continent. Scrotal port extrusion was seen after 8 months in the same patient who then underwent only port surgical removal, leaving the device empty in situ and maintaining continence. Using the adjustable suburethral sling ATOMS we were able to correlate the degree of the device filling with the effects on incontinence measured by the 24h pad test (Fig.1) and voiding using uroflow parameters (Fig.2). Very weak linear relationship was observed between device filling and reduction of maximum flow rate and average flow rate: respectively $r = 0.15$, $r = 0.13$. Again very weak linear relationship was noted between device filling and increase of post void residual volume: $R = -0.14$. Actually the residue was always absent except in 4 patients where it was of small amount and did not increase during device filling. A lower amount of filling was needed for an incontinence rate below 350 g/day (Fig.1).

Discussion
The ATOMS system offers good results in moderate stress urinary incontinence. Despite the small number of patients, this functional study demonstrates that sub-urethral cushion does not decrease urinary flow when is filled. The same is true regarding post void residual volume. As shown in Fig. 1 we consider ATOMS a good option for moderate incontinence preferably up to an amount of 400 g/day. The main advantage compared to other suburethral slings is the easy adjustability.
NOVEL TUBE POSITIONING TECHNIQUE FOR AMS 800™ ARTIFICIAL URINARY SPHINCTER PLACEMENT

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Aim of the study
We describe a novel method of tube placement, in AMS-800 artificial urinary sphincter positioning, to avoid the risk of damage of the tubing system in case of suprapubic tube, or laparotomy is required.

Materials and methods
We prospectively evaluated 34 consecutive male patients who underwent AMS-800 placing. In our modified tubing-positioning technique the lower limit of the dissection of abdominal fascia was the abdominal face of the pubic symphysis and the pectineal ligament. The lateral limit was the insertion of the aponeurosis at the external abdominal oblique muscle. The abdominal fascia was incised more laterally to position the balloon as far as possible from the midline. Before completing the connections, the tubing was fixed at the most lateral site of the aponeurosis with 3 stitches to stabilize tubing. Figure 1 illustrates the dissection area, ideal tubing allocation, and spots where to fix by sutures. Figure 2 shows tube placement documented by 3D CT scanning and abdominal X-ray.

Results
There was no mechanical failure caused by any malfunctioning component. No patient had complications attributed to the new tubing path. The AMS-800™ positioning technique has been described in detail. However, the usual tubing path has been the shortest path from the tubing entry point in the retropubic abdominal area to the reservoir. As represented in Figure 3, this path ideally corresponds to the hypotenuse of a hypothetical right triangle, wherein it is the shorter and more medial path between the two acute angles (the tubing entry point and the reservoir). However, owing to its medial position, this route is potentially more dangerous in cases wherein ST placement is necessary. The tubing path described in this paper corresponds to the line of the two cathetus of the hypothetical right triangle. The shorter cathetus is in the retropubic space, covered and protected by the pubic bone. The longer cathetus is far from the possible zone of surgical incision or ST trocar passage because of its lateral position. For these reasons, this modified tubing positioning helps guarantee a lower risk of damaged tubing in case of ST placement or laparotomy. In our practice, we preferred to use non-absorbable material in the three sutures used to stabilize tubing in the curve points. However, it is conceivable that absorbable stitches might have similar results because of bonding of the dissected subcutaneous fat tissues. Sutures must not be tightened but air knots are suggested to ensure suspension without constricting the tubing.

Discussion
Our novel tube positioning technique is quick, easy to perform, and offers the advantage of allocating tubing in a more safe position in the case a suprapubic tube is required.
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IMPLANT OF ATOMS® SYSTEM FOR THE TREATMENT OF POSTOPERATIVE MALE STRESS URINARY INCONTINENCE: AN ITALIAN MULTICENTRIC STUDY

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Aim of the study
The aim of this study is to evaluate efficacy and safety of the ATOMS system for the treatment of postoperative stress urinary incontinence (SUI) in a multicentric setting.

Materials and methods
We included male patients referring to 6 Italian Urological Institutions for postoperative SUI and treated with ATOMS system from June 2013 to November 2017. Patients received anamnesis, 24h pad test and pad count, physical examination, urodynamic evaluation, ICIQ-UI SF questionnaire. We excluded patients with low bladder capacity and compliance, uncontrolled detrusor overactivity.

Results
We treated 107 patients, mean age 70.3 years (55.8-83.5). Most patients, 87 (81.3%), underwent open RP, followed by laparoscopic and robotic RP (9.3% and 3.7%), TURP, Holec and prostate adenomectomy (1.9% each). 11 patients (10.3%) had undergone urethrotomy, 8 (7.5%) bladder neck incision, 17 (15.9%) adjuvant radiotherapy. We evaluated incontinence severity with the 24h pad count: 14 (13.1%) suffered of mild incontinence (1-2 pads/day), 55 (51.4%) moderate incontinence (3-4 pads/day), 38 (35.5%) severe incontinence (≥5 pads/day). 37 patients underwent previous incontinence surgery: 32 (29.9%) ProACT, 3 artificial urinary sphincter (in 2 cases both devices), 1 suburethral sling, 3 bulking agents. 61 patients (57%) underwent pelvic floor rehabilitation; 9 (8.4%) patients were taking anticholinergics for OAB, 18 (16.8%) duloxetine, 9 (8.4%) both. Mean follow-up was 18.6 months (0.3-52.2). Mean operative time was 49 minutes (20-145). Mean port refillings were 1.68 (0-9) and mean total filling volume of the cushion was 11.25 (0-28). For the following analysis we excluded 9 patients with a small follow up (<3 months). We had a statistically significant reduction of mean 24h pads count from 4.1 to 0.88 (p<0.05). 47 patients (47.96%) were dry and 78 (79.59%) reached social continence (dry or using one security pad/day); 89 patients (90.82%) had a reduction in pad use >50% and only 9 (9.18%) had a reduction <50%. There was a significant reduction in the ICIQ-UI SF questionnaire (mean value from 15.95 to 7.77, p<0.05). We had complications in 33 patients (30.84%): 10 cases (9.35%) of scrotal and perineal pain and numbness persisting > 4 weeks, 10 cases (9.35%) of scrotal port displacement requiring surgical repositioning, 7 cases (6.54%) of temporary scrotal edema, 6 cases (5.61%) of transient dysuria treated with partial deflate of the device, 2 cases (1.87%) of superficial wound infection treated with antibiotic therapy. We had no cases of prosthesis infection. The device was explanted in 4 cases due to scrotal port erosion.

Discussion
The results of this study evidence that the ATOMS system is an effective treatment for male SUI with social continence rates of 79.59% at a mean follow-up of 18.6 months. We had good results even in radiotreated patients and patients who received previous incontinence surgery.
ARTIFICIAL URINARY SPHINCTER FOR URINARY INCONTINENCE AFTER RADICAL PROSTATECTOMY: TEN YEARS EXPERIENCE OF A SINGLE CENTER


Aim of the study
The positioning of an artificial urinary sphincter (AUS) is currently the “gold standard” treatment for post-prostatectomy urinary incontinence. In this study, we present the results about our ten year experience of AUS positioning in a large cohort of patients.

Materials and methods
Data of male patients treated in our centre from 08/2007 to 05/2017 with the positioning of an AUS AMS™ 800 for urinary incontinence after radical prostatectomy (RP) were considered. Patients underwent a single scrotal surgical approach or a double perineal and scrotal approach. Both types of placement of the cuff (transcorporal vs. proximal bulbar urethra) were performed. Transcorporal cuff placement was performed in patients with urethral atrophy. All the sphincters were deactivated for 6 weeks after surgery. Functional urinary outcomes were assessed with quantity of daily pad used and 24-hour pad-test. Social continence was defined as 0 to 1 pad with urinary leakage. Moreover the patients’ quality of life was assessed using IPSS-QoL questionnaire. Early postoperative complications (< 3 month) were recorded. Any additional surgical procedure on the AUS, including device ex-plant, was recorded.

Results
Eighty patients were treated among ten years; demographic data are reported in Table 1. In 9 (11,3%) patients the cuff was placed transcorporally, whilst in the other (88.8%) was placed in proximal bulbar urethra. Reservoir pressure was 61 to 70 cm/H2O in all patients. Cuff sizes were 4, 4.5, 5, 5.5 and 6 cm in 29 (36,2%), 32 (40%), 10 (12,5%), 5 (6,25%), and 4 (5%) patients respectively. Mean preoperative daily pad use was 4.5 (±2.1) pads and 4 patients used a penile sheath. Median preoperative pad test was 480 (IQR 300-900) g. Median hospital stay was 2 (IQR 2-4) days. Early postoperative complications occurred in 7 patients: 3 patients with transient scrotal pain, 4 patients developed a scrotal hematoma (3 treated with single access, 1 with double access). No wound infection or fever were registered. No surgical revision < 3 month was necessary. After a mean follow-up of 68,6 (+35,6) months, 67/80 patients (83,8%) were social continent, including 4 patients who underwent a device replacement. Median pad test was 15 (0-30) g and median IPSS QoL score was 2 (“Mostly Satisfied”). There was no statistical difference in terms of continence rate between single access and double access and between radiated and non – radiated patients. Nine patients (11,3%) underwent a surgical revision: 5 device explant, and 4 device replacement (two for prosthesis mechanical failure, two for urethral atrophy). All the replacements were done with a transcorporal technique.

Discussion
In our experience, AUS positioning for urinary incontinence after RP seemed to be a safe and effective, with a social continence rate of 83,8% at a long term follow up. Moreover, most of the patients were satisfied after the procedure.
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KIDNEY CANCER: ROBOT-ASSISTED SURGICAL TECHNIQUES

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COMPLICATION RATES AND RENAL FUNCTION AFTER ROBOTIC-ASSISTED PARTIAL NEPHRECTOMY IN ELDERLY VS YOUNG PATIENTS

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Aim of the study
The incidence of renal masses in elderly patients is expected to increase as the general population ages. We aim to test the effect of age defined as elderly vs. young patients (≥ 65 yr vs <65 yr) on complications and renal function after robot-assisted partial nephrectomy (RAPN).

Materials and methods
Medical records of patients who underwent RAPN (2013-2017) were analyzed. All analyses were stratified as elderly vs. young patients (≥ 65 yr vs <65 yr) according to the median age. We relied on univariable and multivariable (ULR and MLR) models to test the effect of age on perioperative complications. Estimated glomerular filtration rate (eGFR) measurement were collected before surgery and after a median follow-up of 17 months after surgery. Since, multiple eGFR measurement from the same patient are not independent, adjustment is necessary. Thus, to evaluate the effect of age on eGFR we relied on multivariable generalized estimating equation linear model (GEELM) testing the interaction between age categories and measurement time. All multivariable models were adjusted for gender, ischemia (clamp vs. clampless), PADUA score (high: ≥ 10; intermediate: 8-9; low: ≤ 7), clinical size and Charlson Comorbidity Index (0 vs. ≥ 1) (CCI).

Results
A total of 162 patients underwent transperitoneal RAPN, of which 82 (50.6 %) were aged ≥ 65 years. No statistically significant differences were found in terms of clinical size (3 vs. 3 cm; p=0.7), PADUA score (p=0.2), and gender (p=0.2). Conversely, elderly patients had more frequently CCI≥ 1 (100 vs. 86.2%; p=0.001) and underwent more frequently to clampless RAPN (46.3 vs. 23.8%; p=0.005). Overall 32 patients (19.8%) experienced complications. Most of them were graded as Clavien-Dindo 1-2 (59.4%) with no statistically significant differences between elderly vs. young (p=0.5). Elderly patients had not higher complication rates in ULR (OR: 1.04; CI: 0.49-2.22; p=0.005) and MLR (OR: 1.09, CI: 0.48-2.51; p=0.8) models. Conversely elderly patients after adjustment for all covariates harbored significantly lower eGFR (coefficient: -33.4; CI: -42.6 to -24.2; p<0.001). Moreover, overall eGFR was lower at follow-up than prior surgery (coefficient: -15.1; CI: -24.9 to -5.31; p=0.002). However, the effect of age was independent from the measurement time (test for interaction: p=0.8) (Fig. 1).

Discussion
Elderly patients do not experience higher complication rates than their younger counterpart. However, elderly patients harbor lower eGFR pre and post-operatively. Thus, in these patients, nephron sparing surgery may be even more important.
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THE CLOCK ROBOTIC NOMOGRAM: PROPOSAL OF A PREDICTIVE TOOL TO ASSESS THE FEASIBILITY OF ROBOT-ASSISTED PARTIAL NEPHRECTOMY WITHOUT ARTERY CLAMPING


Aim of the study
To design a predictive tool (the CLOCK Robotic Nomogram - CRN) to assess when RAPN planned as off-clamp could be finalized without recourse to artery clamping.

Materials and methods
The CLOCK trial (clinicaltrial.gov NCT02287987) is a multicentric prospective trial enrolling patients with low-intermediate complexity tumors (RENAL≤10) to be randomized to on- vs off-clamp RAPN. All the procedures were performed by one expert surgeon per centre. The 115 cases allocated into the off-clamp arm constituted the cohort of the present paper. Some of them required to be shifted to on-clamp RAPN and where compared with those who completed the procedure without artery clamping. The outcome was conversion from off- to on-clamp RAPN. Predictors of outcome were identified by uni- and multi-variable analysis, graphically represented by the CRN. Calibration, internal validation and estimation of clinical benefit were performed.

Results
73 (63.5%) patients concluded the procedure without artery clamping (OFF group), whereas 42 (36.5%) required clamping (ON group). The latter had larger tumor diameter (3.3 vs 2.3 cm, p<0.001) and higher R, E and N RENAL scores (p=0.004, 0.007 and <0.001, respectively). The CRN provided good accuracy (Brier score=0.176, Hosmer-Lemeshow test p=0.632) and predictive ability (Area Under the Curve 0.79), and a clinical net benefit for probability thresholds between 20% and 70%. Limitations are the small size of cohort and the lack of external validation.

Discussion
Off-clamp RAPN was not feasible in a significant rate of cases, even in experienced hands. The CRN could be useful to plan clamping approach.
INTRAOPERATIVE AND PERIOPERATIVE OUTCOMES OF CLAMP VS OFF-CLAMP LAPAROSCOPIC PARTIAL NEPHRECTOMY: PRELIMINARY RESULTS FROM A MULTICENTRE RANDOMIZED CLINICAL TRIAL (THE CLOCK2 STUDY)


**Aim of the study**
The duration of ischemia time necessary to determine a kidney damage during a partial nephrectomy is still an unsolved issue. The CLOCK-2 study is a perspective, randomized, multicenter trial aimed to compare Clamp vs Off Clamp the Kidney during laparoscopic partial nephrectomy. In this preliminary report, we evaluate possible factors associated with choice to perform a Clamp or an Off-Clamp technique and implications of surgical approach performed on intra and peri-operative outcomes.

**Materials and methods**
From August 2014, 192 patients were centrally randomized to be submitted to clamp vs off-clamp laparoscopic PN in 5 Italian hospitals. Inclusion criteria were normal coagulative function, healthy contralateral kidney, eGFR ≥ 60 ml/min, R.E.N.A.L. score ≤10. Intraoperative and perioperative data were collected in an e-crf, centrally managed. Any deviation from the assigned technique were recorded and motivated.

**Results**
140 patients were eligible for statistical analysis. Among the 69 patients randomized into clamp group, 35 patients (50.7%) were shifted to off-clamp surgery, preoperatively in 10 (28.6%) and intraoperatively in 25 cases (71.4%). Among the 71 patients randomized into off-clamp group, 23 patients (32.4%) were shifted to clamp surgery, preoperatively in 10 (43.5%), intraoperatively in 9 (39.1%) and because of bleeding during resection in 4 cases (17.4%). R.E.N.A.L. score didn’t correlate with the decision of the surgeon to shift the assigned technique (clamp vs. off-clamp mean R.E.N.A.L. score was 6.43 vs. 6.10, p=0.33). Nevertheless, a larger lesion size was associated with a lower probability to shift from clamp to off-clamp (p=0.013). Higher glomerular filtration rate and Charlson Comorbidity Index were associated, respectively, with a lower (p=0.014) and a higher (p=0.013) probability of shift from off-clamp to clamp. As regards the intra and perioperative data, no significant differences between clamp and off-clamp groups were found concerning intraoperative bleeding (186 ml vs. 208 ml), time of parenchymal suture (12.1min vs. 11.1min), complication’s rate, creatinine in 1st post-operative day (1.08 mg/dL vs. 0.99 ml/dL), haemoglobin loss in 1st post-operative day (12.3 g/dL vs. 12.05 g/dL) and oncological control (1 vs. 1 positive margins).

Operative time and post-operative stay were significantly longer in the clamp group (173 min vs. 135 min, p=0.002; 5.65 days vs. 4.85 days, p<005). Volume of parenchyma removed with lesion was lower in the clamp group (1.13 mm vs. 1.9 mm, p=0.003).

**Discussion**
Both of approaches are effective and safe in terms of oncological control. Clamp procedure appears more effective in terms of preservation of renal parenchyma despite of a longer operative time and hospital stay. Our data suggest that the decision making of the surgical approach is not influenced by nephrometric characteristics of lesions although the surgeon’s experience plays a key role to make homogeneous outcomes in both approaches.
ASSESSMENT OF MID-TERM ONCOLOGIC OUTCOMES IN PATIENTS TREATED WITH ENDOSCOPIC ROBOT ASSISTED SIMPLE ENucleATION (ERASE) FOR RENAL CELL CARCINOMA: RESULTS FROM A TERTIARY REFERRAL CENTRE

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Aim of the study
Endoscopic Robot Assisted Simple Enucleation (ERASE) has proven to be a feasible and safe procedure for the minimally invasive treatment of clinically localized Renal Cell Carcinoma (RCC). Aim of our study is to assess the oncologic mid-term outcomes of ERASE at a single tertiary high volume centre.

Materials and methods
After institutional review board approval, we analysed the prospectively collected data of patients treated with ERASE for RCC at our Institution from 2012. For the present study, we included all patients submitted to ERASE for RCC with a minimum available follow-up of two years. All surgical specimens were examined by an expert uro-pathologist. The recurrence-free survival (RFS) was defined as any event of relapse of disease at any site (both local and distant). Kaplan-Meier method was performed to assess RFS. Pathologic variables were stratified for RFS and compared using the log-rank test.

Results
Overall, 259 patients were eligible for the present study. Median (IQR) age was 62 (55 - 71) and 159 (61.4%) were males. Mean (SD) pathological diameter was 3.2 (± 1.46) cm. Positive surgical margins (PSMs) were encountered in 7 (2.5%) cases. Median (IQR) follow-up time was 36 (27 - 51) months. During follow-up, local recurrence (LR) was registered in 5 patients of whom 3 experienced LR on tumor resection bed, 2 patients on ipsilateral kidney, and 4 patients experienced systemic recurrence (SR). Finally, 2 patients experienced both LR and SR. The actuarial 3-year RFS was 97.7% and the estimated 5-year RFS was 91.4%. At survival analysis, patients who had a nucleolar grade 3-4 and those who had PSMs had a significantly higher risk of disease recurrence (p=0.02 and p<0.001, respectively) (Fig. 1).

Discussion
ERASE is a safe procedure with acceptable mid-term oncologic outcomes. According to the contemporary literature on standard partial nephrectomy, higher nucleolar grading and PSMs affect the RFS even in patients treated with ERASE.
SURGICAL AND PERIOPERATIVE OUTCOMES AFTER ROBOTIC TUMOR ENUCLEATION VS NON-ENUCLEATIVE TECHNIQUES FOR LOCALIZED RENAL MASSES: RESULTS OF A MULTICENTER PROSPECTIVE STUDY FROM THE SURFACE-INTERMEDIATE-BASE (SIB) MARGIN SCORE INTERNATIONAL CONSORTIUM


Aim of the study
Despite resection techniques (RT) potentially affect key partial nephrectomy (PN) outcomes, they are rarely reported in current PN literature. As such, there is lack of evidence on the potential impact of different RTs on perioperative outcomes after robot-assisted PN (RAPN). The aim of the study was to compare surgical and perioperative outcomes, as well as early complications rate, of enucleation (EN) vs non-enucleative techniques (NET) in a multicenter cohort of patients undergoing RAPN at referral Urologic Centers, harnessing the Surface-Intermediate-Base (SIB) Margin score for standardized reporting of RTs during RAPN.

Materials and methods
Data were prospectively collected from a cohort of consecutive patients undergoing PN for cT1-2 renal masses between September 2014 and March 2015 at the 16 high-volume Centers included in the SIB International Consortium. Patients undergoing RAPN were included in this study. All 45 surgeons involved in the study were had extensive experience in RAPN. RT was classified as EN (SIB score 0-2) or NET (SIB score 3-5). Tumor complexity was reporting according to either PADUA or RENAL score. Trifecta was reported according to two different definitions (Hung et al; Khalifeh et al). The Chi-square and Mann-Whitney U tests were used to compare the distribution of key variables among the EN and NET groups.

Results
Overall, 507 patients were included. Of these, 289 (57%) underwent RAPN and represented the analytic cohort. EN was performed in 154/289 (53.3%) patients while NET in 135/289 (46.7%). The EN and NET cohorts were comparable regarding gender, age, Charlson comorbidity index, BMI, preoperative eGFR and Hb, surgical indication, proportion of patients with high surgical risk (ASA score ≥ 3), preoperative tumor diameter and tumor complexity (all p>0.05). Performance of clampless RAPN was significantly higher in for EN (24.2% vs 13.3%, p=0.019). Median warm ischemia time (WIT), operative time, estimated blood loss and length of hospital stay were not significantly different among the EN and NET groups. Intraoperative, major postoperative surgical complications (1.3% vs 1.6%, both Clavien IIIa complications) and medical complications (9.2% vs 11.1%) rates did not significantly different between EN and NET. Positive surgical margins were reported in 5.1% and 8.4% of patients in the EN and NET cohorts, respectively (p=0.28). Median ΔeGFR values at discharge did not significantly differ between EN and NETs. Overall, Trifecta rate was not significantly different among EN and NET (71.4% vs 78.5% according to the definition by Khalifeh et al; 69% vs 63.4% according to the definition by Hung et al [for those patients with data on % of volume preservation available for calculation, n=185]).

Discussion
In our prospective multicenter study using a standardized reporting instrument to objectify RT during PN at referral Centers, robotic EN achieved comparable surgical and perioperative outcomes compared to NETs.
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DEFINITION OF A STRUCTURED TRAINING CURRICULUM FOR ROBOT-ASSISTED PARTIAL NEPHRECTOMY: A DELPHI-CONSENSUS STUDY FROM THE ERUS EDUCATIONAL BOARD


Aim of the study
Despite robot-assisted partial nephrectomy [RAPN] is a complex procedure, no validated training pathway is currently available for surgeons who start a RAPN program. The aim of the study is to define a structured training curriculum for RAPN based on simulation activity, clinical training and non-technical skills, with the intent to improve clinical outcomes during RAPN learning curve.

Materials and methods
Using a Delphi consensus process, a web-based survey based on the available evidence was delivered to a panel of experts in the field of RAPN. Experts were selected according to clinical, training and research experience in RAPN. Consensus was defined as ≥90% agreement.

Results
Overall, 27 (100%) experts completed the survey. The structure of the simulation-based (Fig.1A) and the modular console-based (Fig.1B) training modules were defined. Consensus was reached in multiple areas (Table 1). The relatively high number of participants combined with the high threshold for consensus achievement strengthen the study.

Discussion
The definition of a curriculum for RAPN has been identified as an educational priority and as a method to improve clinical outcomes during RAPN learning curve with unanimous consensus. A structured training program for RAPN that could lead a novice surgeon from virtual reality, dry/wet lab and modular console training to independent completion of a full procedure is ready for clinical implementation.
OUTCOMES OF LAPAROSCOPIC AND ROBOTIC SURGERY FOR CLINICAL T2 RENAL MASSES IN OBESE PATIENTS: A MULTICENTER INTERNATIONAL STUDY


Aim of the study
Obesity is a medical condition with detrimental effects on health and associated with an increased incidence of several malignancies and it is linked with chronic renal disease. The aim of this study is to evaluate the impact of obesity on outcomes of patients who underwent surgery for large kidney masses.

Materials and methods
We developed the multi-center, multi-national renal masses database involving 22 surgical centers worldwide (ROSULA – RObotic SUrgery for LArge renal mass). Using this database, we identified cases with >cT2 renal masses who underwent robotic radical nephrectomy (RRN), robotic radical nephrectomy (RPN) or laparoscopic radical nephrectomy (LRN) from June 2003 – September 2017. Descriptive analyses relied on tests of proportions and means, and on chi-square and t-test statistics for comparison testing. Univariable and multivariable logistic regression models tested the effect of obese status vs. normal weight on complication rates. Survival analyses were carried out to test the effect of overweight/obese status on overall mortality (OM) and local or distant disease recurrence (DR) rates. All tests were two-sided and a level of statistical significance was set at P < 0.05.

Results
Of 812 patients diagnosed with cT2 renal masses, 69.5% were obese. Median age was 63.0 years (IQR:55.0-70.0) and median preoperative eGFR was 78.0 (IQR: 61.2-92.0) mL/min. LRN, RRN and RPN were performed in 41.5%, 30% and 28.4% of cases, respectively. Overall intraoperative and postoperative complications occurred in respectively 8.4 and 17.5% of patients and were classified mostly according to Clavien-Dindo grade I. Obese patients experienced longer operative time (153.5 vs. 130.0 minutes; p<0.001). Univariable and multivariable logistic regression models failed to find significant difference in postoperative complication rates (p>0.05). Overall, the 4.1% (N=33) and 8.3% (N=67) of patients died or experienced local or distant recurrence during the study period. Kaplan-Meier plots showed lower 5-year OM-free survival and lower 5-year DR-free survival rates in obese vs. normal weight (82.0 vs.91.0%, p:0.005 and 75.1 vs. 89.5%; p:0.01, respectively). Multivariable Cox regression models failed to find differences in OM and in DR rates in overweight/obese vs. normal weight patients after adjustment for all covariates (HR: 3.91, CI: 0.80-19.02; p:0.09 and HR: 1.6, CI:0.81-3.19; p:0.2 respectively).

Discussion
These findings provide evidence of safety of RRN, RPN and LRN in obese patients with large renal tumors. However, obese patients might carry higher risk of OM and DR compared to normal weight patients.
THE LEARNING CURVE FOR ROBOT-ASSISTED PARTIAL NEPHRECTOMY: IMPACT OF SURGICAL EXPERIENCE ON PERIOPERATIVE OUTCOMES

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Aim of the study
Robot-assisted partial nephrectomy [RAPN] is a complex procedure and surgical outcomes can be importantly affected by increasing experience. The aim of the study is to investigate the effect of surgical experience [EXP] on perioperative outcomes to define the surgical learning curve for RAPN, since actual curves are rarely presented.

Materials and methods
457 patients treated with RAPN for a cT1-2 renal mass by two surgeons with extensive EXP (>300 cases) were assessed into a prospective database were. For each patient, EXP was defined as the total number of RAPN performed by each surgeon before the patient’s operation. Outcomes of the study were warm ischemia time [WIT], Clavien-Dindo ≥2 postoperative complications [CD≥2] and positive surgical margins [PSM]. Multivariable linear (WIT) and logistic regression (CD≥2, PSM) models tested the effect of EXP on the outcomes. Restricted cubic splines were used to test for the non-linear nature of the relationship between EXP and the outcomes. Covariates consisted of tumour clinical size and RENAL nephrometry score to account for case mix. Model-derived coefficients were used to calculate estimated WIT and probability of CD≥2-free postoperative course. Local polynomial smoothing method was used to depict actual curves.

Results
Median EXP was 148 cases (interquartile range [IQR] 65-254). Median WIT was 14 min (IQR 10-19). The rate of CD≥2 and PSM were 14 and 4%, respectively. Increasing EXP resulted associated with lower ischemia time (1st spline estimate -4.5 minutes per 25 cases; 95% confidence intervals [CI] -2.3, -1.3; p<0.0001) and with higher probability of CD≥2-free postoperative course (OR 1.01 per 25 cases; CI:1.005,1.02; p<0.001). Conversely, EXP was not associated with PSM (OR 1.00; CI 0.99,1.002; p=0.5). The relationship between EXP and WIT resulted non-linear, with a steep reduction in WIT from case 1 to case 100 and a plateau observed after 150 cases (Figure 1 panel A). Conversely, the relationship between EXP and CD>=2 resulted linear without a plateau being observed even after 300 cases (Figure 1 panel B).

Discussion
Perioperative outcomes after RAPN are importantly affected by surgical experience. After 150 RAPNs, no further improvement is observed with respect to WIT. Conversely, when CD≥2 are taken into considerations, the learning curve appears endless, without a plateau even after 300 cases.
THE IMPACT OF SURGICAL STRATEGY IN ROBOT-ASSISTED PARTIAL NEPHRECTOMY: SHOULD WE TREAT ANTERIOR TUMOURS WITH TRANSPERITONEAL ACCESS AND POSTERIOR TUMOURS WITH RETROPERITONEAL ACCESS?


Aim of the study
Available comparisons of trans-[tRAPN] and retroperitoneal robot-assisted partial nephrectomy [rRAPN] are scarce and affected by relevant selection bias. The aim of the study is to compare perioperative morbidity, renal function and positive surgical margins [PSM] after tRAPN and rRAPN focusing on the position of the tumour.

Materials and methods
1184 patients diagnosed with a cT1-2 cN0 cM0 renal mass elected for tRAPN or rRAPN were assessed. Primary outcomes were Clavien-Dindo ≥2 complications [CD≥2], ischemia time [IT, min], postoperative and 12-month estimated glomerular filtration rate [eGFR, mL/min] and PSM. Secondary outcomes were estimated blood loss [EBL, mL], operative time [OR, min] and length of stay [LOS, days]. After 1:1 nearest-neighbour propensity-score matching to account for all measurable potential confounders, logistic and linear regression analyses tested the effect of tRAPN vs. rRAPN on the study outcomes. Sub-analyses testing the hypothesis of better outcomes in case of tRAPN for anterior tumour and rRAPN for posterior tumour were performed with interaction test.

Results
After propensity-score matching, 384 tRAPN and 384 rRAPN patients remained. No difference with respect to age, gender, comorbidities, preoperative eGFR, single kidney status, tumour size, RENAL score, hilar position, face and side involved and year of surgery was recorded between tRAPN and rRAPN patients. CD≥2 complication rate was 5.7% after tRAPN and 8.6% after rRAPN (p=0.1). Median IT was 19 after tRAPN and 20 after rRAPN (p=0.3). Median postoperative eGFR was 82 after tRAPN and 78 after rRAPN (p=0.04). Median eGFR was 88 after tRAPN and 87 after rRAPN (p=0.6). PSM rate was 3.6% after tRAPN and 1.8% rRAPN (p=0.2). Median EBL was 100 after tRAPN and 50 after rRAPN (p<0.0001). Median OR time was 120 after tRAPN and 124 after rRAPN (p=0.1). Median hospital stay was 7 after tRAPN and 8 after rRAPN (p=0.3). At interaction test, no advantage in case of tRAPN for anterior tumour or rRAPN for posterior tumour was recorded (Figure 1).

Discussion
No relevant difference with respect to morbidity, renal function and PSM was recorded between tRAPN and rRAPN. Moreover, neither tRAPN for an anterior tumour nor rRAPN for posterior tumour yields better results. The two strategies are equally effective regardless of tumour position.
Aim of the study
In this video we present two cases of robot-assisted partial nephrectomy (RAPN) for high complexity hilar renal masses.

Materials and methods
Both cases were incidentally discovered tumors. The daVinci Xi robotic system in a four arm configuration was used by an expert surgeon. The first case was a 37 y.o. woman with a completely endophytic 46 mm lower pole renal mass discovered during pregnancy and treated soon after delivery. PADUA and RENAL scores were 13p and 10h respectively. Renal sinus was extensively involved and the mass was in close relationship with the renal vein and the collecting system. The mass was approached with a transperitoneal approach. The kidney was completely mobilized. Tumor edges were marked using monopolar scissors under ultrasound guidance using a robotic drop-in probe. Both renal vein and artery were clamped. Warm ischemia time was 32 minutes. A triple inner renorraphy was performed with a Monocril 3-0 continuous suture. The outer renorrhaphy was performed with Vicryl 1 sutures and a sliding clip technique. The second case was a 52 y.o woman with a completely endophytic 33 mm right upper pole mass. PADUA end RENAL scores were 10p and 7, respectively. The hilar mass was extensively abutting the collecting system, needing a wide opening of a superior calix. The same technique was used. A drain was placed in both cases.

Results
The console time was 180 and 210 minutes, respectively. Intraoperative blood loss was less than 200 ml. The drain was removed in 3rd postoperative day. Hospital stay was 5 days. No peri-operative complications were reported. Pathology confirmed a type 1 papillary and a chromophobe renal cell carcinoma with negative surgical margins, respectively. Postoperative serum creatinine was 0.98 mg/dL (eGFR 74 = ml/min) and 0.71 mg/dl (eGFR = 67 ml/min) respectively.

Discussion
Nephron sparing surgery (NSS) represents the current gold standard treatment for localised renal tumors. Nephrometry scores include tumor size and other peculiar tumor features to estimate surgical complexity and plan NSS. This video demonstrates that robotic technology allows the expansion of minimally invasive partial nephrectomy to highly complex hilar renal masses with limited perioperative morbidity and good functional outcomes in the hands of experienced surgeons.
Aim of the study
The surgery of the cava vena (SCV) is always a challenge also for the expert surgeons. The SCV is made by different pathologies: the most common are a renal cancer that involve into the inferior vena cava (IVC) with a tumor thrombus, a relapse of renal cancer (RRC) that involved the cava, a tumor of the adrenal gland with strength adhesion to the cava with a tumor thrombus of the adrenal vein. The development of the mini invasive surgeries, special with the robotic system in expert hands, allow to practice these cases with a reduction of the complications and the length of stay instead the open approach. Indeed, our aim is to present our first six cases of SCV treated with robotics approach.

Materials and methods
We reported data of 6 patients submitted to SCV performed at our Institution from January 2016 to October 2017 by one highly experienced surgeon in robotic surgery. For the right renal kidney with thrombus the IVC was dissected above and below the insertion of the renal vein to the extent dictated by the length of the thrombus. The left and the right vein were isolated. The right renal artery was isolated and clipped. the gonadal vein, lumbar right and left veins were also clipped. The caudal IVC, left renal vein and cephalic IVC were individuated and clamped. The IVC wall was cut with evidence of retraction of the thrombus to the margin of IVC. For the tumors of the right adrenal gland with thrombus of the adrenal vein the upper pole of kidney was isolated. The lateral border of the IVC and the renal vein are identified. The lateral border of the IVC is dissecting, the right adrenal vein is dissected and clipped. The adrenal gland is mobilized and isolated circumferentially from the cava vein and removed after the control of the artery. For the RRC the IVC was dissected above and below the relapse in the area of the right renal vein. The left vein was isolated. The remain part of the right artery was isolated and clipped. The RRC was completely isolated. The caudal IVC, left renal vein and cephalic IVC were individuated and clamped. The IVC wall was cut and the relapse was removed.

Results
Overall 6 patients, 5 male and 1 female, submitted to SVC were analysed, 2 level 1 IVC thrombus, 2 RRC and 2 adrenal tumours with thrombosis. The mean age was 60 years (SD 7). Median Charlson comorbidity index was 2 (1-3). The mean operative time was 210 minutes (SD 50). the median blood loss was 200 ml (SD 150). Overall, we not recorded intraoperative complications. We reported one postoperative complication, a bleeding with a decrease of the hb value without blood transfusion (Clavien Dindo 1). No surgeries were converted to open procedure. The mean length of stay (LOS) was 5 days (SD 2.0).

Discussion
SVC with robotic approach is technically challenging but safe and feasible if performed by expert robotic surgeons. Further clinical studies are mandatory with a large simple size and with more difficult levels of thrombosis to finally assess the safety of SVC with robotic approach.
ENDOSCOPIC ROBOT-ASSISTED SIMPLE ENucleATION (ERASE) FOR HIGHLY COMPLEX RENAL MASSES: DESCRIPTION OF THE TECHNIQUE AND FUNCTIONAL OUTCOMES REPORT

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Aim of the study
Tumor excision (TE) is a fundamental step during partial nephrectomy (PN). We have recently introduced the concepts of resection strategy (RS, the surgeon’s preoperative intent) and resection technique (RT, the actual surgical result) to describe the complexity of TE during PN in a standardized way across published series. In this video we describe robot-assisted partial nephrectomy (RAPN) technique, performed with a pure enucleative RS for the treatment of highly complex renal masses.

Materials and methods
Data were prospectively collected from a cohort of 483 patients treated with endoscopic robot-assisted TE for highly complex renal masses (PADUA score ≥10) from January 2013 to December 2017. Demographic, perioperative and pathologic data were gathered. RAPN was performed with a pure enucleative RS aiming to develop the anatomic dissection plane between the tumor pseudocapsule and the surrounding healthy parenchyma.

Results
Overall, 55 patients with highly complex renal masses were included in the study. Median age was 59 (IQR 51-69). Overall, 22 (40%), 26 (47.3%), 5 (9,1%) and 2 (3.6%) tumors were classified as cT1a, cT1b, cT2 and cT3, respectively. Median PADUA Score was 10 (IQR 10-11). Mean clinical diameter of renal masses was 4.2 cm (SD 1.8). Preoperative median creatinine serum level was 0.93 mg/dl, while preoperative median eGFR value was 83.6 ml/min/1.73 m2. Median warm ischemia time (WIT) and median operative time were 18 (IQR 15-23) and 150 (IQR 125-180) minutes respectively. Median estimated blood loss (EBL) was 100cc (IQR 70-150). Intraoperative complications occurred in only one patient (1.8%). Mean length of hospitalization was 5 days. Postoperative complications were recorded in 5 patients (9,1%), of which 7.3% Clavien 2 and 1.8% Clavien 3b. Trifecta was reached in 81.8% of cases (45/55). Third post-operative day median eGFR was 74.5 (IQR: 57.0 – 83.7), while at 36 months follow up eGFR increased up to a median value of 81.05 (IQR 72.3-86.1).

Discussion
ERASE has proven to be a safe technique, able to achieve optimal perioperative and postoperative outcomes. We believe that endoscopic robot assisted simple enucleation could represent a feasible approach for highly complex renal tumors with optimal cancer control and optimal renal function preservation.
BLADDER CANCER: SURGICAL TREATMENT

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P149 THE INTRODUCTION OF A SURGICAL CHECKLIST FOR THE TRANSURETHRAL RESECTION OF THE BLADDER IMPROVES RECURRENCE-FREE SURVIVAL IN NON-MUSCLE INVASIVE BLADDER CANCER PATIENTS
Aim of the study
Ureteroileal anastomotic stricture (UAS) after ileal conduit diversion occurs in a non-negligible proportion of patients undergoing radical cystectomy (RC). Surgical techniques aimed at preventing this potential complication are sought. We describe our surgical technique of retrosigmoid ileal conduit and to assess perioperative outcomes and postoperative complications with a focus on UAS rate.

Materials and methods
A prospective single-centre, single-surgeon cohort of 67 consecutive patients undergoing open RC with ileal conduit urinary diversion between July 2013 and April 2017 was analysed. A study group of 30 patients receiving retrosigmoid ileal conduit was compared with a control group of 37 patients receiving standard Wallace ileal conduit. Operative room (OR) time, estimated blood loss (EBL), transfusion rate and 90-day postoperative complications were recorded and compared between the two groups. In particular, rate of UAS, defined as upper collecting system dilatation requiring endourological or surgical management, was assessed and compared.

Results
The two groups were comparable with regard to all demographic, clinical and pathological variables. No differences were observed in terms of OR time (p=0.35), EBL (p=0.12) and transfusion rate (p=0.81). Ninety-day postoperative complications were observed in 11 (36.7%) patients who underwent a retrosigmoid ileal conduit and in 20 (54.1%) patients who received a traditional ileal conduit (p=0.32). Major complications (grade 3-4) were observed in 3 (10%) cases in the former and in 12 (32.4%) cases in the latter group (p=0.08). No single case of UAS was observed in the study group, whereas 6 (16.2%) cases of UAS occurred in the control group (p=0.02).

Discussion
In our study, we observed a significantly reduced rate of UAS and no increase in postoperative complications with the retrosigmoid ileal conduit diversion compared to standard Wallace ileal conduit diversion after open RC.
Aim of the study
Despite the significant increase in number of performed robotic radical cystectomies (RARC), intracorporeal neobladder (ICNB) are performed with robot-assistance infrequently, as it is a time-consuming and technical challenging step of the procedure. Several techniques for ICNB have been proposed but there is no consensus about the best one. To add a contribution in this field, we present a step-by-step technique for robot-assisted “Y” shaped- ICNB.

Materials and methods
Neobladder configuration: a 40 cm segment of ileum is chosen for the neobladder, 15 to 20 cm proximal to the ileocecal valve. The bowel segment is arranged in a Y shape with two central segments of 15 cm and two chimneys of 5 cm. Three sutures are used to fix the Y configuration. Surgical technique: at the level of the intermediate suture (which is the “lowest” part of the neobladder), the bowel is opened and brought caudally, allowing the anastomosis with the urethra, that is performed with a V-lok suture, over a 20 ch catheter. A 60-mm Endo GIA stapler, passed through the 12-mm assistant port, is used to divide the bowel. The bowel continuity is restored by using the same Endo GIA. The two central segments are detubularized with the incision of the anti-mesenteric border with cold scissors; then the posteromedial edges of the bowel are sutured together using a 3/0 V-Lok continuous suture. The same process is then repeated for the anterolateral edges, in order to complete the anterior plate obtaining the neobladder reservoir. The watertightness of the neobladder is tested by introducing 60 ml of saline solution through the catheter. The ureters, previously resected above the crossing with the iliac vessels and spatulated by robotic scissors, are anastomosed to the enterotomy performed at the dorsal aspect of the two chimneys with a 3/0 Vicryl suture. Once the posterior wall anastomosis is completed, a ureteric stent is placed through the chimney and passed out from the abdominal wall. A 3/0 reabsorbable suture is used to fasten the stent. Once the stent is in place, the anastomosis can be completed with the suture of the anterior wall. At the end of the uretero-ileal anastomosis the two peritoneal knots are cut and the chimneys are fasten to the psoas muscles.

Results
Five patients underwent robot-assisted radical cystectomy (RARC), extended pelvic lymph node dissection and intracorporeal neobladder (ICNB). The mean overall console and diversion times were 350 and 260 min. No grade > 3 complication according ClavienDindo system are recorded.

Discussion
Our technique seems to have a good safety profile and to allow acceptable operative times. Longer follow-up is required to assess the functional outcomes of our diversion.
ROBOT-ASSISTED PARTIAL CYSTECTOMY OF A BLADDER PHEOCHROMOCYTOMA

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Aim of the study
Pheochromocytomas of the urinary bladder are very rare tumors of chromaffin cells, they account for less than 0.05% of all bladder tumors. Robotic assisted surgery helps surgeons to perform many types of complex procedures with more precision, flexibility and control. For this reason we report a case of robotic assisted partial cystectomy of a bladder pheochromocytoma.

Materials and methods
We report a case of 25 years old girl, no smoker, with a urinary bladder paraganglioma. Clinically the patient presented headache, hypertensive crises, nausea and vomiting during micturition, but no gross hematuria or irritative urinary symptoms. Her hypertension was poorly responsive to treatment with Nifedipine and other drugs. She had no other significant past medical history. 24 hour urine revealed elevated levels of normetanephrine (> 4000 micrograms/ 24 hours). MRI of the abdomen and pelvis showed a solid lobulated lesion of the right superolateral bladder wall (diameters 65 x 40 x 38 mm AP x CC x LL), hyperintense on T2 weighted images with marked diffusion restriction and persistent contrast enhancement. No lymphadenopathy. A cistoscopy was performed, it confirmed the presence of a 3-4 cm mass covered by normal mucosa. The patient underwent to robot-assisted laparoscopic partial cystectomy.

Results
Surgery was performed in Trendelenburg position. Six trocars were positioned in a standard fashion, with the fourth arm on the left of the patient. The 6 cm mass was removed opening the right posterolateral bladder wall and the specimen was placed into an Endobag. The bladder defect was closed in 2 separate layers with a 3-0 barbed suture. The surgical time was 150 minutes. The patient had a regular hospitalization, abdominal drainage and Foley catheter were removed on postoperative days 4 and 5, respectively. Her blood pressure values and laboratory tests returned to normal since the end of the procedure. After 3 months from operation, cystoscopy was found to be normal. At 6 months follow-up, abdomen MRI showed no relapse of disease.

Discussion
Robotic partial cystectomy offers numerous advantages compared to open surgery. It is performed through a few small incisions, resulting in significantly less pain, scarring and recovery time for patients.
NERVE-SPARING ROBOT-ASSISTED RADICAL CYSTECTOMY (RARC) WITH TOTALLY INTRACORPOREAL MODIFIED VESICA ILEALE PADOVANA (VIP): TECHNICAL NUANCES AND PRELIMINARY RESULTS

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Aim of the study
Nerve- or sexual-sparing robot-assisted cystectomy (RARC) with intracorporeal ileal neobladder can be offered to selected patients with muscle-invasive or high-risk non-muscle invasive bladder cancer. However, it is a complex surgical procedure usually performed only at referral centers. As a high-volume robotic center with a longstanding experience in open reconstructive surgery, we started a robotic program for RARC and herein we describe our step-by-step technique and preliminary results of nerve-sparing RARC (nsRARC) with totally intracorporeal modified vescica ileale padovana (mVIP).

Materials and methods
Between March 2017 and December 2017 selected patients with clinical T2N0M0 bladder cancer underwent nerve-sparing (in males) or sexual-sparing (in females) RARC + intracorporeal mVIP at our institution. All interventions were performed by a single surgeon with extensive experience in robotic urologic surgery and open radical cystectomy and ileal neobladder reconstruction. Surgical technique for RARC replicated the principles of open nerve-sparing / sexual-sparing radical cystectomy and followed the principles of Collins technique with specific technical modifications. We used GelPOINT hand-assisted device and early clamping and section of the urethra (with a 12ch catheter), in order to obtain a timely removal of the tumor-bearing bladder and lymph nodes avoiding potential tumor seeding. RARC was performed with DaVinci Si/Xi platform in 4 arms configurations using a 0° lens. After induction of general anesthesia, with patient lying in supine position a 4-5 cm, a midline supraumbilical incision was made for GelPOINT access device. A step-by-step overview of the reconstructive surgical technique to create a spherical shaped reservoir used in our experience is shown in the video accompanying the abstract.

Results
Overall, 8 patients underwent nerve-sparing or sexual-sparing RARC with intracorporeal mVIP during the study period (7 males, 1 female). Demographic and preoperative characteristics are described in table 1. Median console time was 8 hours. Postoperative surgical complications occurred in 6/8 patients, including 3 (37.5%) Clavien-Dindo Grade > II, 2 of them (25%) within 30 days from surgery and 3 patients (37.5%) an early Clavien-Dindo Grade I. Regarding functional outcomes, urinary day-time continence was obtained in all patients, with no need of clean intermittent self-catheterization. Two (28.6%) patients experienced spontaneous erections after 3 months, 4 (57%) experienced erections at a median f-up of 2 months with the use of PDE5-i. At a median follow-up of 6 months, no local or distant recurrences were recorded.

Discussion
In experienced hands, nerve-sparing /sexual-sparing RARC with totally intracorporeal mVIP is technical feasible and achieves favorable early functional outcomes. The use of GelPOINT device and early clamping of the urethra may increase oncological safety during RARC.
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NERVE SPARING ROBOT ASSISTED RADICAL CYSTECTOMY AND “SHELL” NEobladder: THE EVOLUTION OF TECHNIQUE IN A HIGH VOLUME CENTER


Aim of the study
To describe step by step the evolution of our technique for nerve sparing robot assisted radical cystectomy and our “SHELL” technique for neobladder (video created in 2018).

Materials and methods
From January 2012 to March 2018 we performed 81 robot-assisted radical cystectomy (RARC) with extended pelvic lymph node dissection. In 49 cases we performed extracorporeal neobladder, in 33 cases intracorporeal neobladder. From 2016 we performed first 22 intracorporeal VIP neobladder (Padovana), then 4 intracorporeal “Karolinska” neobladder, and finally 7 intracorporeal “SHELL” neobladder. We divided the procedure in 3 phases: lymph nodes dissection, radical cystectomy, and reconfiguration of neobladder. No conversion to open surgery was required. The median follow up was 12 months.

Results
Mean age was 58 years. Median console time was 470 min for the VIP-Karolinska reconfiguration, and 409 min for the SHELL reconfiguration. Transfusion rate for VIP-Karolinska and SHELL reconfiguration was 40% and 14% respectively. Median hospitalization time for the VIP-Karolinska group was 19 days, and 10 days for the SHELL group. Severe complications (Clavien Dindo III or more) rate was 27% and 28% for the VIP-Karolinska and for SHELL group respectively.

Discussion
Our step by step technique for SHELL neobladder is feasible with perioperative outcomes comparable with the previous techniques and improving in the surgical time, length of stay and transfusion rate.
"EN BLOC" THULLIUM LASER RESECTION OF NMIBC: TECHNIQUE AND PRELIMINARY RESULTS


Aim of the study
Previous series showed the safety and feasibility of en-bloc resection of non-muscle invasive bladder cancer (NMIBC) by different techniques. Here, we present our "en bloc" thullium laser technique for NMIBC, assess the quality of resection and report the preliminary functional and oncological outcome.

Materials and methods
This is an observational prospective longitudinal study, enrolling patients with clinically NMIBC, having tumors of ≤ 3 cm and ≤ 4 lesions, who underwent thullium laser en-bloc bladder resection. A circular incision was made around the tumor with the tip of laser fiber maintaining a distance of approximately 5-10 mm from the tumor edge. This incision was carried out in macroscopically 'normal' mucosa surrounding the base and then extending through the sub epithelial connective tissue, muscularis mucosae and muscularis propria layers throughout detrusor muscle. The muscular fibers were sectioned cautiously from the periphery to the centre of the lesion base. Finally, the lesion was detached from the bladder wall and the tumor was extracted with an Ellick evacuator or by a nephroscopy sheet and laparoscopic grasp (i.e. Schneider) were used. The primary study end-point was recurrence-free survival. Secondary outcomes were: feasibility, safety, the presence of detrusor muscle (DM) and the recurrence rate at the first follow-up (3 months) cystoscopy (RRFF-C). Statistical analysis was complemented with multivariable analysis.

Results
The study cohort consisted of 34 NMIBC cases, mean age 73 yrs ± 9, presenting with a mean tumour diameter of 1.9 ± 0.51 cm and a median number of resected tumours per patients of 1 (range 1-4). The procedure was completed in all the patients: mean time of 35 ± 24 minutes; the median hospital staying was 2 days (1-7). The one year recurrence-free survival was 94.2% %. All the ERBT samples showed the presence of DM and the RRFF-C was 5.8% (2/34). An extraperitoneal bladder perforation occurred in only one patient, who was managed by conservative approach (catheterization), two patients developed fever; no significant haematuria was recorded.

Discussion
Our findings confirmed the feasibility and safety of thullium laser en-bloc resection of NMIBC with favorable preliminary results.
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PATHOLOGICAL EXAMINATION EXTEMPORARY OF LYMPH NODES USING FROZEN SECTION (FS) DURING RADICAL CYSTECTOMY (RC) IS USEFUL TO SELECT PATIENTS WHO NEED SUPER EXTENDED LYMPH NODE DISSECTION (SE-LAD): RESULTS OF A PROSPECTIVE STUDY

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Aim of the study
Extemporary pathological examination of lymph nodes during RC using FS has been debated and is still controversial. In the majority of tertiary centers an extended or super-extended lymphadenectomy (E-SE-LAD) without intra-op evaluation of the nodes is performed. However this approach has drawbacks: 1. longer time of surgery 2. possible higher complication rate. To prevent this an intra-op path evaluation of the nodes removed can help in reducing the extent and time of surgery and complications. The objective of the study was to evaluate the path diagnosis on FS of lymph nodes during RC and to compare it to the final path report. Finally the impact of FS results on the extent of surgery was analyzed.

Materials and methods
The last 74 pats who received RC with ELAD for TCC of the bladder at our center were included. Obturator, internal, external, common, pre-sacral and perivesical nodes were removed bilaterally before RC and sent immediately for FS. When 1 pos. node was detected LAD was extended to the aortic bifurcation bilaterally. If none or more than 1 node was pos. at FS LAD was stopped. Mean age was 63.5 year (58-78). Male/female ratio was: 51/23. 148 LADs were performed and nodes sent in separate containers (pelvic: obturator + internal, external, common iliac, pre-sacral, peri-vesical) for FS during RC. Pathological preparation an established path protocol for extemporary diagnosis was followed in all cases. It consisted of different passages:
1. freezing (cryostat)
2. first staining (hematoxylin-Eosin)
3. cutting (5 nm thickness sections)
4. quick re-staining with hematoxylin-Eosin
5. reading.

Results
The median N of nodes sent for FS was 18 from each side (36 in total). 14/74 pts (19%) had pos. nodes at FS and all were confirmed at the final path evaluation. 3/14 pts. had only one pos. node (2 R, 1 L) and LAD was extended to the aortic bifurcation. The final path report confirmed the FS report and no further pos.nodes were detected. In one case (1/148 LADs) a node was suspicious at FS and pos. at the final path report: patient received ELAD. 10/14 pts. had more than one pos node: LAD was not extended further. The concordance between FS and final path report was 99.3% (147/148 LADs). In 2 pats. the N of pos nodes at the final path examination was greater than the one found on FS (+ 5 and + 2). In both cases surgery was not changed.

Discussion
A high concordance between intra-op FS diagnosis of lymph nodes and final path report was observed (99.3%). In 4% of pats (3/74) the surgical procedure was changed (ELND) due to the FS results. In 96% of our pts. an extended surgery was not necessary. FS resulted a valuable method for the detection of pos. nodes during RC. A well defined and strict path protocol and path/uro cooperation is the key.
SINGLE INSTITUTION SERIES OF A NEW NEobladder RECONFIGURATION STRATEGY AFTER ROBOTIC ASSISTED RADICAL CYSTECTOMY: FLORENCE ROBOTIC INTRACORPOREAL NEobladder (FLORIN)

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Aim of the study
We describe our step-by-step technique for robotic intracorporeal neobladder configuration, including the stages of conception, development and exploration of this surgical innovation, according to the Idea, Development, Exploration, Assessment, Long-term follow-up (IDEAL) Collaboration guidelines.

Materials and methods
The Florence robotic intracorporeal neobladder (FloRIN) was performed employing the following main surgical steps: isolation of 50 cm of ileum; bowel anastomosis; urethro-ileal anastomosis creating an asymmetrical 'U'-shape (30 cm distally and 20 cm proximally to anastomosis), ileum detubularisation; posterior wall reconfiguration as an 'L'; bladder neck reconstruction; anterior folding of the posterior plate to reach the 12 o’clock position; uretero-enteral 'orthotopic' bilateral anastomosis. The conception and development of the FloRIN followed the IDEAL guidelines recommended stages: Phase 1 (simulation) involved the neobladder robotic configuration using silicone models. Phase 2a (development) aimed to reproduce the configuration in an open fashion in one patient, and then in the first three robotic procedures. Phase 2b (exploration) consisted of the technique standardisation in 15 consecutive robotic approaches. Phase 2a and 2b included urodynamics and imaging assessment of the patients treated. Phase 3 assessment is currently underway with other 22 patients treated at our institution.

Results
Since February 2016 FloRIN was performed in 40 patients. Refering to patients treated during Phase 2b and Phase 3, thirty-seven patients undergone reconstrucive surgery, 28 men and 9 women. The median (interquartile range [IQR]) reconstruction operating time was 238 (216-263). 23 cases (62%) undergone the Early Recovery after Surgery (ERAS) project. Postoperative early (<30 days after surgery) Clavien-Dindo Grade III complications occurred in 5 of the 37 patients (14%), including a case of bilateral ureteral stenosis, two cases of ureteral splinter loss in abdomen and two anastomosis suture dehiscence of bowel. Delayed complication occurred in other 5 patients (14%) including 4 cases of ureteral stenosis treated with pielostomy and ureteral stenting and one case of vesico-intestinal fistula. Intestinal canalization time was 5 days (4-6). Hospital discharge was carried out on average on the 16th (12-18) postoperative day.

Discussion
We describe the FloRIN configuration, showing its technical feasibility with acceptable time efficiency. The results of the project to develop this new reconstructive technique are gradually consolidating. Further clinical trial will evaluate FloRIN functionality after a longer time of follow-up and with a larger series.
"ENHANCED" RECOVERY PROGRAM IN ELDERLY PATIENTS UNDERGOING RADICAL CYSTECTOMY


Aim of the study
Radical cystectomy (RC) is still a challenging procedure due to significant morbidity and prolonged in-patient stay after surgery, moreover in the elderly patients. Enhanced recovery after surgery (ERAS) protocols are multimodal perioperative care pathways designed to achieve early recovery after surgical procedures by maintaining preoperative organ function and reducing the stress response following surgery. The key elements of ERAS protocols include preoperative counselling, optimization of nutrition, standardized analgesic and anesthetic regimens and early mobilization. The aim of this study was to present our results in using ERAS protocols after RC and urinary diversion in elderly patients (>75 yrs).

Materials and methods
We retrospectively reviewed our prospectively maintained database of RC. We extracted the data of patients underwent open or robot-assisted RC and urinary diversion (Bricker intervention [BrI] or Y neobladder [Ynb]) between January 2011 and March 2018. Only patients managed with ERAS protocol were included and divided in two groups according to the age (group A <75, group B >75 yrs). Briefly our protocol includes: no oral bowel preparation, no opioids for the postoperative pain relief, removal of naso-gastric tube at the end of the surgery, oral clear fluids on day of surgery, parenteral and enteral nutrition in postoperative day (POD) 1, mobilization in POD2. Intraoperative surgical variables, peristalsis recovery, time to flatus and to stool pass, length of hospital stay, restored oral intake, mobilization and complications (classified according to Clavien system) were recorded and compared between the groups. For the purpose of this study stable health status was defined as follow: no drain, complete and free mobilization, standard oral intake and regular bowel function. Statistical significance was set at p<0,05.

Results
Data of 200 RC were analysed. Among 136 BrI and 64 Ynb, 47 (% su 136) and 19 (% su 64) were performed in elderly patients respectively. The groups were comparable in terms of BMI, gender and intraoperative variables except for the operative time which was higher in elderly patients underwent RC with Ynb (p = 0,01). Grade >2 postoperative complications were recorded in 6 patients in both urinary diversions without any statistically significant difference for both groups. No statistically significant difference was found in term of time to flatus, time to pass stool, time to oral intake and mobilization for both groups in both urinary diversions. In group B time to stable health status was 8 and 10 days for BrI an Ynb respectively, with no statistically significant difference with group A.

Discussion
The results of this study suggest that our protocol allowed to achieve good outcomes in term of time to return to physiologically bowel function and time to stable health status, even in elderly patients. In our opinion the use of ERAS protocols should be implemented especially for patients aged >75 yrs.
THE INTRODUCTION OF A SURGICAL CHECKLIST FOR THE TRANSURETHRAL RESECTION OF THE BLADDER IMPROVES RECURRENCE-FREE SURVIVAL IN NON-MUSCLE INVASIVE BLADDER CANCER PATIENTS

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Aim of the study
More than half of patients with non-muscle invasive bladder cancer (NMIBC) will experience an intravesical recurrence, requiring additional treatment and its resulting morbidity, decreasing quality of life and increasing healthcare costs. The quality of surgical resection is essential in the management of bladder cancer (BC) patients and may have a significant impact on the risk of intravesical recurrence. To standardize the procedure and to improve surgical outcomes, the introduction of a surgical checklist (SC) has been proposed. Moreover, the SC improves operative reporting, which can be considered a proxy of surgical quality. However, studies reporting the impact of a SC on oncological outcomes are lacking. The aim of our study was to evaluate the impact of the introduction of a SC on recurrence-free survival (RFS) of NMIBC patients undergoing TURBT.

Materials and methods
An eight-item SC was progressively implemented into clinical practice at two tertiary referral centers. We reviewed the reports of TURBTs performed before and after the SC’s implementation. Patients undergoing TURBTs between January 2012 and January 2017 were enrolled in this retrospective study. A multivariable logistic regression was performed to assess the impact of SC on the presence of detrusor muscle in pathologic specimen. Kaplan-Meyer curve was built to assess the impact of SC on RFS. A multivariable Cox regression model was built to assess the impact of SC on RFS rate.

Results
Overall, 547 patients were included in the study and 266 of them (49%) underwent TURBT after the SCs’ implementation. Median follow-up for patients alive at last follow-up was 20 months (IQR 10-31). Median age at TURBT was 72 years (IQR 63-78) and 459 (84%) patients were male. Most of the patients had NMIBC (91%) and high-grade disease (58%). Detrusor muscle in TURBT specimen was detected in 60% of the cases. On logistic multivariable regression analysis, the introduction of the SC was not significantly associated with the presence of detrusor muscle in the surgical specimen (OR 0.81, 95% CI 0.49-1.34, p=0.4). On univariable and multivariable Cox regression analysis, that adjusted for the effects of standard prognosticators, SC’s implementation was independently associated with a significative improvement of RFS (OR 0.57, 95% CI 0.35-0.92, p=0.02).

Discussion
TURBT is essential in the management of BC patients. We demonstrated that the implementation of a SC into clinical practice increases the quality of operative report thereby potentially improving individualized risk-stratification and care resulting in lower disease recurrence-rate. Therefore, the introduction of a SC should be recommended in order to enhance oncological outcomes by improving surgical standardization and operative reporting.
STONEs: TREATMENT

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MOSES TECHNOLOGY: A NEW WEAPON IN ENDOUROLOGISTS' HANDS FOR OPTIMIZATION OF LASER LITHOTRIPSY

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Aim of the study
The holmium-YAG laser is a commonly used laser for endourological procedures, particularly for intracorporeal lithotripsy. Recently, the Moses technology has been developed in the issue of holmium laser: with this technology, laser pulse first separates the water and then it delivers the remaining energy toward the target stone. It has been demonstrated in the first and unique in vitro study that Moses technology resulted in more efficient lithotripsy and less stone retropulsion. The aim of this video is to describe this technology and to show its potentialities in intracorporeal lithotripsy.

Materials and methods
This video gives an overview of how the Moses technology works, by using examples in vitro and in vivo of stone lithotripsy, comparing regular mode with Moses mode.

Results
Moses technology introduces a pulse-shape modulation that optimizes energy delivery through water to the target tissue. In this way, less energy is lost and the energy transmission is optimized to the working distance. It also results in minimized stone movement due its vapor bubbles characteristics: the Moses technology delivers an initial vapor bubble and then the remaining energy can hit directly the stone. While the rest of the energy impacts the stone, the initial vapor bubble collapses away from the stone, pulling it back to its place. The collapse of the vapor bubble stabilizes the stone and minimizes its movement; this balance coupled with the smaller vapor bubbles characteristics and more targeted energy delivery results in significantly less stone retropulsion. The Moses characteristics are also optimized for maximum energy delivery at two different fiber-target distances. The first setting, Moses contact mode, is optimized for operation at a close distance (around 1 mm). The second setting, Moses distance mode, is optimized for lithotripsy at a distance around 2 mm. The two different settings could be chosen according to the clinical scenarios: the distance mode could be useful during a lithotripsy with a stone from a distance due to anatomical restrictions or during the pop-corning technique. Moreover, the Moses mode induces a different ablation pattern when compared to the regular mode, leading to a more concise and narrow incision. The Moses technology results in more efficient laser lithotripsy, in addition to significantly reduced stone retropulsion that could lead to a shorter procedural time and safer lithotripsy.

Discussion
The Moses technology has the potentiality to be a step ahead in laser lithotripsy. The true usefulness and safety of this new technology need to be assessed and validated by in vitro and in vivo studies.
THE MATRIOSKA TECHNIQUE IN PERCUTANEOUS NEPHROLITHOTOMY


Aim of the study
The first percutaneous access to extract a kidney stone was performed in 1976 by Johanson and Fernström. In the first ‘80s P. Alken and J. Wickham described the endoscopic technique of percutaneous nephrolithotomy. Since then, the PCNL technique was progressively perfected and miniaturized with the introduction of small caliber instruments such as the Mini, the UltraMini, the SuperMini and the Micro perc sets. One of the most recent advancements in PCNL is represented by the minimally invasive PCNL (MIP) set which includes different size progressive nephroscopes and access sheaths in a single system. In this video we present the Matroska technique in PCNL, consisting in the opportunity to enlarge the tract size during the procedure in a progressive way according to intra-operative needs.

Materials and methods
The main indication to the Matroska technique is the case of a stone occupying the pelvis and a narrow calix, which makes the passage of a guidewire into the collecting system impossible without damaging the calix neck. In these cases, the procedure can be started through a small tract in order to visualize the stone and the calix and start Holium laser fragmentation to create some space. Once gained access to the pelvis it is possible to introduce the guidewires properly. The following step consists in dilating to a medium size tract which guarantees better irrigation, better vision and lower pressure in the collecting system with a wider choice of instruments for fragmentation and lapaxy. Then, in case of very large stones it is possible to move to a large tract and complete the job.

Results
This technique allows the surgeon, during the procedure, to calibrate the optimal access to clear the stone. This can help to reduce the invasiveness of the procedure without limiting the chances of obtaining a stone free status.

Discussion
The Matroska technique makes the PCNL procedure flexible and progressive. It allows the surgeon to perform the less invasive achievable access tailored on the patient and the stone, minimizing the calix neck tear.
INNOVATIONS IN ENDOUROLOGY: A CLOSED-CIRCUIT VACUUM-ASSISTED MINI-PCNL SYSTEM


Aim of the study
Standard PCNL was designed to be an open circuit with a continuous water inflow inside the collecting system and an outflow through the access sheath. In this setting, intrarenal pressure can’t be accurately controlled and mainly depends on the ratio between the access sheath inner diameter and the nephroscope size. The need to control intrarenal pressure leaded to the idea to create a closed circuit with a continuous inflow and a suction-controlled outflow. In such a system intrarenal pressure primarily depends on the difference between inflow and outflow pressures. The ClearPetra system embodies this idea. This video shows the working principles of this system and a procedure performed using a ClearPetra nephrostomy sheath.

Materials and methods
The set consists in a 16 Fr nephrostomic access sheath, whose external access is plugged to prevent the medium from flowing out. The sheath is equipped with a lateral arm connected to the aspiration system. An aspiration pipe connects the lateral arm of the sheath to a plastic can which is in turn linked to the vacuum creating device. The aspiration pressure can be adjusted by the surgeon throughout the procedure. The 16 Fr access sheath size allows the introduction of a 12 Fr nephroscope. During laser lithotripsy, real time lapaxy is achieved by slowly drawing back the nephroscope inside the sheath until the internal opening of the lateral aspiration arm.

Results
In this video a 16 Fr large, 17 cm long Clear Petra nephrostomy sheath was employed to treat a multiple kidney lithiasis > 3 cm in a 46-year-old woman. A 12 Fr nephroscope was employed. Lithotripsy was achieved with Holmium YAG Laser. Lapaxy was exclusively performed by aspirating the stone fragments. No baskets or forceps were used.

Discussion
In conclusion, a closed circuit PCNL system may help the surgeon in several ways: -the continuous aspiration guarantees a crystal clear vision along the procedure -the low intrarenal pressure may be associated with less post-operative infective complications -the easy litholapaxy and the absence of fragments scatter may reduce operative time, increase stone free rate and decrease the need of disposable devices, cutting costs.
BENCH FLEXIBLE URETEROSCOPY IN THE DIAGNOSIS AND TREATMENT OF UROLITHIASIS BEFORE KIDNEY TRANSPLANTATION


Aim of the study
To evaluate the feasibility of bench flexible ureteroscopy in the diagnosis and treatment of urolithiasis before kidney transplantation.

Materials and methods
Both kidneys of a 86 years old brain death donor were considered for a kidney transplantation in a single recipient, according to donor renal function. Renal CT scan of the donor showed: 7 mm stone in the renal pelvis of the left kidney and 7 mm stone in the inferior calyces of the right kidney.

Results
A bench table flexible ureteroscopy was performed in the left kidney: the 7 mm stone was identified in the pelvis and grasped with a basket. However the size of the stone didn't allow the passage through the UPJ. The renal pelvis was surgically isolated and a mini-pyelothomy of the exact size of the stone was performed. The stone was easily extracted through the mini-pyelothomy with the flexible ureteroscope. The pyelothomy was closed and water tight was checked through the flexible ureteroscope. A flexible ureteroscopy was then performed in the right kidney: the pyelo-caliceal system was explored and no stones were found, but a calcified and hypertrophic papilla was identified in the inferior calices. This could explain the imaging diagnosis of urolithiasis. Both kidneys were successfully transplantated in a single recipient according to the renal function of a donor, as a dual kidney transplantation.

Discussion
Bench flexible ureteroscopy in kidney graft with a diagnosis of renal stone at imaging allowed: to confirm the diagnosis and perform a minimal invasive treatment of the urolithiasis; to exclude the presence of a supposed stone in case of a calcified hypertrrophic papilla, avoiding an invasive and useless surgery; to perform a safe transplatation and avoid post-operative challenging surgery.
NEW CONCEPTION FOR FLEXOR VUE DEFLECTING ENDOSCOPIC SYSTEM USE: OPTIMIZATION OF THE STONE FREE RATE (SFR) AFTER RIRS


Aim of the study
In this video we present the endourological treatment of a complex kidney stone in a patient with intrarenal UPJ and hydrocalix with urinary tract infection (P. mirabilis). The aim of the video is to demonstrate the solution of a difficult case employing a new concept of Cook Flexor Vue device.

Materials and methods
The CT scan evaluation show a complex kidney stones with HU evaluation between 600-1100 so we decided for a PCNL surgery. Percutaneous endoscopic vision shows a stenosis of the inferior hydrocalix. For this reason, once introduced the guidewire, we perform a progressive dilation of the stenotic neck and place a nephrostomy in the superior calix. Furthermore we insert a JJ stent parallel with nephrostomy to increase the diameter of the calix neck. Two weeks later, with the patient in supine position using ureteral access sheath 12-14 Ch 35cm, we explore the system with a combined approach: retrograde and percutaneous. We saw a compliant ureterer and caliceal infundibulum allowing a good possibility to treat the stones. Although we enter also with PCN nephroscope it was difficult to manage through this way. So we continued treating the stones retrogradely with digital flexible ureteroscope with dusting setting of our 120 watt laser. The endoscopic view suggested for mixed stones: calcium oxalate and uratic ones. Due to the multiplicity of the stones fragments, we use a system of litholapaxy we recently employed: faster and more effective. The system consists of the well-known Lithovue device but using the optical channel for irrigation. In this way we exploit the vacuum effect principle, exploring any single calix after lasertripsy. The system effectiveness is related to the possibility of exploring any single calix, taking advantage of their spherical shape.

Results
Descriptive statistical analysis was applied. 11 patients (M/F ratio: 7/4, mean age 63.5 ± 8.3) were treated. The stones were located in the lower calyces, and the renal pelvis in 3 and 8 patients, respectively. Medium stone size was 1.8 mm ± 3.2. The procedure with Flexor Vue Deflecting Endoscopic System was feasible in all the patients. Eight patients underwent preoperative ureteral stent. Mean operative time was 82 min ± 13.7 and median hospital stay was of 1.5 day. During the procedure the video channel was used as irrigating channel in order to favour fragment evacuation according to Bernoulli’s principle. The SFR after 30 days was 81% (9/11). Post-operatively we had no significant bleeding, 1 patient with fever, who required antibiotic treatment for 5 days and no sepsis. No cost/effectiveness study was performed.

Discussion
The technique we described could allow an easy non-invasive procedure for fragments evacuation. Further studies with larger population and under randomised setting, comparing with traditional flexible RIRS, are mandatory before the introduction of this technique in our clinical practice.
V33

ROBOT-ASSISTED LAPAROSCOPIC PYELOLITHOTOMY AND CONCOMITANT PARTIAL NEPHRECTOMY FOR LARGE STAGHORN STONE AND KIDNEY NEOPLASM

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Aim of the study
In the era of the endourological treatments for kidney stones, the indications for surgical pyelo- or nephrolithotomy are quite rare. The video presents the peculiar and original surgery we performed, a Robot-assisted laparoscopic pyelolithotomy and concomitant partial nephrectomy.

Materials and methods
We present the case of a 53 years old patient with a simultaneous finding of large staghorn pyelocaliceal stone and a 2 cm kidney tumor on the anterior surface of the mid-lower third of the same kidney. The different steps are illustrated: hilum isolation; renal artery isolation; difficult ureteral isolation (due to the presence of sticky periureteral tissue as a result of chronic inflammation); exposition of the lower third of the kidney to better expose the renal pelvis; V-shaped incision and large staghorn stone removal; pelvis suture, stent positioning; tumor enucleation.

Results
The stone measured 4 x 6 cms and the tumor histology was pT1a clear cell rcc Fuhrman grade 2 with negative surgical margins. The postoperative course was uneventful. Six months after surgery, the patient is stone free and free from tumor relapse.

Discussion
Robot-assisted laparoscopic pyelolithotomy is feasible and can be performed in difficult selected cases.
BPH: LASERS AND BEYOND

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P159  PROSTATIC URETRA LIFT FOR TREATMENT LUTS DUE TUE BPH SAVINGS EJACULATORY FUNCTION: MEDIUM TERM FOLLOW UP
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**Aim of the study**
Holmium:YAG laser TransUrethral Incision of the Prostate (Ho:TUIP) is a well-established but sometimes underused miniinvasive therapy for BOO (Bladder Outlet Obstruction) due to prostates <30 cc without middle lobe and elevated bladder neck. In order to improve Ho:TUIP clinical outcomes we chose to perform it only in highly selected patients, additionally carrying out a single deep and large 5 o’clock incision instead of the traditional two ones, with the aim to minimize excessive healing in the postoperative period and improve long-term durability of success.

**Materials and methods**
Data from 35 consecutive patients diagnosed with BOO due to Marion’s disease, unresponsive to alpha-blockers, were prospectively collected from 01/2015 to 12/2017 in our Department. Ho:TUIP was performed after preliminary endoscopy using a 26F Storz continuous flow endoscope, a 12° degree optics, a 550 micron end-firing laser fiber and the 50W Auriga XL holmium laser device (Boston Scientific) (2.2 J energy, 18 Hz frequency, long pulse length, almost 40W power). The single 5 o’clock incision was performed from the bladder neck in front of the ureteral orifice to the cleft between median and left lobe 1 cm above the veru montanum, enlarging and deepening it as at the beginning of a HoLEP. A silicon urethral catheter was maintained for 2-5 days after surgery.

**Results**
Mean age was 50.6 years +/- 6.9 d.s.; follow up ranged from 4 to 34 months. Before surgery mean PSA was 1.4 ng/ml +/- 1.2 d.s., ultrasound prostatic volume <30 cc, PVR 50-100 cc, mean IPSS 24.2 +/- 7.5 d.s., mean QoL 4.6 +/- 1.5 d.s., mean peak of urine flow 7 ml/sec +/- 3 d.s. Ejaculation was normal in 22% of patients, absent in 7%, reduced in 71%. Ho:TUIP operative time ranged from 15 to 30 minutes, employing 8-14 kJ/procedure. There were no complications. Postoperative mean peak of urine flow was 18 ml/sec +/- 5 d.s., mean IPSS and mean QoL significantly improved, being 9.2 +/- 5.4 d.s. and 1.6 +/- 1.4 d.s. respectively. Ejaculation was preserved in 90.4% of patients; the mean degree of patient’s satisfaction was 4.6 +/- 1.5 d.s. (score 1 = very low, score 6 very high). Early retreatment rate was 11.1% (3 patients with too prominent lateral/median lobes).

**Discussion**
Single incision Ho:TUIP is a safe and effective treatment of BOO secondary to Marion’s disease unresponsive to alpha-blockers. Endoscopic tailoring of the surgical choice on prostate size and morphology and bladder neck features is crucial for the clinical results, balancing durable and effective prevention of detrusor damage secondary to obstruction and preservation of ejaculation, especially in young patients. The technical features of the incision also seem relevant for the outcomes of the procedure.
Aim of the study
The aim of this study is to compare efficacy and safety of patients undergoing in an “everyday practice” 180 Watt GreenLight laser photo vaporization (PVP) as compared to 90 Watt thulium laser enucleation (ThuLEP) of the prostate.

Materials and methods
This is a retrospective analysis of prospective and multi-institutional data collection on all patients who underwent BPH/BPO laser surgery in four urological departments between 2014 and 2017. Indications for surgery were according to the recommendations of EAU guideline. Exclusion criteria were neurological disease, prostate cancer or previous urethral or prostate surgery. Men who underwent concomitant surgical procedures were also excluded. All men were evaluated with medical history, prostate volume (PV), PSA, IPSS, Qmax, and hemoglobin (Hb) levels. Patient Global Impression of Improvement (PGI-I) was evaluated with PGI-I scale at 6-months. Complications were classified as early (within 30 postoperative days), according to the modified Clavien-Dindo classification. Five-hundred-five patients underwent the surgical procedures in the period study (291 PVP and 214 ThuLEP). The propensity scores were estimated by fitting a logistic regression model, with surgery as a dependent variable.

Results
Mean age was 69.6 years. Mean PV was 54 ml. The characteristics of patients were similar in the two groups. Median operation time was 55 minutes and was not different between groups (p 0.218). Median catheterization time was 2 days in both series. After matching, the postoperative stay (2 days) was similar in both groups (p 0.088). ΔHb at 24h was statistically significantly lower in PVP (-0.5 vs. -0.8 g/dl, p 0.002). Overall, 54% of men had a decrease of IPSS more than 20 (ΔIPSS) at 6-month (74% in PVP vs. 42.4% in Thulep); after PS matching, the difference between two groups was confirmed. After matching, PVP group had a better ΔIPSS (68.9% vs. 37.8%, p 0.003). ΔQmax was similar at 6-month before and after matching, whereas PVP group had a better Qmax improvement at 12-month. Overall, 96.4% of all patients had an improvement of their symptoms after surgery, with no difference between groups, before (94.6 % in PVP vs 97.55 in Thulep) and after matching (93.3 vs 97.8%). Overall, 65.7% of patients had no complications (33.3 % in PVP vs. 84.4 in Thulep). Most of the complications were mild-to-moderate in both groups, with grade I lower in Thulep before (8.2% vs. 63.4%) and after PS (6.7% vs. 68.9%); grade II, III and IV were comparable among groups. Reoperation rate after 30-day was similar and less than 8% after matching in both groups. In multivariable proportional odds regression model, surgical technique was not predictive of patients satisfaction and reoperation after 30-day, also after PS matching.

Discussion
Both PVP and ThuLEP improved LUTS and Qmax, with mild-to-moderate early complications and excellent patients’ satisfaction. The reoperation rate was low in both series.
SHORT TERM COMPLICATIONS AFTER VAPOENUCLEATION OF THE PROSTATE WITH THULIM LASER


Aim of the study

to assess the effect of patient and surgery characteristics on overall complication in Thulium Vapoenucleation of prostate (Thuvep) for benign prostatic obstruction (BPO).

Materials and methods

490 patients who underwent Thuvep for BPO in our institution from February 2012 to December 2017 were selected. Data collected included patient demographics, comorbidities, prostate volume, intraoperative parameters, pre-operative maximum flow rate (Qmax), International Prostate Symptom Score (IPSS), and quality of life score (QoL). Post operative complications were assessed according to Clavien Dindo classification System (CCS). Univariate and multivariable logistic regression were used to test the effect of patient and surgery characteristics on overall complications.

Results

Median age was 68 years [Intertertile range: 65-72] and median prostate volume was 70 cc [Intertertile range: 55-87]. 99 patients (20%) had indwelling catheter before surgery. On the entire cohort the overall complication rate was 12% (59/490). Specifically, Clavien ≥ 3 complication rate was 4% (19/490). Minor complication included hematuria and acute urinary retention. No stress incontinence was recorded at 1 and 3 months of follow up. In univariable logistic regression models only age ≥ 72 years was associated with higher complication rate (Odds ratio: 2.2, CI 1.1-4.7, p=0.03). However, prostate volume, preoperative maximum flow, presence of indwelling catheter and anticoagulant or antiplatelet therapy failed to demonstrate a correlation rate. Finally in mutivariable logistic regression models there was no independent predictor of higher complication rate.

Discussion

Thuvep is a safe and effective technique for BPO treatment, with a low major and minor complication rate.
Aim of the study
Aim of our study was to evaluate the impact of energy delivered during prostate photovaporization (PVP) and anatomical photovaporization (APV) on short-term and long-term LUTS recovery.

Materials and methods
We prospectively evaluated patients underwent PVP or APV for LUS due to benign prostate enlargement (BPE) from May 2014 to January 2017. All the procedures were performed by 2 experienced surgeons (more than 100 procedures) using a GreenLight laser XPS. APV was carried out as previously described by Gomez Sancha. Patients were preoperatively assessed according to prostate volume, prostatic specific antigen (PSA), International prostate symptom score (IPSS) and maximum urinary-flow rate (Qmax). Operative data included energy delivered, vaporization time and operative length. Postoperative data were recorded at 3, 6 and 12 months. Comparisons were made using unpaired t-tests for continuous variables and multivariate logistic regression.

Results
Overall, 214 patients were evaluated: 85 treated with AVP and 129 with PVP. Mean prostate volume was significantly higher in AVP compared with PVP group (76,6 ±17,36 Vs 59,1 ±10,4 cc; p=0,001). Mean energy delivered (194651,1 ±80025,2 Vs 171674,4 ±57585,3 J; p=0,015) and vaporisation time (22,6 ±8,3 Vs 20,3 ±6,2 min; p=0,026) were significantly higher in AVP group. However, operative length was similar between the 2 groups (58,2 ±21 Vs 55,2 ±18 min; p>0.05). Six months after surgery IPSS (6,81±1,5 Vs 6,68±1,5; p=0,54) and Qmax (21,2±3,01 Vs 21,9±3,18; p=0,138) were alike between groups, though a statistically significant association was found between the amount and time of energy delivered and higher IPSS (p=0,047 and p=0.44; fig.1a-b). At 12 months follow-up both IPSS and Qmax continued to be similar between groups, interestingly, energy delivered was associated with lower IPSS (p=0,002) and vaporization time lost its significance (p>0,05) (fig.1c-d).

Discussion
Irrespective of the adopted technique (PVP or AVP), energy delivered and vaporization time were associated with higher IPSS 6 months after surgery and lower after 12 months. Both technique represent valid treatment options for LUTS due to BPE. These data could be useful for postoperative patients counseling.
THUVEP FOR LARGE PROSTATES: A PROSPECTIVE SINGLE-CENTER STUDY

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Aim of the study
We described our experience with THUVEP for large prostates, analyzing immediate outcomes and early and late complications.

Materials and methods
From 2011 we prospectively included in this study 252 patients undergoing Thuvep with prostate volume > 80 mL. We evaluated intraoperative parameters, early and late complications and post-operative outcomes.

Results
Median prostate size was 92 (80 - 255 mL). Median operative time was 60,7 (30-160) minutes with a median enucleation time of 25 (12 - 65) minutes and median morcellation time of 8,2 (4 - 80) minutes. Median tissue weight was 65 (35 - 230) g. Median catheterization time was 55 (24 - 216) hours and median length of hospital stay was 3,6 (2-14) days. Median maximum urinary flow rate (8 vs 20 ml/s), postpaid residual urine volume (128 - 10 ml) changed significantly. The serum concentration of hemoglobin was 14,5 and 13,1 before and after the procedure. The rate of early complications was 12,6 % (acute urinary retention 3,9 %, incontinence 3,5 %, clot retention 2,3 %, UTI 1,9 %, blood transfusion 0,7 %). Only 3 patients (1,1%) reported late complications such as urinary incontinence. The functional outcomes in terms of IPSS score showed a significant improvement (20,1 vs 5,8 p<0,05).

Discussion
THUVEP is an effective treatment for BPH of high volume. We observed low peri- and post-operative complications and an improvement of the functional outcomes.
THE ENUCLEATION OF PROSTATIC ADENOMA USING 1.9 µM THULIUM LASER COMBINED WITH 1470 NM RAMAN DIODE FOR THE TREATMENT OF BPH: PRELIMINARY RESULTS

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Aim of the study
The arrival of second generation of 1.9µm Thulium Laser combined with Raman diode 1470 nm gave further impetus to the spread of Laser treatment of the prostate. This new type of laser, compared to the simple Thulium laser, gives the possibility to reduce the power during the enucleation of BPH and to get a good compression between cutting and coagulation. The aim of our study is to demonstrate the efficiency and safety of this new type of laser treatment even in the hands of non-experts, at first experience, with the use of laser for the treatment of BPH.

Materials and methods
Since December 2016 until March 2018 there have been 56 patients who have undergone endoscopic treatment with 1.9 µm Thulium Laser combined with Raman diode 1470 nm. The patients candidate for this kind of treatment were those with indwelling bladder catheter, also patients with low levels of flow more or less related to increased levels of hesitancy post-administration or of increased values of IPSS scores (> 15). An evaluation of the days of indwelling catheter maintenance and of hospitalization was made. Also we made the evaluation of the scale of pain at hospital discharge, at communication of histological examination and after 3 months using the VAS score. Three months after the intervention, a uroflowmetry was done, IPSS score and ultrasound evaluation of post-administration hesitancy. Patient characteristics
We performed transurethral enucleation of prostatic adenoma in patients with mean age of 71 yr (range: 52–87). 33 of them had indwelling bladder catheter. Mean weight of the adenoma was 47 cc (range 20-120); the pre-operative mean flow was 7.2 ml/sec (range 5-9.8); average of post-administration hesitancy was 115 ml (range 50-350); mean IPSS score 28 (range 16-30) and QL score 5.3 (range3-6). The 23 other patients presented an adenoma with a mean weight of 47 cc (20-120), mean pre-operative flow 7.2 ml/sec (range 5-9.8) mean residue 115 ml (range 50-350) mean IPSS score 28 (range 16-30) QL score 5.3 (range 3-6).

Results
The average days of indwelling bladder catheter maintenance were 1.7 (range 1-14); average hospitalization was 2.1 days (range 1-5); average VAS score was 1.2 (range 1 - 5). Histologically demonstrated, the average weight of the removed adenoma was 37 cc. There have been found 3 cases of incidental prostatic adenocarcinoma, with symptoms of pain almost disappeared. Three months after surgery, no patient had symptoms of pain. The mean flow was 18 ml/sec (range 12-21 ml/sec), mean post-administration residue was 25 ml (range 0-75 ml); mean IPSS score 6 (range 1-20) and QL score 1 (range 0-3).

Discussion
The technique of enucleation using 1.9 µm Thulium Laser combined with Raman diode 1470 nm is safe and allows to immediately obtain functional results at least compared to more traditional techniques. The presence of chronic pelvic pain is found only in a small percentage of patients and it disappears in a short period of time. This technique allows to get a histological examination.
ROBOT-ASSISTED “PURE” ADENOMECTOMY A NEW APPROACH FOR LARGE BPH


Aim of the study
Recently, the robotic surgery has entered in the scenario of the treatment of large benign prostatic hyperplasia (BPH) and robotic assisted simple prostatectomy (RASP) has become a treatment option in Robotic Centres. In order to further reduce the invasiveness of this procedure, we use a “urethral-sparing approach” during the dissection of the adenoma. We present the results of our transperitoneal robotic assisted “urethral sparing” simple prostatectomy, that we named “pure” adenomectomy.

Materials and methods
From August 2017, patients with indications to BPH surgery, prostate volume >100cc, and no significant median lobe at preoperative US were enrolled in the study. Demographic and perioperative variables, early (within 30 days) functional results were recorded and analysed. Early Complications (<30 days from surgery) were recorded and classified according to Clavien Dindo System. The "trifecta outcome" (combination of International Prostate Symptom Score <8, Qmax > 15 mL/s, and no perioperative complications) was evaluated at 1 month time point. Surgical technique. After the prostate gland is prepared, a transversal, anterolateral incision is made halfway between the Dorsal Venous Complex (DVC) and the bladder neck. The cleavage plane between the surgical capsule and the adenoma is identified anteriorly and gently dissected at the level of prostate apex bilaterally. Once the left lobe is mobilized a median longitudinal incision is made at the level of anterior commissure. The urethra is medialized by suction device and gently dissected from the left lobe. At the end of this step the left lobe is removed. The procedure is repeated for the right lobe. Thus the urethra is spared inside the prostatic lodge. Prostatic capsule is then barbed sutured.

Results
Twenty-four patients were enrolled: mean age was 68 years, mean prostate volume was 176 cc, 8 patients had urethral catheter due to urinary retention. For the other 16 patients, mean IPSS score was 22 and mean Qmax was 9 ml/sec. Eight patients were sexually active before surgery. All the patients were treated with pure adenomectomy: mean operative time was 100 minutes; blood losses were 400 mL. No intraoperative complications occurred. Bladder irrigation was stopped 24 hours after surgery in all the cases. Catheterization time and hospital stay were 4 and 6 days, respectively. Mean specimen weight was 80 grams. No complications were recorded during follow up and the “trifecta outcome” was achieved in all patients at 30 days time point. All sexually active patients resumed their activity within 2 weeks after surgery with ejaculation maintained in all patients.

Discussion
Our robot-assisted “pure” adenomectomy seems to be safe in the treatment of large prostatic adenoma; moreover it does not seem to affect sexual function and ejaculation. Thus this technique seems to be a valid surgical approach in the hand of the robotic surgeon.
MINIMALLY INVASIVE SURGICAL ALTERNATIVES IN LUTS MANAGEMENT: RESULTS OF ONE ARM, MULTICENTER PROSPECTIVE STUDY ON MEDITATE® SECOND GENERATION TEMPORARY IMPLANTABLE NITINOL DEVICE (i-TIND)

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Aim of the study
Temporary Implantable Nitinol Device (TIND - MediTate®) is a device for the minimally invasive treatment of lower urinary tract symptoms (LUTS) due to benign prostatic obstruction (BPO). The results of feasibility and safety study of TIND implantation are already published, herein we report the results of a one-arm, multi-center, international prospective study to assess the efficacy of second generation of MediTate i-TIND in subjects with BPO.

Materials and methods
The i-TIND is comprised of three nitinol elongated struts and an anchoring leaflet and it is preloaded by crimping it into the delivery system. In expanded configuration, the struts of the i-TIND exert radial force that causes ischemic necrosis and subsequent incisions of bladder neck and prostatic urethra. i-TIND was implanted under light sedation, using a rigid 17F cystoscope. The device was removed 5 days later in an outpatient setting, with no need of anesthesia. To enroll the patients in the study the inclusion criteria were: IPSS score > 10, peak urinary flow (Qmax) < 12 ml/sec and prostate volume < 75 cc. All patients discontinued medical therapy for BPH before the implantation. Demographics, perioperative, functional results and quality of life (QoL) were evaluated. For the purpose of this study we reported the results of 3, 6 and 12 months follow-up.

Results
81 patients with LUTS were enrolled in this multi-center study from Oct 2014. Patients’ age (mean+ SD) was 63.9 y (8.9) and BMI (mean+ SD) was 26.6 (3.6). Prostate volume (mean+ SD), IPSS score (median, range), QoL (median, range) and Qmax (mean+ SD), were 35.3 (+12.5) cc, 22 (11-35), 4 (2-5), and 8.46 (7.54) ml/sec, respectively. All the implantations and the removals of devices were successfully concluded with no intraoperative complications. Three months after implantation median IPSS score, median QoL and mean Qmax were 8 (1-34), 2 (0-5) and 12.48 ml/sec (7.54); after six months were 7 (0-29), 2 (0-5) and 15.22 ml/sec (9.82). After twelve months were 7 (1-31), 1 (0-4) and 14.72 ml/sec (8.17) respectively. No patients reported ejaculatory dysfunction during follow-up. Differences in terms of IPSS score, QoL and Qmax when comparing preoperative and 12 months postoperative results were statistically significant (p<0.05); specifically the mean change from baseline to month 12 in IPSS score was -12.36 (9.33) and the mean change of Qmax was +5.62 (7.92) ml/sec (p<0.001 for both variables). The functional results recorded 6 months after surgery were maintained stable at 1 year. During the follow up no patients required pharmacologic treatment and only one patient needed surgery for BPO.

Discussion
Second generation i-TIND implantation is a safe and effective minimally-invasive option for the treatment of BPH related LUTS until one year follow up. Further studies are required to assess durability of these results.
Aim of the study
Sometimes patients are deemed ineligible for endoscopic or surgical approaches to treat LUTS due to severe comorbidities and have limited or no therapeutic options other than indwelling bladder catheterization (IBC). Other patients are not keen to take oral therapies or to undergo surgery for related side effects. Prostatic Artery Embolization (PAE) is a radiological minimally invasive procedure for BPH. The objective of the study is to assess the efficacy and safety of PAE in relieving LUTS and in catheter removal.

Materials and methods
Prospective study, evaluating patients treated with PAE from November 2013 to April 2017. All patients had urologic visit, multiparametric prostatic MRI or CT study and multidisciplinary team assessment to confirm PAE indication. Inclusion criteria: IBC for LUTS believed to be secondary to BOO from BPH, patients with or without IBC treated with medical therapy (alpha blockers and/or 5 alpha reductase inhibitors) without benefit; patients with LUTS motivated in preserving ejaculation; patients considered unfit for surgery due to comorbidities after anesthetic evaluation. The superselective prostatic embolization is performed using small-diameter hydrophilic microcatheters (2.0) and polyvinyl alcohol particles (Embosphere® 300-500) according to the “PErFecTED Technique” described by Carnevale.

Results
Among 186 PAE performed, 90 (48.4%) patients had IBC (catheter for at least 3 months), 96 (51.6%) non IBC. Median age was 72.4 (range 52-91), and median Charlson Comorbidity Index was 5.27 (range 2-14). PAE was technically successful in 151 (81.2%) patients. Procedural time (media, range): 143, 55-270 min. Fluoro time (media, range): 49, 12-114 min. Dose (media, range): 827, 151-2460 Gycm2. All patients were discharged the day after the procedure. No intra or peri-operative time complications occurred. Catheter was removed 15 days after PAE. Among all patients, 99 complained urethral burning in the first 48 hours after the procedure, 1 rectal discomfort. Among no IBC patients, 37 had urgency e frequency for 10 days. Among 90 IBC patients, a complete follow-up was achieved for 76; 27 after IBC removal had an AUR episode treated with catheter positioning; in all but 17 the catheter was definitively and successfully removed in 3 weeks. 59 (77.6%) of them are without catheter and with a non significative post voiding residual (< 100 cc); 3 had urinary tract infection in the first month after catheter removal (successfully treated with antibiotic). Median prostate volume reduction was 30%. The uroflusmetry performed at the latest follow-up assessed a mean Qmax flow of 11,982±5,734 (p<0.01). Moreover, a significant improvement in quality of life (assessed with a visual scale) was reported (p<0.01).

Discussion
PAE may play an important role in selected patients in whom medical therapy has failed, are keen to preserve ejaculation and who are not candidates for surgery. Our experience shows feasibility, safety and high success rate of PAE in the management of patients with IBC.
PROSTATIC URETRA LIFT FOR TREATMENT LUTS DUE TO BPH SAVINGS EJACULATORY FUNCTION: MEDIUM TERM FOLLOW UP

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Aim of the study
Prostatic urethral lift (PUL, Urolift) technique can displace prostate lobes to capsule to enlarge mechanically urethral lumen without thermal injury or resection of prostate tissue. We report our experience for treatment of lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) in patients (pts) who want preserve ejaculation.

Materials and methods
22 men treated by single surgeon and followed up (FU) in prospective observational study from July 2014 to October 2017. Inclusion criteria: severe symptomatic BPH evaluated by International Prostate Symptom Score (IPSS) with normal erectile (EF) and ejaculatory functions (EjF) evaluated by international index of EF (IIEF-5) and Male Sexual Health Questionnaire for ejaculatory Dysfunction (MSHQ-EjD-SF). Exclusion criteria: enlarged prostate (>70 cm3), bladder neck sclerosis, presence of third prostatic lobe, dwelling catheter, other cervical urethral obstruction or tumors. All preoperatively performed uroflowmetry (UFM) with peak flow (Qmax) and post void residual (PVR), rectal digitous exploration, transrectal prostate ultrasound for measure prostate volume (PV), PSA and cystoscopy. FU was scheduled at the first postoperative month (mo) and every 6 by UFM, IPSS, IIEF-5, MSHQ-EjD-SF. At 6 mo FU all underwent cystoscopy and PSA was dosed. Procedure was in spinal anesthesia and after 1 day bladder catheter was removed. Pts were discharged with fluoroquinolone for 3 days, alpha-blockers for 3 weeks, anti-inflammatory for 7 days.

Results
Mean age was 51.54±9.4 (35-78) years, mean PSA was 0.89±0.4 (0.2-1.72) ng/ml, mean PV was 31.35±11.2 (18-67) cm3. Mean operative time was 21.07±12.5 (10-45) minutes and mean implants per pts were 3.3. FU was 19.35±13.8 (6-48) mo. The variation of main parameters was Q-max increase: 69.61% (6.21 ml/sec) (P=0.008), PRV reduction: 21.2 ml (50.4%) (P=0.03), IPSS reduction: 9.41 points (50.43%) (p<0.0001). Other post-operative data were reported in Table 1. 2 pts after 6 mo underwent trans-uretral resection (TUR) of prostate for persistence of hypovalidal urinary pick flow. EF and EjF were similarly preserved and no pts presented retrograde ejaculation. According to Clavien-Dindo classification of surgical complications were: acute urinary retention after catheter removal (resolved in 2 pts with placement of catheter for 7 days, grade 2) and 1 ematuria undergone emostatic TUR (grade 3a). 1 patient after 12 mo had an increased PSA and developed a prostate tumor treated by radical prostatectomy. 80% (16/20) of pts at FU were satisfied of surgical treatment, they would repeat the procedure and recommend it; 2 out of the 4 unsatisfied pts had a prostate >40 cm3 and 2 had a slight high bladder neck at cistoscopy. 1 pt had 67-cm3 PV and underwent a prostate TUR. All other pts had a PV <40 cm3.

Discussion
Urolift can improve urinary disorders secondary to BPH, preserving EjF and EF. Safe and easy method, reproducible, with a low % of complications. Careful selection of the patient is mandatory.
PROSTATE CANCER: NODAL AND ADVANCED DISEASE

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BODY MASS INDEX (BMI) IS AN INDEPENDENT FACTOR ASSOCIATED WITH THE RISK OF MULTIPLE LYMPH NODE INVASION IN PATIENTS UNDERGOING EXTENDED PELVIC DISSECTION DURING ROBOT ASSISTED RADICAL PROSTATECTOMY


Aim of the study
To investigate risk factors of multiple lymph node invasion (LNI) in patients undergoing extended pelvic lymph node dissection (ePLND) during robot assisted radical prostatectomy (RARP).

Materials and methods
The study included 211 operated patients who were from June 2013 to March 2017. Patients were classified according to level of LNI which was coded as absent, single or multiple. Risk factors of LNI were evaluated by the multinomial logistic regression model. A receiver operating characteristic (ROC) curve and area under the curve (AUC) were used to assess efficacy of factors and model evaluation.

Results
In univariate analysis, LNI, which was single in 13 (6.2%) and multiple in 15 (7.1%) cases, associated with body mass index (BMI; \( P = 0.030 \)), prostate specific antigen (PSA; \( P = 0.009 \)), proportion of biopsy positive cores (BPC; \( P = 0.038 \)), and high grade biopsy grade group (BGG; \( P < 0.0001 \)). In multivariate analysis, the risk of multiple LNI, when compared to subjects without, was independently increased by BMI (odds ratio, \( OR = 1.194; P = 0.026 \)) and PSA (\( OR = 1.089; P = 0.014 \)). ROC curves indicated that both BMI (AUC = 0.702) and PSA (AUC = 0.732) had a fair discrimination power.

Discussion
Multiple LNI was detected in more than 50% of cases and the risk was increased independently by PSA and BMI, which both showed a fair discrimination power. The positive association between BMI and aggressive PCA needs further basic research.
Neutrophil to lymphocyte ratio is associated with lymph node invasion and higher nodal burden in contemporary high risk patients treated with radical prostatectomy and extended pelvic lymph node dissection


Aim of the study
Neutrophil to lymphocyte ratio (NLR) is a significant predictor of adverse pathological outcomes in several malignancies. Since previous reports showed that inflammatory severity may affect metastatic progression and lymph node dissemination in pre-clinical models, we hypothesized that NLR is associated with lymph node invasion (LNI) and nodal burden in men with high risk prostate cancer (PCa).

Materials and methods
We evaluated 519 patients treated with radical prostatectomy (RP) and extended pelvic lymph node dissection (ePLND) for high risk PCa according to the EAU classification between 2011 and 2016 at a single tertiary care center. NLR was available in all cases and calculated from blood samples taken 1 week before RP. Univariable and multivariable logistic regression analyses evaluated the impact of NLR on adverse pathological outcomes at RP (pT3b/pT4, LNI and Gleason score 8-10). Linear regression analyses examined the correlation of NLR and number of positive nodes in patients with LNI. The best cut-off methodology was employed to identify the best NLR value associated with the aforementioned outcomes. The impact of NLR on the accuracy of the Briganti nomogram accuracy for LNI prediction was evaluated using the area under the curve (AUC) method. Kaplan-Meier curves and cox regression analyses tested the impact of NLR on biochemical recurrence (BCR).

Results
The median NLR was 2.18. At RP, 382 (73.6%), 210 (40.5%) and 204 (39.3%) patients had pT3b/T4, Gleason score 8-10 and LNI, respectively. Mean number of nodes removed was 21. Median follow-up time was 60 months. The 5-year BCR-free survival rate was 46.0%. At MVA, higher NLR was associated with LNI (p=0.02). No association was observed when pT3b/pT4 disease or GS 8-10 were considered (all p≥0.6). At logistic regression analyses, increasing NLR was associated with a higher number of positive nodes in patients with LNI (beta=0.152, p=0.03). At best cut-off analyses, the NLR most significantly associated with LNI was 2.1 (p=0.001). When MVA predicting LNI were repeated with the identified cut-off, patients with NLR ≥2.1 had a 1.76-fold higher risk to harbor LNI compared to patients with NLR <2.1 (p=0.007). When the Briganti nomogram was applied, inclusion of NLR to the base model increased AUC from 81 to 83.5%. After stratification according the identified NLR cut-off, the 5 years BCR-free survival rates were 48.9 vs. 42.2% for patients with NLR < vs ≥ 2.1 (p=0.003). At MVA, NLR (HR for NLR ≥2.1 vs.<2.1:1.50) remained a significant predictor of BCR (p=0.03).

Discussion
An elevated NLR was associated with LNI and higher lymph node burden in patients with high risk PCa. Moreover, NLR was associated with BCR after RP. These results support the integration of NLR in predictive models for LNI risk and cancer recurrence in high risk PCa.
STAGE-MIGRATION AND SURVIVAL OF LYMPH NODE POSITIVE PROSTATE CANCER PATIENTS: A COMPREHENSIVE TREND ANALYSES OF SURGICALLY TREATED MEN OVER THE LAST TWO DECADES


Aim of the study
Despite a trend towards more intensified prostate cancer (PCa) screening programmes, inverse stage migration has been reported in men treated with radical prostatectomy (RP) at high volume Centers. This is mainly due to more accurate patient selection and treatment of more aggressive PCa. However, whether this applies also to men with pN+ disease is currently unknown. Therefore, we analysed the evolution of tumour characteristics and patient survival in pN+ PCa, over the last 2 decades.

Materials and methods
Between 1998-2016, we identified 3,383 pN+ PCa patients, underwent radical prostatectomy (RP) and extended pelvic lymph node dissection at three tertiary referral centers in Europe and United States. Lowess smoother weighted functions graphically depicted the year-by-year trends of pathological characteristics and use of adjuvant treatments. Kaplan-Meier and multivariable Cox regression (MCR) assessed clinical recurrence (CR) and CSM according to year of surgery (1998-2003 [historical] vs. 2003-2009 [intermediate] vs. >2009 [contemporary]). Covariates were age, PSA, pathological Gleason score (GS), pT stage, positive surgical margins (PSM), number of nodes removed (NNR), number of positive nodes (NPN) and adjuvant therapies. We repeated the analyses using year of surgery as a continuous variable.

Results
Median baseline PSA value decreased over time (p=0.009). Pathological stage remained approximately stable over time, with the exception of a slight increase of pT3 (p=0.01). Conversely, a sharp increase of pathologic GS 8-10 and 4+3 was observed from 1998 to 2009 (all p<0.01). The rate of PSM increased between 1998 and 2004, and remained stable thereafter. During the study period, we also observed a considerable increase in the median NNR (from 10 to 20; p<0.001), which was associated with an increased median NPN (from 1 to 2, p=0.034). Overall, there was a trend towards lower use of adjuvant therapies (from 40 to 10%; p<0.001). Five-year CR-free survival and CSM-free survival for respectively historical vs. intermediate vs. contemporary patients were 85 vs. 77 vs. 55% (p<0.001) and 91 vs. 87 vs. 80% (p=0.0056), respectively. At MCR, intermediate and contemporary patients exhibited higher CR risk (HR:1.37; p=0.016 and HR: 3.17; p<0.001) and CSM risk (HR:1.59; p=0.017 and HR: 2.28; p=0.002) compared to historical patients. Overall, CR and CSM risks increased of 1.2- and 1.08-fold (all p< 0.001) per each year of treatment.

Discussion
Over the last two decades, a significant stage migration of pN+ PCa patients towards more aggressive disease was observed. These findings combined with the lower rate of use of adjuvant treatment observed over time may explain a worse cancer control observed for more contemporary pN+ patients and should be taken into account when selecting the proper post-operative management.
IS THERE AN AGE LIMIT FOR THE INDICATION OF EXTENDED PELVIC LYMPH NODE DISSECTION DURING RADICAL PROSTATECTOMY IN PATIENTS WITH CLINICALLY LOCALIZED PROSTATE CANCER?


Aim of the study
Available recommendations for extended lymph node dissection [eLND] at radical prostatectomy [RP] do not consider patient age, but rely on cancer characteristics only. However, for patients with limited life-expectancy, eLND might be an overtreatment. We hypothesized that limited life-expectancy of older RP candidates might dilute any beneficial effect of eLND in terms of cancer staging and outcomes. Therefore, we aimed at assessing the differential effect of age on the risk of lymph node invasion [LNI] and mortality due to cause other than prostate cancer [OCM] in order to define an age limit above which eLND might be avoided.

Materials and methods
We included 3,906 patients diagnosed with prostate cancer and treated with RP and an anatomically defined eLND at a single Institution. Logistic and Cox regression analyses were used to compute the risk of LNI at eLND and the risk of OCM 10 years after RP. Predictors of LNI were chosen in compliance with guidelines-recommended models and were PSA, primary and secondary biopsy Gleason score and clinical stage. Predictors of OCM were age at surgery, Charlson comorbidity index [CCI] and year of surgery. Locally weighted scatterplot smoothing method was used to graphically examine the differential effect of age on the risk of LNI and OCM.

Results
Median age was 65 years. LNI rate was 12%. 10-year OCM rate was 5%. PSA (odd ratio [OR] 1.06; p<0.001), primary (OR 5.32; p<0.001) and secondary (OR 2.27; p<0.001) biopsy Gleason score >=4 as well as clinical stage cT2 (OR 2.4; p<0.001) and cT3 (OR 3.24; p<0.001) were associated with higher LNI risk. Age (hazard ratio [HR] 1.11; p<0.001) and CCI (HR 1.28; p=0.03) were associated with higher OCM risk. Year of surgery (HR 0.92; p<0.001) was associated with lower OCM risk. For patients aged 75 or younger, the risk of LNI (8-11%) was higher than the risk of OCM (<1-10%; Figure 1). Conversely, for patients aged 76 or older the risk of LNI (11-17%) was equal or lower than the risk of OCM (11-26%).

Discussion
For RP candidates older than 75 years, the risk of OCM equals or exceeds the risk of LNI. Such relatively high risk of OCM compared to the relatively low risk of LNI casts relevant doubts on any potential benefit related to eLND at RP. These findings argue against the routine use of eLND for older patients in clinical practice.
DEVELOPMENT AND SPLIT-SAMPLE VALIDATION OF THE FIRST NOMOGRAM TO IDENTIFY THE CANDIDATES FOR EXTENDED PELVIC LYMPH NODE DISSECTION AMONG MEN STAGED WITH MULTIPARAMETRIC MRI FOR CLINICALLY LOCALIZED PROSTATE CANCER


Aim of the study
So far models predicting lymph node invasion (LNI) in prostate cancer (PCa) patients treated with radical prostatectomy (RP) and extended pelvic lymph node dissection (ePLND) are based exclusively on clinical variables. However, local stage is currently more accurately assessed by mpMRI. We therefore aimed at developing and validating a novel nomogram to predict the risk of LNI in contemporary patients staged with mpMRI prior to surgery in order to more accurately select the optimal candidates for ePLND.

Materials and methods
We relied on 2,464 PCa patients treated with RP and ePLND between 2005 and 2017 at four tertiary care referral centres. The population was randomly divided into a development (n=1,848) and a validation cohort (n=616). Within the development cohort two multivariable logistic regression models to predict LNI were developed: 1) a base multivariable model using the standard clinical predictors [PSA, clinical stage assessed by DRE (T1 vs. T2 vs. T3), primary Gleason grade (3 vs. ≥4), secondary Gleason grade (3 vs. ≥4) and percentage of positive cores]; 2) an advanced model including MRI T-stage [no lesion visible/lesion without capsular penetration [1-2] vs. lesion with suspicion of extra-capsular extension (3a) vs. lesion with suspicion of seminal vesicle involvement (3b)] to the base model instead of clinical stage assessed by DRE. Multivariable-derived coefficients were used to develop nomogram predicting the probability of LNI. The predictive accuracy (PA) of the two models was compared using the AUC. Decision curve analyses were performed to compare the net benefit. Finally, for each nomogram cut-off, specificity, sensitivity, and negative predictive values (NPVs) were calculated.

Results
The median number of lymph nodes removed was 13. Overall, LNI rates were 4.5 and 5.2%, in the development and validation cohort, respectively. All variables included into both base and advanced models were independent predictors of LNI (all p≤0.01). The PA of the basic and of the advanced models in the external validation cohort were 84.5 and 86%, respectively. The advanced model including MRI T-stage resulted into higher net-benefit relative to the base model across all risk ranges. Using a 5% nomogram cut-off, 487 patients (79%) would be spared PLND and LNI would be missed in 7 patients (1.4%). The sensitivity, specificity and NPV associated with the 5% cut-off were 78.1, 82.2, 98.6%, respectively.

Discussion
We reported the first multivariable model aimed at predicting LNI using local stage information derived from mpMRI. The PA of the model including MRI T-stage was higher than the model using DRE-derived local stage. For these reasons, mpMRI, when available, should be preferred in the assessment of LNI in order to better identify candidates to ePLND.
EXTENDED PELVIC LYMPHADENECTOMY FOR PROSTATE CANCER: SHOULD THE CLOQUET’S NODES DISSECTION BE CONSIDERED ONLY AN OPTION?

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Aim of the study
Cloquet’s node is located below the inguinal ligament and it can be considered the superior-most deep inguinal lymph nodes or the inferior-most external iliac lymph nodes. There is lack of consensus regarding Cloquet node dissection during ePLN for PCa and its removal is not standardized in the templates that have been published. The aim of the present study is to assess the quantitative prevalence of Cloquet nodes and the incidence of malignancy involvement in patients undergoing RRP and ePLND for PCa.

Materials and methods
All consecutive patients underwent RRP and ePLND with intent to cure local PCa performed by a single surgeon (WA) were identified from our prospectively collated institutional database. Dissected pelvic lymph nodes were sampled according to an anatomical template as follows: external iliac, obturator, internal iliac, Marcille’s, common iliac and Cloquet’s all the nodes packages were sent to the pathologist separately according to the most updated guidelines and were analysed by a dedicated pathologist. Baseline characteristics, perioperative and pathological outcomes were analyzed. All specimens were processed according to the Stanford protocol.

Results
Between January 2014 and December 2017 a total of 258 patients underwent RRP and LAD for PCa. In aggregate 247 out of 258 patients (95.7%) presented at least a lymph node in the Cloquet fossa tissue and 105 (40.6%) present more than one Cloquet node at one side. Patients with multiple nodes in Cloquet fossa presented higher average lymph node amount (27 vs 33; p< 0.0001). 13.5% of patients presented positive nodes. Pathological evaluation of the Cloquet’s nodes showed metastatic PCa in 3 out of 35 (8.5%) pN+ patients. In one case the Cloquet node was the exclusive node station involved by metastatic disease. No differences were found when patients with metastatic Cloquet’s nodes were compared with the pN+ population in terms of demographics, PSA, D’Amico classification, biopsy and pathological Gleason Grouping, clinical and pathological stage and complications.

Discussion
From the best of our knowledge this is the first study that analyses specifically the quantitative prevalence of Cloquet nodes and the incidence of malignancy involvement in patients undergoing RRP and ePLND for PCa. The occurrence of multiple lymph nodes in the Cloquet fossa is a rare event. Our series showed that Cloquet involvement seems to be associated to multiple nodes cohabitation and contemporarily lymph node metastases in other template locations. Related morbidity rate is sporadic and can’t justify the Cloquet’s preservation. Wider series are required to comprehend predictor factors of Cloquet’s nodes involvement. Until then the Cloquet’s lymphadenectomy would be recommended and should not be an option.
WHICH PATIENTS WITH CLINICALLY NODE PROSTATE CANCER BENEFIT FROM RADICAL PROSTATECTOMY? THE IMPACT OF THE SIZE AND SITE OF NODAL INVOLVEMENT ON LONG-TERM OUTCOMES


Aim of the study
The optimal treatment of clinically node positive prostate cancer (PCa) is still under debate. There is virtually no data to assist physicians in the identification of cN1 disease at preoperative imaging who could benefit from radical prostatectomy (RP). We aimed at assessing the outcomes of a large cohort of patients with cN1 PCa and we sought to identify predictors of recurrence and mortality.

Materials and methods
Overall, 162 patients with cN1 PCa treated with RP with an extended lymph node dissection between 2001 and 2017 at three referral centers were identified. Clinical N1 status was defined as ≥1 enlarged nodes with a short axis diameter ≥1 cm at CT or MRI scan. Patients had full details on the site and maximum diameter of nodal metastases. Logistic regression analyses assessed predictors of pathological lymph node involvement (LNI). Clinical recurrence (CR) was defined as positive imaging after rising PSA levels. Kaplan-Maier analyses assessed time to CR and cancer-specific mortality (CSM). Multivariable Cox regression analyses tested the impact of the site of nodal involvement and the maximum diameter of suspicious lymph nodes at imaging on CR and CSM.

Results
Median preoperative PSA was 16 ng/ml. The presence of cN1 disease was detected by abdominal CT scan and abdominal MRI in 54.9 and 45.1% patients, respectively. Overall, 79.7 and 20.3% patients had cN1 at the level in the pelvis alone and retroperitoneum ± pelvis, respectively. Median size of positive nodes at preoperative imaging was 13 mm. Overall, 84 (51.9%) patients received neoadjuvant androgen deprivation therapy (ADT) and 127 (78.4%) patients had LNI. Median numbers of nodes removed and of positive nodes were 18 and 2. At multivariable analyses, biopsy grade group 4-5 was the only predictor of pathologic LNI (OR: 3.2). Median follow-up for survivors was 64 months. All patients received adjuvant ADT after RP. Overall, 53 and 27 patients experienced CR and CSM. The site of CR was the pelvis, the retroperitoneum, the bone and visceral organs in 29.4, 11.8, 37.3 and 21.6% patients. The 8-year CR- and CSM-free survival rates were 51.4 and 74.6%. The 8-year CR- and CSM-free survival rates were 58.2 vs 25.2% and 80.1 vs 72.9% for pelvic vs retroperitoneal involvement at preoperative imaging (all P<0.05). At multivariable analyses, involvement of the retroperitoneum but not the size of nodal metastases at imaging was a significant predictor of CR (HR: 2.23) and CSM (HR: 2.32).

Discussion
Not all cN1 patients are affected by systemic disease at diagnosis, where RP ± ADT might play a role in selected patients with cN1 disease in the pelvis, regardless of the size. Conversely, node positive disease in the retroperitoneum is associated with worse oncological outcomes and surgery might play a limited role, where the administration of systemic therapies are to be considered.
THE IMPORTANCE OF THE SIZE OF NODAL METASTASES IN PREDICTING RECURRENCE OF NODE POSITIVE PROSTATE CANCER PATIENTS TREATED WITH RADICAL PROSTATECTOMY AND EXTENDED PELVIC LYMPH NODE DISSECTION: IMPLICATIONS FOR POST-OPERATIVE TREATMENT TAILORING


Aim of the study
Previous studies demonstrated that not all patients with node positive prostate cancer (PCa) are affected by the same prognosis, where individuals with ≤2 positive nodes have a favourable outcome as compared to their counterparts with higher number of positive nodes. However, none of these models considered the nodal burden in terms of the size of nodal metastases. We sought to develop a comprehensive prediction model including the diameter of nodal metastases to improve our ability to stratify patients with lymph node invasion.

Materials and methods
Overall, 255 node positive PCa patients treated with RP and nodal dissection between 2011 and 2017 at a single center were identified. All patients had detailed data on the number of nodes removed, the number of positive nodes and the maximum diameter of nodal metastasis. Clinical recurrence (CR) was defined as positive imaging during follow-up after the onset of biochemical recurrence (BCR). Multivariable Cox regression analyses tested the impact of maximum nodal involvement on the risk of CR after adjusting for pathologic characteristics. The discrimination accuracy of the model was quantified using the ROC-derived area under the curve (AUC) and was compared to a model that included the number of positive nodes only. Kaplan-Meier analyses assessed time to CR after stratifying patients according to the number of positive nodes (≤2 vs >2) and maximum nodal involvement stratified according to the median diameter (≤5 vs >5 mm).

Results
The median number of nodes removed and of positive nodes were 21 and 2, respectively. Median maximum nodal involvement was 5 mm. Overall, 179 (70.2%) and 105 (41.2%) patients had pT3b/4 and ISUP grade group 4-5 disease, respectively. Overall, 25 patients experienced CR. At multivariable analyses, the maximum diameter of nodal involvement represented a predictor of CR (Hazard ratio [HR]: 1.04; p=0.01). The multivariable model including the maximum diameter of nodal involvement had a higher AUC as compared to the model based only on the number of positive nodes (73 vs 65%, respectively). The 5-year CR-free survival rates were 92.5% vs 87.4% vs 71.6% vs 67.6% for patients with ≤2 positive nodes and ≤5 mm diameter vs ≤2 positive nodes >5 mm diameter vs >2 positive nodes ≤5 mm diameter vs >2 positive nodes >5 mm diameter (p=0.001).

Discussion
The maximum dimension of nodal invasion represents an independent predictor of CR and should be considered to improve our ability to identify node positive patients at higher risk of recurrence at intermediate-term follow-up. A model based on the number of positive nodes and maximum nodal involvement can be used to assist physicians in the identification of patients candidate for additional cancer therapies after surgery.
ASSESSING THE 20-YEAR OUTCOMES OF LYMPH NODE POSITIVE PROSTATE CANCER PATIENTS: A PLEA FOR LIFELONG FOLLOW-UP


Aim of the study
To date, scarce data are available on oncological outcomes of lymph node metastatic (LNM) prostate cancer (PCa) patients at very long follow-up and on predictors of cancer specific mortality (CSM) in this setting. We aimed to evaluate the long-term patterns of hard oncological endpoints such as clinical recurrence (CR) and CSM in a large multi-institutional database of surgically treated LNM PCa patients with at least 20 years of follow-up.

Materials and methods
Between 1987-1997, we identified 615 surgically treated LNM PCa patients, at three tertiary referral centers in Europe and US. All received radical prostatectomy (RP) and extended pelvic lymph node dissection. The primary outcome was CR. For this study analyses, patients were divided into two groups: earlier recurrent (CR within 10 years from surgery) and later recurrent (CR at least 10 years after surgery) patients. Secondary outcomes were CSM and other cause of mortality (OCM). Smoothed cumulative incidence plots assessed CR, CSM and OCM rates at 20 years after RP. Competing risk regression (CRR) tested predictors of CSM and OCM. The same analyses were then repeated separately in both groups of patients (namely, earlier and later CR).

Results
Median follow-up for survivors was 227 months. Overall, 206 (33.5%) experienced CR. Median time to CR was 89 months and 20-years CR rate was 39.2%. Overall, 390 patients died during the study period, 140 (35.9%) due to PCa. Median time to CSM was 110 months. 20-year CSM and OCM rates were 23.9% and 45.5%. At CRR, pathological Gleason score (GS) 8-10 (HR=2.0, p=0.009), positive surgical margin (HR=1.73, p=0.009) and ≥3 LNM (HR=2.0, p=0.004) were predictors of CSM. Overall, 132 (21.4%) patients experienced CR within 10 years from RP. Among those, 99 (75%) died due to PCa. The associated 20-yrs CSM rate was 78.3%, after accounting for OCM (16.6%). GS 8-10 was the only predictors of CSM (HR: 2.9, p=0.002). Of all remaining patients, 69 had CR at least 10 years after RP. Of this group of patients, the vast majority (47; 68.1%) harbored pT3b-T4 stages, 53 (76.8%) had GS≤7 and 36 (52.2%) had only one LNM. Among these, 32 (46.4%) died due to PCa. 20-years CSM rate was 45.7%, after accounting for OCM (13.8%). Here, ≥3 LNM was the only CSM predictor (HR: 4.08, p<0.001).

Discussion
Among LNM PCa patients, one out of four died due to PCa within 20 years from surgery. Although the majority of clinical recurrences occurred within ten years after RP, node positive patients are still at risk for developing late recurrences, beyond 10 years after surgery. While the impact of CR on CSM is higher in earlier recurrent patients, more than half of men developing recurrence beyond 10 years after RP will eventually dye from PCa. Therefore, patients harboring LNM at RP should be strictly monitored even at long-term and they should always be considered at risk for major PCa-related events.
ROBOT ASSISTED PROSTATECTOMY AND LYMPHADENECTOMY: MANAGEMENT OF ADVANCED DISEASE CASES

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Aim of the study
Robot assisted technique is increasingly used in the execution of radical prostatectomy cases also for advanced prostate tumors.

Materials and methods
In this video we are presenting the case of a RALP in a Gleason score 8 cancer, cT3, with a PSA of 63.96, with clear lymph node invasion at preoperative MRI. Our aim is to provide some suggestions and to share some tips and tricks that are potentially useful to address these challenging cases.

Results
For lymphadenectomy, the literature indicates as gold standard the execution of an extended template. If there is evidence of lymph node involvement, it is essential to have a safety tray available for immediate repair of a potential vessel injury during dissection. Multiple access points to the bulky node can allow a correct and safe access to lymph nodes attached to the external and hypogastric iliac vessels. In this fashion the dissection can be performed by attacking the lymph node package from different angles, therefore limiting the risk of injury to vessels and nerves. From the preoperative clinical staging of the case we know that the disease is likely to affect the periprostatic tissue. It is therefore crucial to maintain a proper distance from the prostate gland in accordance with the EPE risk that can be evaluated through the nomograms available in literature. This distance should be maintained carefully at the level of the bladder neck, even at the expense of its caliber which may result large. It is advisable to leave the maximum possible amount of tissue around the seminal vesicles during their dissection. The posterior plane should be set up by looking for pre-rectal fat and keeping as much distance from the prostate as possible. This poses a risk of injury to the rectum. Checking the integrity of the rectum by insufflating air through the rectal probe, solves any possible doubt of injuries. The extent of the disease, the size of the prostate and the shape of the pelvis can contribute to make the prostate stuck. It may therefore be useful to use traction points to create essential visual spaces for dissection. The complete isolation of the urethra can be fundamental for various reasons: for obtaining a correct dissection of the apex, reducing the risk of residual disease for having the maximal preservation of the external urethral sphincter and facilitate the recovery of postoperative continence for reducing the risk of involuntary lesions of the rectum.

Discussion
The advances of robotic technique and robotic expertise in referral centers is now allowing to face more and more difficult and challenging cases with excellent results both in terms of post-operative recovery and from the oncological point of view.
OLIGOMETASTATIC PROSTATE CANCER: THE IMPORTANCE OF A MULTIDISCIPLINARY APPROACH IN A HIGH VOLUME ROBOTIC CENTER


Aim of the study
Primary treatments in case of oligometastatic prostate cancer (OpCa), such as robot-assisted radical prostatectomy (RARP) and local or metastasis-directed radiotherapy (RT), were described safe and feasible. Our study aimed to assess clinical and oncologic outcomes of trimodal approach in oligometastatic disease.

Materials and methods
We prospectively collected and retrospectively analyzed data on patients affected by OpCa defined by the presence of ≤5 bone lesions and/or extrapelvic or retroperitoneal nodal involvement at preoperative imaging. All patients were subjected to RARP with extended pelvic lymph nodes dissection (EPLND) and received an adjuvant hormonotherapy (HT). After surgery, patients affected by localized nodal invasion or localized bone lesions were subjected to RT.

Results
From January 2010 to December 2016, 33 patients with OpCa were enrolled in the study. Data are reported as median (IQR). Age at surgery was 66 years (58 - 68). Twenty-four (72.7%), 21 (63.6%) and 12 (36.4%) patients presented nodal, bone or both site metastases at diagnosis, respectively. Median operative time, blood loss, and length of stay were 230 (190 - 280) min, 200 (100 - 300) ml, and 3 (2 - 5) days, respectively. In 14 (42.4%) cases a mono- or bilateral nerve sparing procedure was performed. Catheterization time consisted in 5 (5 - 5) days. Clavien-Dindo grade II, IIIa and IIIb complications were recorded in 1 (3%), 6 (18%) and 1 (3%) patient, respectively. At final pathology 7 (21.2%), 5 (15.2%) and 21 (63.6%) ISUP grade group 3, 4 and 5 were found, respectively, while stage T2c was described in 1 (3%) patient, T3a in 4 (12%), T3b in 27 (82%) and T4 in the remaining 1 (3%). The yield of LN removed was 18 (11 - 27), and in 27 (81.8%) patients a LN invasion was described at final pathology. Positive surgical margins were described in 15 (45.4%) patients. Median follow-up time was 37 months (28 – 55). After surgery 17 (51.5%) patients underwent adjuvant RT while 5 (15.2%) were subjected to focal cyber-knife (CK). Salvage RT and CK were performed in 10 (30.4%) patients. After RARP alone a PSA < 0.2 ng/ml was described in only 6 (18%) patients. This value was instead reached in 16 patients out of 21 treated with the trimodal approach. Overall, 16 (48.5%) patients developed clinical progression with a median PFS time of 35 months (CI 95%; 19.5-50.5) according to Kaplan Meier method. Seven (21.2%) patients developed CR with a median CRFS time was 70 months (CI 95%; 43.4 - 96.6). At 24 months, 88% of patients were continent (0 - 1 pads), 9% have mild incontinence (2-3 pads) and only 3% a severe one (> 4 pads). Potency was not analyzed due to the high rate of ADT. No patients died during the follow-up.

Discussion
RARP is a safe and efficacious procedure for OmPCa, with a rate of complication similar to the one described in literature. A multimodal approach represents a feasible treatment in selected OmPCa patients providing good oncologic outcomes.
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DUCTAL CARCINOMA OF THE PROSTATE PRESENTING WITH METASTATIC DISEASE: CLINICAL FEATURES AND 20-YEAR OUTCOME FROM A MONOINSTITUTIONAL EXPERIENCE

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Aim of the study
Ductal carcinoma of the prostate (DAC) is a rare histological subtype of prostate cancer (PC), generally associated with a poor prognosis as it is reported to be an aggressive tumor often with locally advanced and/or metastatic disease at presentation. Given the paucity of such reports in the available literature, little is known about how histological feature may affect prognosis in DAC, especially in case of newly diagnosed metastatic disease (mDAC). We present our 20-year experience of multidisciplinary management of mDAC.

Materials and methods
A retrospective analysis of our Institutional Urology-Radiation Oncology database was performed. Patients (pts) diagnosed with mDAC with available follow-up data were included. All these pts were discussed at our multidisciplinary Oncology board, generally undergoing Androgen deprivation therapy (ADT) as first line therapeutic option. Palliative radiotherapy (RT) was performed in symptomatic pts. In selected cases systemic therapy was started at disease progression. A subgroup analysis was also performed splitting the whole population in study in pure mDAC (group A) and mixed mDAC (group B). Kaplan-Meier method was used to estimate survival outcome, after adjusting for predictive variable (age, comorbidities, pathological stage).

Results
The features of the population in study are summarized in Table 1. From 1997 to 2016, 11219 patients had histological diagnosis of PC at our Institution. Among these, 112 DAC (cumulative incidence 0.99%), of whom 23 (20.5%) mDAC at presentation. 38 pts (33.9%) were pure DAC at the histological examination, while 74 (66.1%) showed a mixed histology. Among 23 mDAC at presentation, 70% were pure DAC. Median PSA at presentation was 12 ng/mL for pure ductal mDAC vs 84 ng/mL for non-mDAC. Bone metastasis were found in 20 pts (87%), visceral lesions in 6 pts (26%). 11 pts (47.8%) developed castrate resistant PC, 6 of them undergoing continuous ADT plus palliative RT (33.3%), 3 pts (13%) ADT plus systemic therapy. 2- and 5-year overall survival (OS) were 85% and 38%, respectively for group A, 40% and 0%, respectively for group B.

Discussion
DAC is a rare, aggressive subtype of PC, especially when presenting in a pure form, with evidence of PSA detection lower than conventional PC or mixed DAC at the diagnosis despite a higher rate of metastatic first presentation.
A PROSPECTIVE REAL LIFE STUDY EVALUATING ABIRATERONE ACETATE PLUS PREDNISONE (AAP) FOR METASTATIC CASTRATION RESISTANT PROSTATE CANCER (MCRPC) (ABITUDE STUDY)


Aim of the study
According to an emerging need to investigate effectiveness in routine clinical practice, the ABITUDE study was designed to evaluate Abiraterone Acetate plus Prednisone (AAP) in a real-world setting on chemotherapy-naïve patients with metastatic Castration-Resistant Prostate Cancer (mCRPC). Here we present the main results of the first interim analysis.

Materials and methods
ABITUDE is a prospective, observational cohort study. Patients were consecutively enrolled in 49 Italian centers at the beginning of AAP and are being followed for 3 years. The primary objective is to evaluate PSA decline rate, radiographic progression-free survival (rPFS) and clinical benefit maintenance according to PCWG3 during AAP. Patient’s quality of life and pain were measured every 6 months with the Functional Assessment of Cancer Therapy–Prostate (FACT-P; score range: 0-156) and the Brief Pain Inventory (BPI; score range: 0-10).

Results
Among 481 enrolled patients, 453 (94.2%) were evaluable for analyses: 330 (68.6%) were managed in oncology centers, while 65 (13.5%) and 58 (12.1%) in urology and radiotherapy centers, respectively. The median observation duration per patient was 8.8 months. Main baseline characteristics are shown in Table 1. The most relevant difference in the cohort treated in urological centers was in the longest time in standard hormonal therapy before the beginning of AAP. During the treatment with AAP, 242 patients (60.3%) had a ≥50% PSA decline (N=401). The 1-year probabilities for no radiographic progression and for clinical benefit maintenance were 73.9% (standard error: 2.9%) and 76.0% (standard error: 2.9%) (N=439). At enrolment, median (25th-75th percentile) FACT-P total score was 110 (95; 120) points (N=421); during observation period, 218 patients (71.9%) did not show functional decline (N=303). Median (25th-75th percentile) baseline BPI worst pain score was 2 (0; 4) points (N=388); the 1-year probability for no pain progression was 70.9% (N=439). Serious adverse events were 16.8% but only 0.6 % were possibly, probably or certainly correlated to study drug.

Discussion
These data suggest that AAP was active and safe in a real world study population with baseline comorbidities. Further analyses with a longer follow up are awaited.
ENZALUTAMIDE IN REAL LIFE: RESULTS FROM A RETROSPECTIVE, MULTICENTER, ITALIAN STUDY


Aim of the study
Enzalutamide is a second-generation androgen receptor (AR) inhibitor that binds to and blocks the AR with higher affinity than previously available AR inhibitors. High activity has been proven in patients with metastatic castration-resistant prostate cancer (mCRPC). Aim of this study is to evaluate the safety and efficacy of enzalutamide in the “real life” clinical practice for men with mCRPC.

Materials and methods
A consecutive series of patients with mCRPC in 11 Italian tertiary centres treated with enzalutamide under the Italian Medicine Agency (AIFA) program was collected. Demographics, clinical parameters, treatment outcomes and toxicity were recorded. The Kaplan-Meier method was used to calculate the median of progression free (PFS), pain free and overall survival (OS). OS was defined as the time between the beginning of treatment with enzalutamide and death or last follow-up visit, PFS as that between the beginning of treatment with enzalutamide and the first verified event. Differences between curves were evaluated by Log-rank test. To identify independent prognostic factors with significant impact on PFS and OS multivariate analyses were performed using the Cox proportional hazards model. Calculating the exponential of the regression coefficients from the Cox model provided an estimate of the hazard ratio (HR) and the 95% confidence interval (95%CI).

Results
We included 105 patients (mean age 74.8±9.0 yr). All patients were on androgen deprivation therapy. Patients had prior abiraterone, taxanes, radium-223 and stereotactic radiotherapy in 26.7%, 20.9%, 3.8% and 16.2%, respectively. Fifty-four patients (51.4%) had a Gleason score ≥8 at diagnosis, being 62% asymptomatic. The median serum total PSA at enzalutamide start was 17.6ng/mL (IQR 4.9-54.4). The median cycles of enzalutamide was 6 (IQR 3-11). Grade 3 and 4 toxicity was recorded in 8/84 patients 9.5% (37% cardiovascular events, 37% fatigue, 12% critical elevation of AST/ALT levels, 12% neurological toxicity). Median follow-up was 7.0 months (IQR 3-14), the median progression free and overall survival were 11.0±2.5 and 31.0±9.3 months, respectively. The last median serum total PSA was 9.4ng/ml (IQR 0.8-65.0). Univariate analysis of factors associated with OS demonstrated that progression of pain (HR 4.46 (95%CI 1.62-12.29); p=0.004) and use of opiates (HR 3.97 (95%CI 1.66-9.81); p=0.003) were predictors of a worse OS and also that these two factors associated with previous therapies (abiraterone, chemotherapy, radium or stereotactic radiotherapy) (HR 3.27 (95%CI 1.78-5.98); p=0.001), and time to mCRPC development (HR 0.91 (95%CI 0.84-0.99); p=0.039) were predictors of a worse PFS.

Discussion
With the rules prescribed from the Italian Medicine Agency (AIFA) program the enzalutamide showed to be effective, well tolerated, in both chemonaive and pretreated progressive mCRPC in a “real life” setting. Pain and use of opiates are associated with worse OS and PFS.
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RENAL AND ADRENAL TUMORS: SURGICAL TECHNIQUES

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TIPS AND TRICKS TO TREAT LARGE (MAYBE MALIGNANT) ADRENAL TUMOURS LAPAROSCOPICALLY

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Aim of the study
Laparoscopic adrenalectomy (LA) has become the gold standard for adrenal masses <6cm without radiological signs of malignancy. Its use for masses >6 cm has been questioned. When malignancy is suspected but there are no signs of local invasion, LA is an option. Therefore, the surgeon should keep in mind some technical tips to maximize oncological results and reduce complications. We present, step by step, the surgical technique when a large adrenal mass with high risk of malignancy is approached laparoscopically.

Materials and methods
Surgical technique: A transperitoneal approach was chosen in order to achieve a wider operative field. The patient is placed in 45° flank position. The pneumoperitoneum is created by using a Veress needle, and the ports are placed as in standard nephrectomy (12 mm for the camera, 12 mm and 5 mm for the surgeon, 5 mm for the retraction of the spleen). Complete bowel mobilization is needed to allow adrenal gland’s exposure. Spleen’s lateral attachment, as well as splenorenal ligaments, are divided. Spleen retraction by using a Johan forceps may be helpful. The mass is carefully dissected from the spleen, the bowel, and the pancreas and clearly visualized. Attention must be paid in order to avoid pancreas tail injuries as sometimes it could be mistaken for the adrenal gland. The renal hilum may be identified either by accessing it directly or by identifying and following the gonadal vein cephalically. Then, if possible, the adrenal vein is carefully dissected and clipped by using Hem-o-Lok. If the renal pedicle is impossible to manage because of the size of the tumour or the amount of vascular pedicles originating from the mass itself, the adrenal gland is at first mobilized circumferentially, starting from kidney’s upper pole. The fat tissue surrounding kidney’s upper pole is dissected and removed. The dissection is then performed to the medial surface of the diaphragm, finding a plane between the adrenal gland’s posterior surface and the psoas muscle. Care must be taken to control arterial blood supply, if necessary by using clips. Then, kidney’s medial surface is dissected, until adrenal mass’s complete mobilization. At last, the renal pedicle and the adrenal vein can be handled and the lesion removed “en bloc” with the surrounding tissues and kidney’s upper pole fat tissue. The surgeon should always remember that oncologic surgery principles must be respected and that the threshold for conversion to an open surgery should be low.

Results
Mean operative time and blood losses were 115 (+46) min and 69 (+28) mL. Only one intraoperative and 5 postoperative complications (4 Clavien 1 and 1 Clavien 2) were recorded. Median hospital stay was 6 (IQR 5-6) days.

Discussion
In case of large adrenal lesions, if the risk of malignancy is not high, LA might be an option when oncological surgery principles can be respected.
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OFF-CLAMP LAPAROSCOPIC PARTIAL NEPHRECTOMY: PREOPERATIVE IMAGING AND TUMOR ENUCLEATION


Aim of the study
There is evidence that longer ischemia time is associated with short and long-term renal consequences. Nevertheless, minimally ischemic and off-clamp Partial Nephrectomy (PN) are considered technically demanding procedures with potential for increased blood loss. Therefore, avoiding global renal ischemia should be particularly applicable for patients with decreased baseline renal function. To help decision making about off-clamp laparoscopic PN based on a standardized preoperative imaging report.

Materials and methods
Information about tumor location, relationship with collecting system, presence of feeding arteries and pseudocapsule integrity using a standardized method were recorded. The video, produced on 2018, shows two patients underwent off-clamp laparoscopic tumor enucleation after a meticulous analysis of preoperative imagining. In the first case we present a 57 years old woman diagnosed with right renal tumor and normal renal function. Renal tumor information were resumed as follows: 3.4 cm right renal mass PADUA score 6, located on segment 9, 70% exophytic, 15 mm distant from collecting system, absence of feeding arteries and integrity of the pseudocapsule surrounding the tumor. In the second case we present a 50 years old gentleman with stage 3 chronic kidney disease diagnosed with right oncocytoma. Tumor morphological characteristics were summarized as follows: 4 cm right renal tumor involving segments 3 and 1, 30% exophytic, 3 mm distant from the collecting system, no feeding arteries identified and a complete pseudocapsule surrounding the tumor.

Results
In the first case operative time was 115 minutes, estimated blood loss was 250 ml and the patient was discharged 3 days after surgery. Final pathology showed pT1a chromophobe RCC. In the second case operative time was 125 minutes, estimated blood loss was 300 ml and the patient was discharged 3 days after surgery. Final pathology confirmed the diagnosis of oncocytoma.

Discussion
Preoperative imaging with standardized method to report renal mass and meticulous analysis of tumor characteristics can help urologists to offer patients a tailored surgical approach finalized to maximize renal function preservation without undermining oncologic principles and safety.
SAFETY AND EFFICACY OF RETROPERITONEAL SUTURELESS ZERO ISCHEMIA LAPAROSCOPIC PARTIAL NEPHRECTOMY FOR LOW NEPHROMETRY SCORE MASSES


Aim of the study
To evaluate oncological feasibility, oncological and functional results of retroperitoneal sutureless zero ischemia laparoscopic partial nephrectomy (LPN).

Materials and methods
From January 2016 to November 2017, 13 consecutive patients with posterior low nephrometry score (RENAL<7) renal masses underwent retroperitoneal sutureless zero ischemia LPN in our institution. Clinical, surgical and pathological data were prospectively collected. Complications were reported according to the Modified Clavien Classification. The indication for nephron-sparing surgery was elective in 9 (69%) patients and imperative in 4 (31%). Median RENAL score was 5 (IQR: 5-7), median tumor diameter 25 mm (IQR: 20-35). In 11 cases, the tumor was located polar (85%), and in 2 cases hilar (15%). A 4-trocar approach was used. After placing the first trocar about 3 cm above the iliac crest on the medial axillary line, the other three were placed using digital guide after having created the retroperitoneal space with a dilator balloon. The intervention started with dissection of perinephric fat, renal hilum was not dissected. Once the neoplasm is found and delimited, enucleation was performed using the ultrasound scalpel or monopolar scissors and the suction device to better expose the enucleation plain and maintain a bloodless surgical field. Suture of the parenchyma was never performed. Once the mass was removed, interlobar arteries are cauterized using ultrasonic scalpel or bipolar forceps. If necessary hemostatic agents (Tachosil or Floseal) were left on the enucleation site. No drain was left.

Results
There were no intraoperative complications. No cases were converted to radical nephrectomy. Median operative time was 90 min (IQR:80-120), in no case clamping of the renal artery was necessary, median hospital stay was 4 days (IQR:4-4). Mean GFR loss was 10.46 (SD: ±19.46) mL/min/1.73m², mean EBL was 320 (SD: ± 312) ml. Pathological analysis showed renal cell carcinoma in 11 patients (85%) staged T1a. In 2 (15%) an oncocytoma was found.

Discussion
Our preliminary experience showed feasibility and safety of sutureless retroperitoneal zero ischemia LPN for the treatment of low-complexity posterior renal masses. Longer follow-up and higher numbers of patients are, however, warranted.
BILATERAL LAPAROSCOPIC RADICAL NEPHRECTOMY IN A PATIENT WITH END STAGE RENAL DISEASE

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Aim of the study
Patients with end stage renal disease (ESRD) are at a higher risk of renal tumors (RT). In patients who have received kidney transplants (KT), the risk of developing RT in native kidneys (predominantly unilateral) is 10-100 times superior compared to the general population. In a previous study by one of the authors, out of 1109 KT, 8 cases of native renal RT (all unilateral) were observed. This abstract will present laparoscopic bilateral radical nephrectomy (RN) for RT in a patient with ESRD, with the aim of discussing therapeutic indications, access and arrangement of trocars.

Materials and methods
56-year-old man, BMI of 19.9, with IgA nephropathy causing an ESRD with preserved diuresis requiring haemodialysis. In the work-up for living donor transplantation a solid mesorenal right endophytic lesion (15 mm) and a lower left polar one of 7 mm were detected. Multidisciplinary discussions was done about the therapeutic approach, namely right NR and right lumpectomy vs bilateral RN. The advantages of the first choice would have been to preserve the diuresis guaranteeing a better quality of life, risking, however, the relapse of a RT in the remaining kidney due to the presence of predisposing factors like a history of RT, dialysis and immunosuppressant therapy in the case of a subsequent transplant. Instead, a bilateral RN would eliminate the risk of RT, guaranteeing the suitability of the transplant after proper follow up period. Other points of discussion were transperitoneal vs retroperitoneal approaches, placement and dimensions of optics and trocars.

Results
Right side: Positioning on left flank; open access at the level of the umbilicus; 10 mm trocar subcostalis; 5 mm trocar pararectal; 5 mm trocar on the line of access according to Pfannenstiel; exposure of vena cava, right renal vein and artery; section of artery and renal vein; section of the ureter; RN; right surgical completion time including insertion of kidney in endo bag, closure of trocar doors while maintaining optics at the umbilical level. Left side: Shift patient to right flank; 5 mm trocar subcostalis; 5 mm trocar pararectal; 10 mm trocar to the extreme left of Pfannenstiel; isolation of vascular pedicle; clampless renal lumpectomy; tumor extraction via 10 mm trocar; intraoperative frozen section resulting in clear cell carcinoma; decision to proceed with left RN. Extraction of both kidneys in endo bags via Pfannenstiel incision. Operating time was 300 min. Estimated blood loss was 100 cc. Hospital stay: 7 days without complications. Histologic results: clear cell carcinoma of the left kidney pT1a (1.0 cm)-pNx-G2; clear cell carcinoma of the right kidney pT1a (1.5 cm)-pNx-G1-G2.

Discussion
A precise preoperative planning allows to optimize the minimally invasive characteristic of laparoscopy.
HOLOGRAPHIC RECONSTRUCTIONS CAN AID SURGICAL PLANNING BEFORE PARTIAL NEPHRECTOMY: A HEAD-TO-HEAD COMPARISON WITH STANDARD CT


Aim of the study
Preoperative planning before partial nephrectomy (PN) is a crucial step during which the surgeon, relying on cross sectional imaging, generates a personal mental 3D representation of the anatomy. This process is time-consuming, subjective and not reproducible since depends on uncontrolled skills of the observer. Holographic technology could create a true immersive 3D experience and improve the perception of anatomical details, but it has not yet been investigated for clinical applications. Aim of the study is to evaluate the utility of holographic reconstructions vs standard CT for the pre-operative planning of PN.

Materials and methods
The CT scans of 10 consecutive patients with intermediate/high complexity renal masses (RENAL score≥7) scheduled for robot assisted PN were translated into holograms. Seven observers with different experience independently evaluated tumor topography, renal anatomy and nephrometry on CT and holograms, presented unpaired and randomly. Evaluation time for CT vs holograms was compared by the Kruskal-Wallis test, overall and per each observers. Inter-observer agreement referred to any anatomical detail and the assignment of nephrometric scores was measured for CT vs hologram by the Cohen’s kappa test.

Results
Evaluation time was longer and more scattered for CT than for Holograms, overall (mean+standard deviation 3.4+1.7 vs 1.7+0.8 minutes, respectively, p<0.0001) and per observer, disregarding its experience. Inter-observer agreement was fair or poor (k<0.6) for CT, whereas holograms showed a good (k>0.6) agreement concerning several anatomical items. Holograms also showed higher inter-observer agreement regarding nephrometry, even just fair in absolute value. The main limit of the study is the small size of the cohort.

Discussion
Holographic reconstructions could aid preoperative planning for PN and proved to be more efficient than standard CT scan.
TOWARD STANDARDIZED REPORTING OF RESECTION STRATEGIES AND RESECTION TECHNIQUES FOR PARTIAL NEPHRECTOMY: INSIGHTS FROM A MULTICENTER PROSPECTIVE STUDY WITHIN THE SURFACE-INTERMEDIATE-BASE (SIB) MARGIN SCORE INTERNATIONAL CONSORTIUM


Aim of the study
Current international Guidelines prioritize partial nephrectomy (PN) for the treatment of localized renal masses. The goal of PN to maximize renal function preservation while ensuring oncologic efficacy is inherently linked to the resection technique (RT). Although key opinion leaders increasingly acknowledge this concept, evidence is still sparse and current Guidelines do not provide specific recommendations on RTs during PN. Moreover, there is no evidence to date on the surgeons’ preoperative intent (resection strategy, RS) and the key factors driving performance of specific RTs. To fill this gap, we introduced the Surface-Intermediate-Base (SIB) Margin score, we formed the SIB Margin Score International Consortium and we designed a prospective multi-stage project (SIB project) within the IDEAL framework. The aim of this video is to show a step-by-step evaluation of the SIB model for standardized reporting of RSs and RTs during PN.

Materials and methods
After obtaining Institutional Review Board Approval, consecutive patients with cT1-2 N0M0 renal tumors treated with PN from September 2014 to March 2015 at the 16 Centres of the SIB International Consortium were included in the study. All surgeons involved had extensive experience in PN. PN was performed with open, laparoscopic or robotic approaches based on surgeon’s experience, skills and on hospital resources. Preoperative surgeon’s resection strategy was defined as anatomic if the surgeon’s intent was to follow the anatomic plane, predominantly by blunt dissection, while non-anatomic if the surgeon’s intent was to perform tumor excision predominantly by sharp dissection through non-anatomic planes. Principles of SIB score include a) identification of the circumferential Surface, Intermediate and Base macro-areas within the intrarenal portion of the PN specimen; b) identification of the zones of minimal margin (named score-specific area) within each macro-area; c) grading of score-specific areas according to visual definitions of RTs and d) classification of the overall RT based on the SIB score sum. Final RT was classified as enucleation (SIB 0-2), enucleoresection (SIB 3-4) or resection (SIB 5).

Results
Overall, 507 patients were included. Preoperative intent of the surgeon (RS) was anatomic in 277 (55%) cases while non-anatomic in 230 (45%). Enucleation was performed in 266 (52%) patients, enucleoresection in 150 (30%) and resection in 91 (18%). Hybrid RTs (SIB score 2 and 4) were performed in 136 (27%) cases. Overall, 32 (71%) surgeons used at least two different RTs in their personal series.

Discussion
Resection technique vary significantly across surgeons and institutions worldwide. Moreover, the pattern of RTs performed by the 45 surgeons involved in our study suggests that most surgeons vary the RT from case to case employing a significant proportion of resection approaches across the SIB spectrum. Our findings provide a robust foundation for further work along the IDEAL model.
RIGHT LAPAROSCOPIC ADRENALECTOMY IN A CASE OF METASTATIC RENAL CANCER WITH A LATE SURGERY: IS A LAPAROSCOPIC APPROACH FEASIBLE?

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Aim of the study
Metastases to the adrenal gland are the second most common type of adrenal mass lesion after adrenocortical adenomas. Primary treatment consists in laparoscopic or laparotomy excision according with the surgical experience. The video shows a step-by-step surgical technique of a laparoscopic right adrenalectomy for metastasis in kidney cancer disease performed 18 months after nephrectomy.

Materials and methods
The patient is a 65-years old man with a previous history of recurrent bilateral type I papillary kidney cancer. In 2015 he underwent a laparoscopic right radical nephrectomy. In 2016 he underwent a right laparoscopic adrenalectomy for an adrenal lesion suspicious for metastasis. Then at our hospital in 2017 he underwent a left robot-assisted partial nephrectomy of five different lesions. During follow-up, a CT scan showed a 5-cm nodule in the upper pole of the solitary left kidney and suspect metastatic disease at the site of the previous adrenalectomy. After the discussion at the multidisciplinary team meeting, patient was scheduled for a right laparoscopic metastasectomy and left laparoscopic radical nephrectomy at the same time. After positioning the patient in the left flank position, five operative trocars are placed, according to renal trans-peritoneal surgical model. The first surgical steps are the mobilization of descending colon, the access into retroperitoneal space and, after incision of Gerota’s fascia and the identification of the adrenal gland. Intraoperative frozen section (IFS) of tissue removed from the native location of right adrenal gland was done and revealed the presence of fat tissue without adrenal cells or metastatic disease. Surgical procedure was continued deeply with a partial liver derotation with a major exposure of the region suspicious for the original adrenal gland and metastatic nodule. The lesion was completely removed. IFS confirmed the presence of metastatic disease. After the procedure patient was positioned in the right flank and a laparoscopic left radical nephrectomy was performed. The final histological exam confirms the diagnosis of metastatic kidney cancer lesion of right adrenal gland and 7 different papillary type I lesions in the left kidney.

Results
Surgical total time for the two consecutive operations was 350 minutes. Surgical time for adrenalectomy was 250 minutes. Totally blood loss was 350cc. No intraoperative or post-operative complications had been reported. According to the nephrologist patient started the hemodialysis at the first post-operative day. Totally length of stay was 6 days.

Discussion
Missed adrenal metastasis at the time of the previous surgery enhances the difficulty of adrenalectomy. The growth of the lesion due to the delay of surgical timing and the anatomical modifications following previous surgery make laparoscopic adrenalectomy challenging procedure. Laparoscopic adrenalectomy is feasible even in such a challenging case with good oncological outcome and without any complication.
ROBOTIC TRANSPERITONEAL ADRENALECTOMY FOR MASSES LARGER THAN 5 CM


Aim of the study
Adrenalectomy is the treatment in case of functional or malignant adrenal masses. In the last 20 years the open approach has left the field to the minimally-invasive techniques due to the same oncological outcomes with lower morbidity rate. Laparoscopy is the gold standard for masses smaller than 5 cm, while the benefit of this approach for larger masses is still debatable. Robotic surgery is becoming a valid alternative to conventional laparoscopy. We describe our experience in robotic adrenalectomy for masses larger than 5 cm and the surgical technique performed in a single case.

Materials and methods
From January 2016 to April 2018 we performed 10 robotic adrenalectomy for masses larger than 5 cm. Perioperative and postoperative outcomes were collected and analysed. We describe a case of a 66 years old woman with incidental right adrenal mass diagnosis. Preoperative computed tomography showed a hypodense nodular lesion of 7x5 cm suspected for pheochromocytoma. The patient did not complain any symptoms at the hospital intake. No major comorbidities were referred by the patient (Charlson Comorbidity Index score of 3). We performed a transperitoneal approach in lazy left lateral decubitus, using the da Vinci Xi® model master-slave system. We started with incision of Gerota’s fascia previous liver mobilization and retraction. Isolation and section of adrenal vein and arteries. Complete the avascular posterior dissection of the gland and asportation in endo-bag.

Results
The operative time was of 115 min, the estimated blood loss of 50 ml. The patologic report confirmed the presence of a pheochromocytoma. In our experience of 10 robotic adrenalectomy for masses larger than 5 cm, the mean size was of 8,3 cm (range 5 - 18 cm). The mean operative time was of 120 min (range 70 - 210 min) with a mean estimated blood loss of 100 ml (range 50 - 300 ml). No conversion to open surgery was needed. Mean hospital stay was of 5 days (range 4 - 8 days). No perioperative and postoperative complication were reported. The patologic reports showed 2 adenocarcinoma, 2 pheochromocytoma, 1 myelolipoma, 1 angiomyolipoma, 3 adenoma.

Discussion
Robotic adrenalectomy rapresents a safe and effective alternative technique to the laparoscopic approach in surgical treatment of masses larger than 5 cm. High definition magnified 3D vision of operative field, stable traction and wristed instruments allow more accurate dissection. (Year of production: 2018)
KIDNEY CANCER: ROLE OF NOVEL IMAGING

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INDICATIONS FOR ROBOTIC PARTIAL NEPHRECTOMY IN HIGHLY COMPLEX RENAL TUMORS: THE IMPACT OF HYPERACCURACY 3D RECONSTRUCTION AND UROLOGISTS’ PERCEPTION


Aim of the study
In the last 10 years Partial nephrectomy progressively gained a primary role also for the treatment of highly complex renal tumors. But many times the indication to PN could be enlarged if the surgeon would just have access to more precise imaging than CT scan images. 3D reconstruction could be the tool that we need. The aim of this study is to assess the role of 3D reconstruction in aiding preoperative planning for highly complex renal tumors amenable to robotic partial nephrectomy (RPN).

Materials and methods
During the 6th Techno-Urology Meeting (www.technourologymeeting.com) we showed to the attendees/urologists the Computed tomography (CT) scans and respective 3D reconstructions of 20 highly complex renal tumors were displayed. These 20 cases had already undergone RPN performed by a single experienced surgeon. The attendees were asked to watch the videos of the CT scans first, and then the respective 3D reconstruction of 5 out of the 20 cases, randomly selected. A purpose-built questionnaire collected responders’ surgical experience and surgical indication (RPN vs nephrectomy) after viewing the videos.

Results
20 expert urologists, 27 young urologists, and 61 residents (total=108) participated in the study. 542 views of the cases were obtained. Based on CT scans, RPN was indicated in 256 cases (47.2%). After viewing the respective 3D reconstruction, the responders changed their indication in 148 cases, raising RPN to 404 cases (74.5%) (p<0.001). The surgical experience showed to be a strong predicting factors of changing opinion.

Discussion
The present study is encouraging and it surely represent a significant step towards the validation of the use of 3D reconstruction for surgical planning in patients undergoing robotic kidney surgery. The use of this technology might translate into a larger adoption of nephron sparing approach. Further studies in this area are mandatory to corroborate these results.
MORPHOLOGIC AND FUNCTIONAL EVALUATION BY CT-SCAN VOLUMETRIC ASSESSMENT AND RENAL SCINTIGRAPHY AFTER NEPHRON SPARING SURGERY. WHICH ROLE OF THE SURGICAL COMPLEXITY ON THE POSTOPERATIVE OUTCOME?


Aim of the study
Preservation of renal function is one of the main goals of nephron sparing surgery (NSS). The renal scintigraphy (RS) and the CT scan based volumetric assessment (VA) have gained reliability in renal function (RF) estimation due to a precise assessment of the operated kidney function alone, mostly detectable when a surgically complex renal mass is excised. PADUA score is a widely used nephrometric system, able to discriminate lesions complexity in the preoperative planning. Aim of the study was to assess the impact of PADUA score on functional data obtained by RS and the software-calculated volume data at CT-scan.

Materials and methods
All patients with a renal mass suitable for PN from 01/2016 were prospectively enrolled. Demographic (including PADUA score stratified into 1,2,3 risk groups according to the tumor surgical complexity), intraoperative and postoperative variables were considered. All patients underwent RS and VA prior and after PN (at 3rd month postoperatively). For RF, besides serum creatinine and eGFR, split renal function (SRF) and Effective Renal Plasma Flow (ERPF) were evaluated by RS. For VA, CT-scan images were elaborated by a dedicated Software for 3D segmentation according to the “growing region” strategy by two dedicated radiologists. Multivariate linear regression analysis was used to identify relationships between the LORV and LORF (expressed as SRF and ERPF decline) and other demographic, perioperative and pathological variables. The analysis was conducted firstly on the whole cohort of patients, then considering each PADUA risk category. All variables were previously tested using a univariate model (statistical significance set at p<0.05).

Results
51 Patients who underwent PN by minimally-invasive approach were analyzed. Median SRF, ERPF and volume decrease were 15%, 22% and 14%, respectively. The postoperative LORF and LORV were significantly different with respect to the baseline, regardless the PADUA risk category. At univariate analysis the LORV ant the LORF demonstrated a significant correlation (r=0.59, r2=0.35; p=0.00001), (Fig. 1). After stratification per PADUA risk groups, only in high surgical complexity renal masses (PADUA risk category 3) the correlation between LORV e LORF was maintained (r=0.61, r2=0.37; p=0.007), (Fig. 2). All these correlations were confirmed at multivariate analysis (r=0.77, r2=0.43; p=0.0003 for the whole cohort and r=0.88, r2=0.52; p=0.01).

Discussion
The combination of RS and VA allowed to find a correlation between LORV and LORF, especially in patients with surgically complex renal tumors. From these findings is seems that RF and renal volume are better preserved when low PADUA score lesions are removed. When challenging lesions occur, the clinical relevance of the nephron-sparing approach must be carefully pondered.
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VARIATIONS IN RENAL CORTEX VOLUMES BEFORE AND AFTER PARTIAL NEPHRECTOMY: A PILOT STUDY ON 30 CASES

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Aim of the study
The measurement of renal cortex volume (RCV) has been suggested and validated in patients candidate for living donor nephrectomy to estimate split renal function. To date no studies investigated its role in the setting of partial nephrectomy (PN). The present study analyses trends and predictors of variations in RCV in the operated and contralateral kidney (OK- and CK-) before and after PN, and their relationship with estimated glomerular filtration rate (eGFR).

Materials and methods
Pre- and post-operative CT scans at 12 months from surgery of 30 patients submitted to robot-assisted PN were reviewed by a single examiner blinded of surgical outcomes, after specific training with an uro-radiologist and a software engineer. By a semi-automatic segmentation tool (Philips Intellispace Portal® 8.0) applied to axial, coronal and longitudinal arterial-phase 3-mm scans, the pre- and post-operative OK- and CK-RCV and tumor total (TTV) and intra-parenchymal volumes (TIV) were calculated. eGFR was estimated by the CKD-EPI equation. Linear regression assessed the relationships between RCVs and patient’s and tumor’s features as well as with surgical variables.

Results
Mean pre-PN OK- and CK-RCVs were 105 ±24 cc and 107 ±24 cc, respectively; mean TTV was 27±12 cc, mean TIV 11± 9 cc. Pre- and post-PN eGFR were 83±15 and 74±15 ml/min/1.73 m2. Regression analysis showed that pre-PN total RCV was related to male gender (regression coefficient [RC] +58.9, p=0.001) and inversely to hypertension (RC -39.0, p=0.04). After PN, mean OK-RCV decline was 15 cc, whereas CK-RCV increased of 8 cc, for a mean total RCV variation of -6.3 cc. Pre- and post-PN total RCV was related to pre- and post-PN global RCV (RC 0.12, p=0.045; RC -0.72, p=0.024). The decline of OK-RCV was related only to TIV (RC -0.28, p=0.021), while the increase in CK-RCV was related to OK-RCV decline (RC -0.27, p=0.002) and use and duration of ischemia for tumor resection (respectively RC 2.88, p=0.043 and RC 0.18, p=0.009).

Discussion
Pre and post-PN RCV and eGFR were directly related suggesting that split renal function could be derived from the partition of eGFR on the basis of OK- and CK-RCV. After surgery OK-RCV decreased proportionally only to TIV, indicating that the quantity of loss of parenchyma is a major driver of functional decline. Conversely, CK-RCV increased after PN, proportionally to the decrease in OK-RCV: this suggests that CK, even just at intermediate distance from surgery, develops a compensatory hypertrophy. CK-RCV increase was also related to ischemia.
COMPARISON OF COMPUTED TOMOGRAPHY (CT) AND CONTRAST ENHANCED ULTRASOUND (CEUS) FOR THE MANAGEMENT OF COMPLEX RENAL CYSTS: A SINGLE-CENTER EXPERIENCE


Aim of the study
To compare CT and CEUS Bosniak classification for the assessment of cystic renal masses and to gauge the correspondence between CEUS Bosniak classification and clinical/histological outcome.

Materials and methods
All patients who underwent CEUS between March 2017 and February 2018, with a previous established CT diagnosis of complex cystic renal masses, were identified. A senior radiologist (EG) preliminary reviewed the CT imaging and performed each CEUS. A modified Bosniak classification system was applied to CEUS. The same CT scanner (Philips Diamond Select Brilliance 64-slice scanner), ultrasound scanning system (GE Healthcare LOGIQ E9) and ultrasound contrast agent (Bracco Imaging S.p.A. SonoVue) were used in all studies. Radiological results were discussed in a multi-disciplinary fashion between urologists and radiologists to decide the subsequent treatment (end of follow-up, surveillance, surgical treatment). We retrospectively collected imaging characteristics, patient records, multi-disciplinary meeting reports, surgical resection notes and histopathology reports and clinical follow-up details.

Results
Between March 2017 and February 2018, 35 patients underwent CEUS and 37 complex renal cysts were evaluated. The reclassification of Bosniak scores after CEUS and the clinical/histological results are summarised in the accompanying table. The Bosniak score after CEUS was downgraded in 7 patients (6 of them had Bosniak I cysts after CEUS and therefore ended follow-up) in 18 the score was maintained and in 10 upgraded. Eight complex renal cysts underwent surgery. Two of them had a benign histology: 1 simple renal cyst and 1 oncocytoma (Bosniak IIF and IV after CT, III and IV after CEUS). Six complex renal cysts were malignant: 1 multilocular cystic renal neoplasm of low malignant potential, 1 papillary Renal Cell Carcinoma (RCC) type 1 and 4 clear cell RCC (2 Bosniak IIF, 3 Bosniak III, 1 Bosniak IV after CT and 1 Bosniak IIF, 1 Bosniak III, 4 Bosniak IV after CEUS). Three complex renal cysts were upgraded from Bosniak III to Bosniak IV, all of them were RCC. Two Bosniak IV cysts were confirmed after CEUS: 1 was an oncocytoma and 1 an RCC. Two patients with Bosniak 4 cysts are waiting for surgery, in other 2, surgery was delayed due to comorbidities. Two patients were lost to follow-up (1 Bosniak III and 1 Bosniak IV at CEUS). No side effects were recorded after CT or CEUS.

Discussion
In our experience CEUS performed by an expert radiologist is a useful alternative to CT scan for the assessment of complex renal cysts, in particular, when iodinated CT contrast is contraindicated. CEUS can help to better define the Bosniak score, to stratify more precisely the risk of malignant nature of the cysts and to select patients candidates to end the follow-up or to surveillance. Furthermore, CEUS can reduce the ionizing radiation exposure and the CT scanners workload.
CONTRAST-ENHANCED ULTRASOUND SCAN (CEUS): AN USEFUL TOOL TO PREVENT SHORT AND LONG TERM COMPLICATIONS AFTER NEPHRON-SPARING SURGERY (NSS)?

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Aim of the study
NSS is today one of the pillars in the treatment of organ-confined kidney tumor by combining early and long term renal function preservation and optimal oncological outcomes. Unfortunately there are not enough datas to strongly recommend any kind of imaging technique to routinely screen the patients in the early post-operative period. Thanks to experience gained by using CEUS after cryoablation in small renal masses to assess complications and efficacy of the procedure in first 48 hours after it, in this study we focused on the possible role of CEUS in early detection of peri-operative complications and reducing hospital readmission rates.

Materials and methods
We retrospectively analyzed in our dataset 108 patients (pts), 70 men and 38 women, who underwent robot-assisted partial nephrectomy (RAPN) and laparoscopic partial nephrectomy (LPN) at our center between 2015 and April 2018. Median age of the population was 64 years (range 33 - 85). Average tumor size was 37.8 millimetres (range 15 - 90) with a median PADUA score of 8. In one case the enucleation regarded 7 synchronous neoplasms and in two cases three synchronous neoplasms. 86 patients, 58 men and 28 women, routinely had CEUS before being discharged within a median post-operative time of 72 hours (range 24 - 148). For the other 22 pts CEUS was not performed because of suspect of clinically relevant blood loss that needed more accurate imaging exams.

Results
Among pts who received CEUS, 8 of them (6.88%) resulted positive for a local complication: in three cases a sub-capsular ematoma was present but did not need any treatment except for clinico-laboratoristic strict follow-up; in four cases (3.44% of the total) a pseudoaneurysm was present with an average dimension of 1.3 cm. In two of these cases an angiographic embolization was needed to control the bleeding even though the patients were totally asymptomatic. In one last case there was the evidence of local renal ischemia who did not need any treatment. Finally, all of the patient had magnetic resonance imaging (MRI), computed tomography (CT) or CEUS within 6 months after surgery that did not demonstrate any further complications. Moreover, no readmissions were needed for any of the patients.

Discussion
As shown by our datas, CEUS seems to be an effective tool to detect early complications during peri-operative follow-up in pts who undergoes NSS. Thanks to its low cost, the short time consuming needed to perform it, no radiation exposure and almost no adverse reactions, CEUS could be potentially routinely performed in all the hospitals who offer NSS and easily identify those patients who need further follow-up or active treatment during hospital stay. Moreover, if we consider those patients who do not show any clinical sign of a silent underlying bleeding, using CEUS we could avoid most of hospital readmission and potentially life-threatening complications.
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USEFUL RADIOLOGICAL ANALYSIS IN PREDICTING OUTCOMES OF RENAL FUNCTION IN PATIENTS UNDERGOING RADICAL NEPHRECTOMY

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Aim of the study
In the pre-operatory assessment of patient with Renal Cell Cancer (RCC) it is vital to have new predictors of estimated glomerular filtration rate (eGFR) decrease. The objective of this study is to evaluate the usefulness of the CT evaluation of kidney volumes and visceral and subcutaneous adipose tissue in the prediction of a decrease of eGFR at 12 months after surgery.

Materials and methods
Retrospectively we evaluate data of 112 patients that have undergone Radical Nephrectomy (RN) between January 2010 and March 2017. Clinical data including age, gender, body mass index (BMI), diabetes mellitus (DM), and hypertension were obtained from patient medical records. Pre-operatory and follow up eGFR were calculated using the CKDEpidemiology study equation. Images from the pre-operatory CT performed in the 60 days prior surgery were analyzed simultaneously by two expert radiologists. Subcutaneous adipose tissue (SAT), visceral adipose tissue (VAT), total adipose tissue (TAT) and abdominal circumference assessment were carried out on a cross-sectional plane passing through umbilical plane in portal phase with Aquarius v. 4.413 (Terarecon, Foster city, CA, USA). VAT% was calculated using the formula, VAT%=[VAT/TAT] X 100. Tumor volume (TV), functioning resected volume (FRV) and contralateral kidney volume (CKV) were calculated using manual segmentation technique using Syngovia v.4.0.1 (Siemens, Munich, Germany). All the variables were analyzed with a simple linear regression model with bilateral p-value set at 0.05.

Results
Mean patient age was 65.2 years (SD=12.56) and 73.2% were male. Mean BMI was 26.0 kg/m (SD=3.55). Hypertension was present in 53 patients (47.3%) and DM in 15 (13.4%). Mean pre-surgery eGFR was 70.1 ml/min (SD=21.1) resulting in a 12 months eGFR of 53.68 ml/min (SD=20.33). Mean VAT was 158.48 cm (SD=74.86), mean SAT was 200.25 cm (SD=100.96) with a mean VAT% of 44%(SD=13%). The mean CKV was 162.31 cm (SD=39.3) and mean FRV of 139.96 cm (SD=46.1). In the linear regression model the statistical significance was reached by pre-op eGFR (p<0.001), Age (p<0.001), BMI (p=0.021), Hypertension (p=0.021), CKV (p=0.02) and %VAT (p=0.007).

Discussion
Other than the well know factors predicting the decrease of renal function after nephrectomy the contralateral kidney volume and the visceral adipose ratio could add information to the thorough pre-operative evaluation of patients with RCC.
Aim of the study
Comprehensive pre-operative planning is essential to optimizing perioperative outcome in inferior vena cava (IVC) thrombectomy for advanced renal cell carcinoma (RCC). The aim of this study was to describe and evaluate the utility of 3D Synapse system in volumetric measurement in patients with RCC and caval tumor thrombus.

Materials and methods
We retrospectively quantitated the preoperative computed tomography (CT) and magnetic resonance imaging (MRI) in of a cohort of 83 patients with RCC and IVC tumor thrombus who underwent radical nephrectomy and IVC thrombectomy in two large volume centers between March 2008 to November 2017. Imaging was available for 68 patients: CT (n= 56) and MRI (n=12). Each patient was evaluated with the 3D Synapse system by an experienced radiologist. The renal vein thrombus volume (RV-TV), IVC thrombus volume (IVC-TV), the total venous thrombus volume (TV-TV, sum of RV-TV and IVC-TV), renal tumor volume (RTV) and total tumor volume (TTV, sum of TV-TV and RTV) were measured. We correlated radiologic RTV and TVTV with histological data. We assessed perioperative outcomes using multivariable analysis controlling for age, BMI, ASA score, grade, pT size and IVC thrombus level. Manual segmentation was implemented in 3D Synapse system to extract regions-of-interest (ROI) from contrast-enhanced CT and MRI imaging. The 3D ROIs included IVC and renal vein, thrombus and renal mass. Segmental volumetric analysis was performed for the IVC. The superior portion of IVC (from atrio-caval junctio to 1 cm inferior to renal veins) and the inferior portion of IVC (1 cm below renal veins to common iliac bifurcation) were separately segmented and analyzed. Caval thrombus included both tumor as well as bland thrombus. In all cases, volume was calculated as the sum of cross-sectional areas in mm2 calculated per 2mm image slice. Total volumes and 3D reconstructions of the renal mass and the IVC thrombus were obtained (Fig. 1 and Fig. 2).

Results
We found significant positive correlation between RTV and pathological RTV (r=0.63, p<0.001, Fig. 3) but not between IVC-TV and histological IVC-TV (r=-0.04, p=0.79). Median IVC thrombus volume was 27.0cc and renal tumor volume was 441.5cc. Multivariable regression analysis indicated that TV-TV was an independent predictor of operative time (R2=0.21, p=0.009), estimated blood loss (R2=0.29, p<0.001), length of hospital stay (R2=0.14, p=0.03) and the need for caval resection (OR 1.01, p=0.04).

Discussion
The 3D Synapse System is a useful tool for volumetric analysis and may help facilitate caval thrombectomy. The total venous thrombus volume is a useful parameter and independently predicts operative time, estimated blood loss, length of stay and the need for caval resection.
CONTRAST-ENHANCED ULTRASONOGRAPHY (CEUS) AND TIME/INTENSITY CURVES FOR THE ACTIVE SURVEILLANCE OF SMALL RENAL MASSES

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Aim of the study
To assess the prognostic efficacy of Contrast-enhanced Ultrasonography (CEUS) and Time/Intensity (T/IS) curves for the active surveillance of Small Renal Masses (SRMs).

Materials and methods
We performed CEUS in 288 patients to evaluate 312 renal lesions at our center from 2010 to 2017. All the lesions were confirmed by Contrast-enhanced CT or Contrast-enhanced MR. Overall, 66 patients underwent surgery (group A), while 246 patients were clinically and radiologically followed for at least 3 years (group B). A quantitative evaluation (QE) of the lesions enhancement using a dedicated software which elaborates T/IS curves was performed. The kinetic of perfusion has been classified into Overall, 4 different patterns, which correspond to 4 types of curves were identified: type 1 “quick wash in (WI) and quick wash out (WO)”, type 2 “quick WI and slow WO”, type 3 “WI and WO synchronous to the surrounding parenchyma”, type 4 “slow WI and slow WO”. Histological examination was available for all patients of group A treated with surgery and the aggressiveness was established according to the nucleolar grade (grade 1-2 vs 3-4). The QE of the lesion enhancement was not possible in some cases due to the lack of respiratory compliance or to other patient characteristics (for example high BMI, deep lesions).

Results
Fifty-six QE were performed in the group A; 3 patients were not evaluable by time/intensity curves and 7 patients had cystic lesions. In the group B we performed QE in 85 cases, 139 patients had simple cystic lesions and 22 were not evaluable or did not reach 3 years of follow up. In relation to the histological data, patients with type 1 curve (16) had aggressive lesions in 96% of cases; patients with type 2 (40) in 57% of cases; patients with type 4 (49) in 18%; patients with type 3 pattern showed non aggressive lesions. Limits of our study are the small number of cases and the duration of the follow up.

Discussion
CEUS is a safe and cost-effective procedure, suitable for patients with impaired renal function. T/IS curves are a useful tools for active surveillance because they could be related to the biological aggressiveness of renal lesions thus provide precious information to the clinical decision strategy for the management of SRMs.
Aim of the study
RCC is a potentially lethal cancer with aggressive behaviour. Up to one-third of patients with newly diagnosed RCC have metastatic diseases and more than 30% will develop metastases after nephrectomy, with a 5-year survival below 10%. The earlier detection of metastases can offer more opportunities to act early and elicit a better therapeutic effect, especially when lesion is confined. Positron emission tomography (PET)/CT with the metabolic tracer FDG is a powerful noninvasive tool used for staging and treatment response assessment in metastatic ccRCC. However, there is growing interest in non-FDG molecular imaging agents allowing greater sensitivity and specificity and potentially add phenotypic information for patient/tumor-specific treatment strategies. Prostate specific membrane antigen (PSMA) is a transmembrane glycoprotein over-expressed in the vasculature of solid tumours. Increased angiogenesis by ccRCC can be utilised to potentially improve staging using PSMA-targeted PET/CT. In this study, we evaluate the diagnostic potential of [68Ga]-PSMA-HBED-CC PET/CT (PSM-CT) in restaging patients with ccRCC.

Materials and methods
Ten patients with ccRCC were submitted to PSMA-PET to verify the real staging of the disease or for inconclusive results of conventional imaging. Synthesis of [68Ga]-PSMA-HBED-CC was performed using a fully automated module (Scintomics GRP®, Fuerstenfeldbruck, Germany) and 68Ga was obtained from a IGG100 68Ge/68Ga generator (Eckert & Ziegler, E&Z, Berlin, Germany). The mean yield of labelling reaction was 65.53% and the radiochemical purity 99.90%. Whole body PET/CT was acquired, from vertex to medium thigh of the femur 60 min after i.v. injection of [68Ga]PSMA-HBED-CC (150 MBq) on a hybrid scanner Discovery IQ (GE Healthcare). For each study maximum standardized uptake value (SUVmax) was recorded for each lesion.

Results
PSMA-PET/CT detected multiple areas of avid tracer uptake in 7 pts with mean SUVmax 46.4 (range 21-114). PSMA-PET revealed greater disease extension in comparison with CT in the same anatomic context (i.e. bone, lymphnodes). Moreover, PSMA-PET detected occult metastatic lesions in 4 pts not revealed by conventional imaging in thyroid, bone, cerebellum, adrenal gland, lung. In 1 patients PSMA-PET demonstrated an unknown single brain metastic lesion that was submitted to IGRT with complete remission. In another patient PSMA-PET revealed two unknown brain lesions now performing radiotherapy.

Discussion
In our patients, PET/CT with [68Ga]-PSMA-HBED-CC demonstrated high in vivo PSMA expression in ccRCC metastatic lesions improving diagnostic sensitivity by detection of occult lesions at the conventional imaging (thyroid, adrenal gland, brain) and real assessment of disease burden. PSMA-PET may identify small metastatic lesions not obvious on routine imaging and reveal unknown metastatic sites. Moreover, PSMA-targeted imaging may potentially be used to predict and/or assess response to systemic therapy.
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DEGREE OF RENAL FUNCTION PRESERVATION AFTER ROBOT-ASSISTED PARTIAL NEPHRECTOMY WITH SELECTIVE TAILORED ISCHEMIA: AN OBJECTIVE ANALYSIS USING 99MTC-MERCAPTOACETYLTRIGLYCINE (MAG-3) RENAL SCINTIGRAPHY

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Aim of the study
Renal function (RF) preservation is a critical component of survival after partial nephrectomy (PN). Although renal scintigraphy (RS) represents the most accurate method for assessing RF, to date few studies report on functional outcomes according to RS after PN. The aim of the present study is to objectively assess ipsilateral preservation and predictors of RF after robot-assisted PN (RAPN) with selective tailored ischemia.

Materials and methods
Data from 27 patients with cT1a-b renal mass undergoing RAPN with selective tailored ischemia by a single experienced surgeon (A.M.) at Luzerner Kantonsspital (Lucerne, SWITZERLAND) between 2015 and 2016 were reviewed from our institutional prospective database. RAPN with selective tailored ischemia included microdissection and clamping of tumor-specific arterial branches based on three-dimensional reconstruction of computed tomography images. Super-selective tumor devascularization is assessed by near-infrared fluorescence (NIRF) imaging. Specifically, since induced ischemia often involves areas of tumor-adjacent healthy parenchyma, it is tailored to the mass edge by selectively unclamping higher-order arterial branches according to NIRF. To assess RF, serum creatinine (Scr) and eGFR according to the Modification of Diet in Renal Disease (MDRD) formula were measured preoperatively, 1 day after RAPN, at discharge and at 3- and 6-mo follow-up. In addition, RS using radionuclide 99mTc-mercaptoacetylglycine (MAG-3) was performed preoperatively (within 2 weeks prior to RAPN) and at 6-mo follow-up. Univariable and multivariable linear regressions were performed to identify predictors of RF preservation in the affected kidney.

Results
Pathological analysis showed renal cell carcinoma in 25 (93%) patients and oncocytoma in 2 (7%), with no positive surgical margins. Mean (SD) Scr level was similar between before and 6 mo. after surgery [0.9 (0.2) and 1.0 (0.1); p=0.057], while mean (SD) eGFR significantly decreased from 78.0 (14.5) mL/min/1.73 m2 preoperatively to 67.7 (12.7) mL/min/1.73 m2 6 mo. postoperatively (p=0.002). Mean (SD) proportion of the contribution from the operated kidney according to 99mTc-MAG-3 RS was 48.9 (8.8) % preoperatively and 33.7 (12.3) % at 6 mo. (p=0.001). Notably, the median (IQR) RF preservation measured by eGFR and 99mTc-MAG-3 RS was 81.8 (81.1-92.4) % and 72.1 (63.4-84.7) %, respectively (p=0.013). On multivariable analysis, baseline ipsilateral RF estimated by RS was predictive of functional preservation (p=0.012).

Discussion
RAPN with selective tailored ischemia represents an effective treatment for cT1a-b renal mass. It provides favourable oncological outcomes and significant renal function preservation as shown by an objective evaluation using renal scintigraphy. Moreover, our findings confirm that baseline functional status predicts RF preservation after surgery and that eGFR tends to overestimate renal function peri-operatively.
WHAT ARE THE PREDICTORS OF ADHERENT PERINEPHRIC FAT AT THE TIME OF PARTIAL NEPHRECTOMY FOR LOCALIZED RENAL MASSES? RESULTS OF A SINGLE-INSTITUTION STUDY

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Aim of the study
Adherent perinephric fat (APF) is one of the major non-tumor-related factors that may increase the technical difficulty of both open and robot-assisted partial nephrectomy (PN). The Mayo Adhesive Probability (MAP) Score has been recently proposed as an indicator of APF at the time of PN. The aim of this study was to evaluate the predictors of APF, defined according to the MAP score, among patient- and tumor-related variables.

Materials and methods
The clinical data of patients treated with open or robotic PN for localized renal tumors were prospectively recorded in a tertiary referral centre from 2011 to 2017. Patients were selected for this study based on the availability of complete conventional perioperative variables and imaging in the institutional software. Metabolic syndrome was defined according to the National Cholesterol Education Program Adult Treatment Panel (NCEP-ATP) III criteria. MAP score was measured on one axial CT-slice centered on the renal hilum by an expert uroradiologist. Patients were divided into two different goups (MAP 0-3 vs MAP 4-5) based on the original classification of MAP score study. Multivariable analysis evaluated the predictors of adherent perinephric fat (APF) (defined as MAP score 4-5) among patient- and tumor-related covariates.

Results
Overall, 175 patients were included in the study. Complete data on metabolic status were available for 99 (56,6%) patients. Patients with APF were significantly different from patients without APF (MAP score 0-3) in terms of age, gender, BMI, Charlson comorbidity index, ASA score, waist circumference, HDL status and metabolic syndrome. On the contrary, tumor-related variables (including preoperative diameter, complexity, contact surface area and each anatomical characteristic included in the PADUA score) were not significantly different among patients with and without APF. At multivariable analysis, metabolic syndrome was the only significant predictor of APF (MAP 4-5) (odds ratio: 24.9; 95% confidence interval: 5.49-109.22; p<0.001). The limited sample size and the retrospective study design represented the main study limitations.

Discussion
Metabolic syndrome may be significantly associated with presence of APF at the time of PN for localized renal masses. These preliminary results require further investigations to understand the biologic background of the association between metabolic profile and characteristics of perinephric fat and to assess the impact of APF on PN outcomes.
VIRTUAL REALITY-BASED VALIDATION OF THE ERUS CERTIFIED TRAINING PROGRAMS INTENSIVE SIMULATION MODULE: RESULTS FROM A HIGH-VOLUME ROBOTIC SURGERY TRAINING CENTRE


Aim of the study
Simulation has a crucial role in robotic surgery training and the ERUS certified Curriculum and Structured courses include an intensive simulation module [ISM]. The aim of the study is to validate the ISM by measuring the participant performance at the beginning and at the end of the ISM using objective metrics.

Materials and methods
76 participants of ERUS certified Curriculum or Structured course underwent the ISM at a high-volume robotic surgery training centre. ISM consisted of 5 days of virtual reality, dry-lab and wet-lab simulation activity combined with theoretical sessions on technical and non-technical skills and operating theatre case observation. Each participant received a baseline assessment before the ISM and a final assessment after the ISM. Participants’ performance was measured using objective computed-generated metrics to exclude any human-related bias in the assessment. Assessments consisted of the overall score [OS] in a set of 5 skill simulator exercises, namely Matchboard 2, Energy Switching 2, Ring Walk 3, Suture Sponge 2 and Tubes. OS at baseline and final assessment were compared using Wilcoxon test.

Results
Median participants’ age was 33 (interquartile range 30-39). 40% were residents, 34% were fellows and 36% were staff members. 44% had no console experience, 38% performed individual steps but not a full case and 18% performed a full case before the ISM. At baseline assessment, median OS was 75 (IQR 64-86) for Matchboard 2, 78 (IQR 71-88) for Energy Switching 2, 64 for Ring Walk 3 (IQR 37-84), 81 (IQR 65-92) for Suture Sponge 2 and 67 (IQR 52-81) for Tubes. At final assessment, median OS was 91 (IQR 79-96) for Matchboard 2, 93 (IQR 83-98) for Energy Switching 2, 88 for Ring Walk 3 (IQR 77-94), 92 (IQR 83-95) for Suture Sponge 2 and 88 (IQR 75-97) for Tubes. Individually, the median OS increase resulted of +10 in Matchboard 2, +10 in Energy Switching 2, +20 in Ring Walk 3, +7 in Suture Sponge 2 and +17 in Tubes (Fig 1) and the completion of the ISM resulted associated with a significant improvement in all exercises (all p<0.0001).

Discussion
These figures validate the ISM of the ERUS certified Curriculum and Structured courses as training programs that improve surgeon’s performance measured using objective metrics. The impact of such improvement on clinical outcomes must be determined.
UPPER URINARY TRACT CANCER: DIAGNOSIS AND NOVEL TREATMENTS

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THULIUM LASER CONSERVATIVE TREATMENT OF UPPER TRACT URINARY CANCER: 10 YEARS-EXPERIENCE OF A REFERRAL CENTER

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Aim of the study
To evaluate the safety and efficacy of retrograde intrarenal Thulium-Holmium:YAG laser treatment of UTUC.

Materials and methods
From 2005 to 2016 we enrolled 146 consecutive patients with new diagnosis of UTUC undergoing diagnostic uretero-renoscopy and thulium laser treatment at one referral institution. The instruments utilized were the Semirigid Ureteroscope 7Fr and Flexible Uretero-renoscope 7.5Fr (KSE). The Laser source was the Thulium-Holmium YAG (Revolix Duo) at 10 watts, with 270 micron fibers. Biopsies were made with nitinol basket 2.2Fr + 3Fr flexible cup forceps. The EAU guidelines follow-up scheme was applied: endoscopic control + cytology initially every 3 months, then every 6 months for 2 years, and then annually; with yearly Uro-CT.

Results
Mean age at surgery was 70.7 years old (range 19-91, SD 8.49). Median follow-up was 36.7 (range 12-120) months. Imperative cases consisted of 21 (14.4%) solitary kidney patients. Bilateral UTUC was reported in 9 (6.2%) patients. Solitary tumours were reported in 91 patients (62.3 %), multiple in 55 patients (37.7%). Tumors were > 1 cm in dimension in 83 (56.9%) patients, <1cm in 63 patients (43.1%). Tumors at diagnosis, were only above the uretero-pelvic junction (UPJ) in 55 patients (37.7%), and only below the UPJ in 71 patients (48.6%), with 20 patients (13.7%) having synchronous lesions above and below the UPJ. Biopsies revealed the presence of low-grade disease in 98 (67.2%) patients, high-grade in 44 (30.1%) patients, and 4 patients (2.7%) had tumor where grading was not possible (single small initial tumor), but cytology was negative with low grade recurrences during follow-up. Final stage was pTa in 120 (82.2%), with higher stage lesions (>T1) in the rest. At first follow up, 52 patients (35.6%) were recurrence-free, 71 patients (48.6%) had recurrences, and 23 patients (15.8%) underwent nephro-ureterectomy (21 for >pT1-HG disease + 2 for extensive LG-UTUC not amenable to RIRS). During follow-up, a total 61 patients (41.8%) were continuously recurrence-free, 55 patients (37.7%) had multiple recurrences treated conservatively, and a total of 30 patients (20.5%) had undergone nephro-ureterectomy. The Kidney Preserving Rate in patients with solitary kidney or bilateral tumors (Imperative indications) was 91.8%. No major complication was registered intra- or post-operatively and 90.4% were discharged on the 1st post-op day.

Discussion
The conservative treatment of UTUC with Thulium-Holmium:YAG Duo laser was safe and oncologically effective over a ten year period. Complete UTUC Grading, and if possible, Staging, coupled with regular endo-surveillance, are mandatory in order to optimize an individualized therapeutic strategy for each patient, and to have good timely disease control.
Aim of the study
Radical nephroureterectomy (RNU) with an ipsilateral bladder cuff excision is the gold standard treatment for UTUC. Nephron-sparing surgery (NSS) is traditionally reserved for patients with an imperative indication for renal preservation. An ideal method to procure adequate tissue for UTUC diagnosis has not yet been described. The principal aim of this study is to analyze the diagnostic yield of three different biopsy devices with a view to establishing whether any one of them shows superiority. Another aim is to evaluate the association between ureteroscopic biopsy grading and final UTUC pathology results when distal ureterectomy or RNU was carried out.

Materials and methods
Biopsies were taken using three different devices: 3F biopsy forceps, 6F BiGopsy® Backloading biopsy forceps, and 2.2F Nitinol Basket. Data were prospectively collected and retrospectively analyzed. The ability of each biopsy device to obtain an adequate pathology specimen was evaluated using univariate and multivariate binary logistic regression analysis. When possible, UTUC lesions were treated using holmium laser ablation or monopolar coagulation.

Results
Data on 85 patients (70 males and 15 females) were reported. The mean (SD) age was 71.32 (9.28) years. In total, 112 diagnostic and therapeutic URS and f-URS procedures were performed. A total of 302 biopsies were taken, and in 236 (78.2%) cases the pathologist was able to make a diagnosis of the specimen received. 140 cases of UTUC were found: 75 low grade, 50 high grade, and 15 carcinoma in situ. In 66 cases (21.8%) the biopsy specimens were inadequate for an accurate diagnosis; of these, 55 (83.3%) were taken using 3F forceps and 11 (16.7%) using Bigopsy forceps. No cases of inadequate specimen arose when using the 2.2F Nitinol Basket. Among 28 patients who underwent distal ureterectomy or RNU, the tumor was upgraded on final pathology to high grade in 9 cases (32%), while in 19 (68%) cases the tumor grading was confirmed.

Discussion
In comparison to 3F forceps, the BiGopsy forceps are superior in obtaining sufficient specimen for pathologic examination. The 2.2F Nitinol basket is useful in large tumors to permit debulking of the lesion while achieving a final pathology diagnosis in 100% of the cases. The biopsy specimen has to be taken with large forceps or Nitinol Baskets whenever possible, in order to obtain the highest possible accuracy in grading the tumor. For tumor <2 cm, there is a high concordance between URS biopsy grade and final pathology after distal ureterectomy or RNU, but almost 30% of the tumors > 2cm are misdiagnosed by just the CT and biopsy.
Aim of the study
Radical nephroureterectomy (RNU) with bladder cuff removal is the standard of care for the treatment of upper tract urothelial carcinoma (UTUC). However, due to the chronic renal failure morbidity and consequently increased risk of non-cancer related death, kidney-sparing surgery (KSS) has been proposed as an alternative to RNU in selected cases. Aim of our study is to evaluate the overall (OS) and cancer specific survival (CSS) of patients electively treated with KSS or RNU for UTUC, and determine whether normal or high serum creatinine levels could influence the assessed outcomes.

Materials and methods
Data from patients treated with RNU or KSS for UTUC in 5 European tertiary referral centers from January 2003 were collected and analyzed. Patients with history of other malignancies, metastatic disease, radical cystectomy or renal pelvis cancer were excluded. Patients were treated with RNU or KSS (segmental ureterectomy) according to surgeon preference and followed-up every 3 months the first year, 4 months the second year, 6 months the 3rd-5th year, then annually. A subgroup analysis has been carried out stratifying patients with “normal” (≤1.2 mg/dL) or “high” (>1.2 mg/dL) serum creatinine levels before surgery. Baseline characteristics were compared using the t-tests for continuous variables and χ² for categorical variables. Un-adjusted OS and CSS curves were compared by using Kaplan–Meier method for all-causes mortality and cumulative incidence for cancer-specific mortality.

Results
Overall, 433 patients were eligible for the analysis, 339 treated with RNU and 94 with KSS. Pre-operative characteristics were similar between the two groups, except for multifocality (RNU: 16.8% vs KSS: 8.5%, p<0.05) and serum creatinine (RNU: 1.3 mg/dL vs KSS: 1.1 mg/dL, p=0.03). A total of 102 (23.6%) patients had normal creatinine values (mean±SD: 0.89±0.16 mg/dL): 78 (76.5%) treated with RNU and 24 (23.5%) treated with KSS. 331 (76.4%) patients had high creatinine values (mean±SD: 1.51±0.58 mg/dL): 261 (78.8%) treated with RNU and 70 (21.2%) treated with KSS. The median follow-up was 89 months (Range: 3-116 months). In the subgroup of patients with normal creatinine values, no significant differences have been observed for both OS and CSS in patients treated with RNU or KSS. Indeed, 5yOS was 75% vs. 77% (p=0.665) and 5yCSS 90% vs 95% (p=0.441) in patients treated with RNU or KSS, respectively. Conversely, in the subgroup with high creatinine values, patients treated with KSS vs. RNU showed better 5yOS (81% vs 67%, p=0.002) and better 5yCSS (92% vs 80%, p=0.038), both statistically significant different between the two groups.

Discussion
At least one-fourth of men with UTUC showed elevated (>1.2 mg/dL) creatinine levels. Moreover, patients with high serum creatinine could benefit the most from KSS, since the significant advantage over RNU in OS and CSS.
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ENDOUROLOGICAL MANAGEMENT OF UPPER TRACT UROTHELIAL CARCINOMA: AN IMPERATIVE CASE

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Aim of the study
Radical nephro-ureterectomy (RNU) is the standard treatment of upper tract urothelial carcinoma (UTUC). Despite that, an endourological approach may be considered in imperative cases. We present the case of a patient who underwent conservative treatment for multiple high grade UTUC. The treatment was performed in November 2017.

Materials and methods
Explorative rigid ureteroscopy and flexible ureteroscopy (fURS) (K. Storz) were performed in order to detect the lesions. IMAGE1 S™ (Karl Storz) technology increases dynamic contrast of the lesions. Real-time confocal laser endomicroscopy (CLE) with Cellvizio System® provided in vivo microscopic evaluation of the tissue lesions using a low-energy laser light source. Therefore, biopsies were taken using 3 devices: Piranha, Bigopsy (COOK), and 2.2 Fr Nitinol Baskets. Tumor ablation using holmium (30 W-COOK) and thulium (Revolix – Lisa Laser) was performed.

Results
The age of the patient was 83 with past medical history of high grade (HG) bladder cancer and a functional solitary kidney. Multiple lesions (mean diameter 1.5 cm) were pre-operatively identified at CT scan. Pre-operative serum creatinine and GFR were 1.18 mg/dl and 40 ml/min/1.73 m² respectively. Cellvizio® characterized the lesions as high grade UTUC. A total of 7 biopsies were taken; all the specimens were positive for HG UTUC at the final histopathological results. Cellvizio® found correspondence between the CLE images and the histopathological results. Serum creatinine was 1.40 mg/dl and GFR was 38 ml/min/1.73 m³ on postoperative day 7. Postoperative drop of hemoglobin to 8.5 required two units of blood and patient recovered fine. CT scan at two months follow-up was negative for recurrence.

Discussion
Multiple and/or high-grade UTUC may be treated endoscopically in patients with imperative indications, particularly in old population. The combination of holmium and thulium laser allows a satisfactory ablation of UTUC. Due to the high risk of tumor recurrence and progression, a strict follow-up is mandatory.
KIDNEY SPARING SURGERY FOR UPPER TRACT UROTHELIAL CARCINOMA: LONG TERM RESULTS OF A MULTICENTER STUDY IN COMPARISON WITH RADICAL NEPHROURETERECTOMY


Aim of the study
Radical nephroureterectomy (RNU) with bladder cuff removal represents the gold standard for the treatment of upper tract urothelial carcinoma (UTUC). However, kidney-sparing surgery (KSS) has been proposed in selected cases as an alternative to RNU to overcome the morbidity associated with chronic renal failure and the consequently increased risk of non-cancer related death. Aim of our study was to compare cancer specific survival (CSS), overall survival (OS) and the postoperative creatinine variations in patients electively treated with KSS or RNU for UTUC.

Materials and methods
Data from patients treated with RNU or KSS for UTUC collected in five European tertiary referral centers from January 2003 to December 2013 were evaluated. Patients were treated with RNU or KSS (segmental ureterectomy) according to patients' conditions (tumor characteristics and comorbidities) and surgeon preference and followed-up every 3 months the first year, every 4 months the second year, every 6 months the 3rd-5th year, then annually. Baseline characteristics and follow-up variables were compared using the t-tests for continuous variables and χ2 for categorical variables. Un-adjusted CSS and OS curves were compared by using Kaplan-Meier method for all-causes mortality and cumulative incidence for cancer-specific mortality. Multivariate linear regression model was used to compare RNU and KSS for postoperative creatinine.

Results
Overall, 433 patients were analyzed, 339 treated with RNU and 94 with KSS. Pre-operative characteristics were comparable between the two groups, apart from multifocality (RNU: 16.8% vs KSS: 8.5%, p<0.05) and serum creatinine (RNU: 1.3 mg/dL vs KSS: 1.1 mg/dL, p=0.03). The median follow-up was 89 months (range 12 - 120 mo). At multivariable Cox regression model, patients treated with KSS showed better 5yCSS and 5yOS as compared to those treated with RNU (92% vs 81%, p=0.026 and 80% vs 69%, p=0.003, respectively). However, in the adjusted analysis, no statistically significant differences in terms of CSS and OS between the two groups were found, and the only two significant determinants on both CSS and OS were age at time of diagnosis and pathological stage (≥pT3). At multivariable linear regression model, patients treated with KSS had lower but not statistically significant postoperative creatinine serum level compared to those treated with RNU (-0.24 mg/dL; 95%CI: -0.66 - 0.18 mg/dL; p= 0.26).

Discussion
In selected cases, KSS seems to be a safe and effective surgical option for the treatment of UTUC when compared with RNU, providing better cancer specific and overall survival outcomes, with concomitant sparing of renal function. Age at time of diagnosis and pathological stage are the main determinants for both OS and CSS. Further studies are needed to better understand the strengths and limits of this investigational procedure.
Aim of the study
Kidney-sparing surgery (KSS) has been proposed as an alternative to radical nephroureterectomy (RNU) for upper tract urothelial carcinoma (UTUC). However, segmental resection of the iliac and lumbar ureter seems to be associated with greater failure than for the distal pelvic ureter. Aim of our study is to evaluate the overall (OS) and cancer specific survival (CSS) of patients with ureteral UTUC electively treated with segmental resection and termino-terminal anastomosis of the iliac or lumbar ureter (TT) vs segmental resection of distal pelvic ureter with bladder cuff removal and ureteral reimplantation (RR). Moreover, as secondary endpoint, we evaluated the impact on renal function of TT vs RR.

Materials and methods
Data from patients treated with KSS for UTUC in five European tertiary referral centers from January 2003 to December 2103 were collected and analyzed. Patients with history of other malignancies, metastatic disease, radical cystectomy or previous transitional cell carcinoma of the upper and or lower urinary tract were excluded. Patients were treated with TT or RR according to tumor location and followed-up every 3 months the first year after surgery, every 4 months the second year, every 6 months the 3rd-5th year, then annually. Un-adjusted OS and CSS curves were compared by using Kaplan–Meier method for all-causes mortality and cumulative incidence for cancer-specific mortality. For the aforementioned outcomes, multivariate Cox regression adjusted for age, gender, smoking status, biopsy, tumor localization, hydronephrosis, pre-operative creatinine, history of bladder carcinoma and multifocality tumor pathological stage/grade, lymphadenectomy, number of lymph nodes surgically excised, necrosis, positive surgical margin, lymph vascular invasion, concurrent bladder carcinoma, and tumor in situ was used. Multivariate linear regression model was used to compare RNU and KSS for postoperative creatinine (at 3 months).

Results
Overall, 85 patients were eligible for the analysis, 62 treated with RR and 23 with TT. Pre-operative characteristics were comparable between the two groups. The median follow-up was 89 months (range 24-116 months). Patients treated with TT showed similar 5yOS and 5yCSS as compared to those treated with RR (69% vs 87%, p=0.148 and 92% vs 93%, p=0.953, respectively). Moreover, at the adjusted analysis, no statistically significant postoperative differences were observed in delta creatinine among patients underwent TT and RR, and the only significant determinant for postoperative creatinine variation was preoperative creatinine level.

Discussion
Patients treated with TT and RR showed comparable 5yOS and 5yCSS. Moreover, the only determinant on postoperative creatinine variation was preoperative creatinine level, irrespective of the surgical technique.
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PROSPECTIVE EVALUATION OF PRE-OPERATIVE NEUTROPHIL / LYMPHOCYTE RATIO (NLR) AS A PROGNOSTICATOR IN UPPER TRACT UROTHELIAL CARCINOMA (UTUC) PATIENTS TREATED CONSERVATIVELY

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Aim of the study
To prospectively evaluate the prognostic value of neutrophil / lymphocyte ratio (NLR) in conservatively treated UTUC patients.

Materials and methods
Since 2016, NLR was prospectively collected and evaluated in 30 consecutive UTUC patients (Group 1). It was compared to a retrospective post-hoc dataset from 130 consecutive UTUC patients (2005-2015) (Group 2). All patients underwent uretero-renoscopy and RIRS (retrograde intra renal surgery) for UTUC. EAU guidelines follow-up scheme was applied: panendoscopy+cytology every 3 months for 1st year, then 6 monthly for 2 years, then annually + yearly UroCT. At 1st patient encounter, white blood cells (WBC), platelet (PLT), neutrophil (N), and lymphocyte (L) counts, were collected and recorded. NLR was derived by dividing N by L. These data were compared with tumor characteristics: stage (Ta vs. >T1), grade (G1 vs. ≥G2), focality (uni vs. multi), site (ureter vs. kidney vs. ureter+kidney), and size (≤1 cm vs. >1 cm). The endpoints were: recurrence at the first follow-up, multiple recurrences during follow-up, and progression (Grade+/Stage). They were stratified by the NLR cut-off point, according to the receiver operating characteristic analysis. T-test and chi-square test were used to evaluate parametric and non parametric variables. Statistical significance was considered at p

Results
The mean NLR value was 2.90±1.05 in Group 1 and 3.48±1.92 in Group 2 (p=0.79). Significantly higher NLR values were observed in Group 1 and Group 2 patients with ≥pT1 (p=0.03 and p=0.0001), ≥G2 (p=0.03 and p=0.0009), multifocal (p=0.01 and p=0.028), >1 cm tumor (p=0.04 and p=0.0001), respectively. The optimal NLR cut-off value was 3 for all the endpoints. Patients with NLR>3 exhibited significantly higher risk of recurrence at first follow-up (p=0.04, OR 5.33 in Group 1 and p=0.007, OR 2.94 in Group 2), significantly higher risk of multiple recurrences (p=0.02, OR 7.33 in Group 1 and p=0.006, OR 1.54 in Group 2). No disease progression has so far been observed in Group 1 due to the short follow-up of this prospective cohort to date, while patients in Group 2 with NLR >3 exhibited 5 fold disease progression risk (p=0.04, OR 5.00).

Discussion
The pre-operative evaluation of NLR may provide valuable prognostic information for the clinical management of UTUC patients treated conservatively. NLR >3 was associated with higher recurrence and progression rates. It may identify those needing more frequent endoscopic follow-up, and lower thresholds to conversion to more aggressive surgical strategies. Prospective multicenter multinational studies are needed to validate the role of NLR as a prognosticator of recurrence and progression in these patients.
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PROSTATE CANCER: ROLE OF IMAGING IN RECURRENT DISEASE

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CLINICAL IMPACT OF 68Ga-PSMA PET/CT ON THE MANAGEMENT OF PATIENTS EXPERIENCING BIOCHEMICAL RECURRENCE AFTER RADICAL PROSTATECTOMY


Aim of the study
The aim of this study was to investigate the clinical impact of 68Ga-PSMA PET/CT on the decision-making approach in a population of patients with prostate cancer experiencing biochemical recurrence (BCR) after radical prostatectomy (RP).

Materials and methods
We retrospectively enrolled 276 patients submitted to RP for PCa and with confirmed BCR during follow-up. To assess the site of recurrence each patient was referred to 68Ga-PSMA PET/CT. Moreover, 110 and 90 men were re-staged with 11C-Choline PET/CT and/or Conventional Imaging (including CT scan and/or MRI and/or BS) prior to PSMA PET/CT, respectively. For each patient a clinical approach was defined as follows: PSA monitoring, salvage RT delivered to prostatic bed and/or pelvic and/or retroperitoneal lymph nodes, surgical lymph-nodes dissection, surgical metastasis resection, systemic therapies. Intended treatment before imaging was determined in our Prostate Cancer Unit board by referring urologists or radiotherapists on the basis of EAU guidelines, patient clinical condition and clinical experience. The re-assessment of treatment after revision of each imaging technique was recorded by the same board. The effective clinical impact of 68Ga-PSMA PET/CT, choline PET/CT and Conventional imaging was rated as major (change in therapeutic approach), minor (same treatment, but modified therapeutic strategy) or none.

Results
Table 1 depicts patients’ characteristics after stratifying patients according to 68GaPSMA-PET/CT results (positive vs. negative). The overall detection rate of PSMA PET/CT was 47.5%. Overall median time to BCR was 26 (IQR 12-50) months and median PSA at PSMA PET/CT was 0.71ng/ml (IQR 0.37-1.40). Patients with positive finding at PSMA PET/CT had significantly higher pathologic stage and PSA at BCR and received more often adjuvant therapies, related to men with negative scan (all p≤0.04). Table 2a describes differences in clinical management of patients before and after revision of each imaging technique. Table 2b describes the clinical impact of PSMA PET/CT, Choline PET/CT and Conventional imaging. PSMA PET/CT led to a major treatment change in 177 cases (64.1%): 17.8% from palliative to curative, 7.2% from curative to palliative, 23.9% from curative to surveillance and 8% from palliative to surveillance. A minor clinical impact was observed in 2.5% of men. Choline PET/CT had a major clinical impact in 40 (36.4%) patients and a minor clinical impact in 17 (15.5%) cases leading a more aggressive treatment. Conventional imaging had major clinical impact on 31 patients (34.4%) and minor clinical impact in 21 (23.3%) of cases, with no effect on the decision making in 38 (42.2%) cases.

Discussion
68Ga-PSMA PET/CT seems to have notable impact on therapeutic management in refractory PCa after RP in patients with low level of PSA. 68Ga-PSMA PET/CT has major clinical impact in most of the cases guiding a more curative approach as compared to Choline PET/CT and Conventional imaging.
Aim of the study
Recent studies showed that 68Ga-PSMA PET/CT, during biochemical recurrence (BCR) after radical treatment for prostate cancer (PCa), could play a relevant role in the early identification of metastases in comparison with conventional imaging. The aim of our study was to evaluate the diagnostic performance of PSMA PET/CT in terms of detection rate for different PSA ranges and different sites of recurrence.

Materials and methods
From March 2016 to April 2017, 276 PCa patients treated with RP underwent 68Ga-PSMA PET/CT for BCR. Moreover, 110 and 90 men were re-staged with 11C-Choline PET/CT and/or Conventional Imaging (including CT scan and/or MRI and/or BS) prior to PSMA PET/CT, respectively. First, we analysed the detection rate of 68Ga-PSMA PET/CT according to different PSA ranges (0.2-0.5, 0.5-1, 1-2, > 2) and site of recurrence (local, nodal, skeletal and visceral). Second, we compared the detection rate of PSMA PET/CT both in different PSA ranges and sites of recurrence, with Choline PET/CT (n=110) and Conventional imaging (n=90).

Results
Table 1 depicts the overall patients characteristics. Median age was 68 years. The median PSA at the time of PSMA was 0.70 ng/ml. The overall detection rate of PSMA PET/CT was 47%. Figure 1 shows the detection rate of PSMA PET/CT according to different level of PSA at BCR: 30%, 42.3%, 62.5% and 75.6% of patients had positive PSMA PET/CT with PSA of 0.2-0.5, 0.5-1, 1-2 and >2, respectively. Figure 2 shows the detection rate of PSMA PET/CT according to different site of recurrence. In table 2 are reported the sites of recurrence detected at PSMA PET/CT according to PSA ranges. In patients referred both to PSMA PET/CT and Choline PET/CT (n=110; Figure 3) and in those referred to both PSMA PET/CT and conventional imaging (n=90; Figure 4) the detection rate of PSMA PET/CT was significantly higher for PSA value ≥ 0.5 ng/ml. PSMA PET/CT revealed higher detection rate for local, nodal and bone metastases as compared to Choline PET/CT (Table 3). PSMA PET/CT revealed higher detection rate for skeletal metastases as compared to conventional imaging (Table 4).

Discussion
68Ga PSMA-PET/CT revealed higher detection rate of each site of recurrence for PSA levels > 0.5 ng/ml in comparison with conventional imaging and Choline PET/CT. Despite a not significant difference with other imaging techniques in patients with PSA <0.5 ng/ml, PSMA PET/CT could play a role in the early identification of recurrence since the detection rate in such low level of PSA is 30%, and this could lead to a modification in disease's management in selected patients.
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COMPARISON BETWEEN 64CU-PSMA PET/CT AND 18F-CHOLINE PET/CT IN EARLY DIAGNOSIS OF PROSTATE CANCER BIOCHEMICAL RECURRENCE

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Aim of the study
To evaluate the diagnostic performance of 64Cu-PSMA PET/CT for re-staging prostate cancer after biochemical recurrence (BCR) and to compare it with 18F-Choline PET/CT in a “per patient” analysis.

Materials and methods
An observational retrospective study was performed in 43 patients with BCR after laparoscopic radical prostatectomy, who underwent 64Cu-PSMA PET/CT and subsequently 18F Choline PET/CT for re-staging. The detection rate (DR) of 64Cu-PSMA PET/CT and of 18F-Choline PET/CT were calculated using the SUVmax at 4 hours and SUVmax at 1 hour as reference, respectively. Furthermore, univariate logistic regression analysis was carried out to identify independent predictive factor of positivity at 64Cu-PSMA PET/CT.

Results
An overall positivity at 64Cu-PSMA PET/CT was found in 32 (74.42%) patients versus 19 patients (44.19%) at 18F-Choline-PET/CT. Particularly, after stratifying for PSA values, we showed a good performance of 64Cu-PSMA PET/CT at low PSA levels compared to 18F-Choline PET/CT, with a DR of 57.1% vs 14.3% between 0.2 and 0.5 ng/ml (p=0.031), and of 60% vs 30% with PSA between 0.5 and 1 ng/ml. At the univariate binary logistic regression analysis, the PSA level was the only independent predictor of 64Cu-PSMA PET/CT positivity. No significant difference in terms of DR both for 64Cu-PSMA PET/CT and for 18F-CholinePET/CT was found according to different Gleason score subgroups.

Discussion
In our retrospective study we showed a better performance of 64Cu-PSMA PET/CT compared to 18F Choline PET/CT in prostate cancer re-staging. No difference in terms of DR was found both for 64Cu-PSMA PET/CT and for 18F Choline PET/CT according to Gleason score subgroups. At the univariate logistic regression analysis, PSA at the time of BCR was an independent predictive factor of overall 64Cu-PSMA PET/CT positivity. 64Cu-PSMA PET/CT could provide useful information in BCR settings and help to identify local or systemic recurrence, especially in the evaluation of earlier BCR with PSA <1 ng/ml.
Aim of the study
The aim of this study was to identify the clinical parameters that could predict positive findings at 68Ga-PSMA PET/CT for local, nodal or systemic recurrence in patients with biochemical recurrence (BCR) after radical prostatectomy (RP).

Materials and methods
We retrospectively enrolled 276 patients submitted to RP for prostate cancer (PCa) and confirmed BCR. To assess the site of recurrence each patient was referred to 68Ga-PSMA PET/CT. The population was stratified according to the results of PSMA PET/CT scan (namely, positive vs. negative spot). The positive results of PSMA PET/CT was recorded according to site of recurrence: local, pelvic and retroperitoneal lymph nodes, skeletal and visceral. Finally, uni and multivariate logistic regression analyses were used to identify the predictors of positive PSMA PET/CT both on patient-based analysis and region-based analysis according to different site of recurrence (namely, local, nodal and skeletal).

Results
The characteristics of the population are summarized in Tab. 1. Overall, PSMA PET/CT was negative in 145 (52.25%) and positive in 131 (47.5%) individuals. Median PSA at PSMA PET/CT was 0.71ng/ml (IQR 0.37-1.40). Patients with positive finding at PSMA PET/CT had significantly higher pathologic stage and PSA at BCR and received more often adjuvant therapies, related to men with negative scan (all p≤0.05). The multivariate logistic regression revealed that PSA velocity was the only independent predictor of positive 68Ga-PSMA PET/CT (OR 12.35, p: 0.002; Table 2a). No significant parameters were found to be related to local recurrence detected by PSMA PET/CT (Table 2b). Finally, we found that only the PSA doubling time <3 months (OR 3.52, p: 0.04; Table 2c) and PSA velocity (OR 4.46, p=0.003; Table 2d) were independent predictors of nodal and bone metastases, respectively.

Discussion
In our series, 68Ga-PSMA PET/CT demonstrate an important role in the setting of re-staging of PCa patients with BCR after RP, and can individuate the site(s) of metastasis, allowing a potential PSMA PET/CT- guided therapy even in case of low level of PSA. The PSA kinetic (PSA velocity and doubling time) are the most important predictors of positive 68Ga-PSMA PET/CT, especially in case of nodal and skeletal recurrence.
THE ROLE OF 68GA-PSMA PET IN PROSTATE CANCER EARLY BIOCHEMICAL RECURRENCE


Aim of the study
Biochemical recurrence (BCR) in patients affected by prostate cancer (PCa) represents a therapeutic challenge. The Literature supports early intervention with salvage radiation therapy after radical prostatectomy (RP) and argues against prolonged monitoring of detectable post-RP PSA levels. 68 Gallium-Prostate specific membrane antigen positron emission tomography (68Ga-PSMA PET) has shown to detect sites of recurrence at serum PSA levels lower than those detected by conventional imaging. The aim of this study was to investigate the role of 68Ga-PSMA PET in order to perform a tailored treatment in PCa early BCR.

Materials and methods
Patients treated by Radical Prostatectomy (RP) with BCR (PSA>0.2 ng/ml) underwent to 68Ga-PSMA PET were enrolled. Adjuvant radiotherapy (RDT) and/or antiandrogen therapy (HT) were not considered exclusion criteria. PSA value and positive site (prostatic lodge, lymph nodes, bone lesions, other lesions) were reported.

Results
34 patients with a median age of 21 years (IQR 63-77) and Gleason score of 7 (IQR 7-7.75) were analyzed, respectively. Four (11.7%) patients had positive margins and 4 pts had pT2c, 19 pT3a, 11 pT3b staging. RDT was performed in 15 patients (3 adjuvants, 12 salvages); HT post RP was performed in 3 pts. Median PSA before 68Ga-PSMA PET was 0.77 ng /ml (IQR 0.188-3.90). 68Ga-PSMA PET was positive in 28 pts (82.3%) with mean PSA 0.881 ng/ml [IQR 0.40-1.22]. Lymphnodal recurrence was found in 17 pts (50%) of which in 8 pts (23.5%) were relevated iliac-obturator lymphnodal metastases. 9 pts (26,4%) had distant metastases. The site of those lesions were: bone in 3 cases, bronchial-pulmonary apparatus in 3 cases, esophagus and in abdominal wall in the site of trocar placement during robot assisted RP of 4 years before) in 1 and 1 pts, respectively. 68 Ga-PSMA PET was negative in 6 cases (17.6%), (median PSA 0.493 ng/ml [IQR 0.46-0.86]). In case of positivity to 68 Ga-PSMA PET 8 pts (23.5%) underwent to surgical treatment, 15 pts (44.1%) to cyberknife RDT and 5 pts (14.7%) to HT. In case of surgery, histologic confirmation of PCa metastasis was available in 6 (17.6%) pts.

Discussion
In conclusion we suggest to perform 68Ga-PSMA PET in early restaging after RP +/- adjuvant or salvage RDT with PSA values < 1 ng/ml. Furthermore, 68Ga-PSMA allows a more tailored treatment, avoiding to start HT.

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EARLY AND LATE IMAGES OF 18F-CHOLINE (FCH) PET/CT FOR THE DETECTION OF PROSTATIC FOSSAE RECURRENCES IN PROSTATE CANCER WITH A BIOCHEMICAL FAILURE (PSA< 2 NG/ML)

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Aim of the study
The aim of this study was to assess the improvement in detection rate of FCH PET/CT in the prostatic fossae in patients with low PSA values, by using an early static acquisition.

Materials and methods
From an institutional database of 1500 patients undergoing FCH PET/CT from January 2016 to May 2017, we selected those who performed an early scan for the detection of prostate fossae recurrences and had a PSA levels <2 ng/mL at PET time. 75 subjects met the inclusion criteria. All these patients underwent an early static (after 2 minutes from the FCH injection; 1 bed; 5 minutes/bed) and late whole-body (after 60 minutes from FCH injection; 7 beds; 3 minutes/bed) PET/CT acquisition. A correlation among therapeutic factors, Gleason Score, PSA levels, PSA doubling time (PSAdt), PSA velocity (PSA vel) and early PET/CT findings were assessed by using the chi-square test and Mann-Whitney test. The agreement between early and late PET/CT acquisitions was studied by K-statistic. ROC analysis was used to evaluate the optimal cutoff point for PSA able to distinguish positive and negative PET/CT finding. A p<0.05 was considered statistically significant.

Results
PET/CT showed a pathological tracer uptake in 25 patients (33.3%); in 15 cases confined to the prostatic bed, in 4 to lymph nodes, in 4 to the bone, in 2 to both prostatic fossae and lymph nodes and in 3 to both bone and lymph nodes. Therefore, the detection rate of PET/CT was higher for local recurrences (18/25; 72%). PSA values increased in patients with a positive PET/CT finding compared to subjects with a negative scan. Similarly, PSAdt and PSAvel values were different between patients with a positive and a negative PET/CT scan (6.9 versus 10.2 mo and 0.6 versus 0.4 ng/mL/year, respectively). 15 patients had positive early scans and only 4/15 were positive for both early and late PET/CT acquisition (Kappa value = 0.368; p<0.001). No correlation was found between the PSAdt or PSAvel and positive or negative early PET/CT images. At ROC analysis a PSA value of 0.67 ng/mL showed a sensitivity and specificity of 69% and 64%, respectively, to distinguish patients with positive or negative PET findings. Using this cutoff value, FCH PET/CT was positive in 23% of patients with PSA < 0.67 ng/mL; 12% of patients had a positive early PET/CT and therefore 88% had negative early scans.

Discussion
From this study emerges that, in patients with PSA < 2 ng/mL, local recurrence is more often detect by FCH PET/CT finding. An early PET acquisition is able to improve the detection rate, especially in prostatic fossae, and we reported in this study that local findings were increased to 70%. Our results suggest that the selection of patients undergoing a dual phase PET/CT should be based not only on PSA value but also on PSA kinetic.
THE ROLE OF 18F-CHOLINE PET/MRI FOR RECURRENT PROSTATE CANCER AFTER RADICAL PROSTATECTOMY

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Aim of the study
The combination of high resolution anatomical procedures (MRI) and nuclear functional imaging (PET with 18F-choline) could improve the diagnosis and early detection of prostatic cancer recurrences after radical prostatectomy (RP), allowing a more timely and targeted therapeutic approach. The present study reports the results of the use of PET/MRI for suspected relapse after RP in a high volume center.

Materials and methods
during the period between December 2016 and January 2018, we performed 22 PET/MRI in patients with biochemical recurrence after RP. Complete information on the underlying pathology was collected and is described in the results section of this study.

Results
the median age at PET/MRI was 66 years and the time between RP and PET was 47.7 months. The Gleason Score at RP was 6 in 23.8%, 7 in 61.9%, 8 in 4.8% and 9 in 9.5%, the pT2c stage in 42.1%, pT3a in 42.1% and pT3b in 15.8%. No patient had positive lymph nodes after pelvic lymphadenectomy. The median PSA at PET scan was 0.5 ng/ml (IQR 0.27; 1.31) with a PSADT of 12.8 months (IQR 3.7; 23.7). PET/MRI was negative in 50% of cases and locally positive (prostatic loggia) in the other 50%, no lymph node or distant positivity was detected. Of the 18 patients followed directly at our center, 3 (16.7%) were subjected to watchful waiting, 1 (5.6%) to biopsy (positive for neoplasia), 12 (66.7%) to rescue RT and 2 (11%) to hormonal treatment.

Discussion
PET/MRI is a promising imaging test and can provide clinically useful data even at low levels of PSA, however more evidence is needed, especially from prospective studies, before we can support its wide adoption in clinical practice.
ASSESSING THE UNDER-ESTIMATION OF NODAL TUMOUR BURDEN BY 68GA-PSMA AND 11C-CHOLINE PET/CT SCAN IN PATIENTS TREATED WITH SALVAGE LYMPH NODE DISSECTION FOR NODAL RECURRENCE OF PROSTATE CANCER: A LARGE MULTI-INSTITUTIONAL ANALYSIS


Aim of the study
PET/CT scan represents the most sensitive diagnostic modality to assess recurrent prostate cancer. Despite high specificity, it is limited by relatively low sensitivity. Moreover, the underestimation of tumour burden may be related to tracer uptake. We hypothesized that under-estimation of tumour burden increases progressively by number of positive spots at pre-operative imaging.

Materials and methods
The study included 525 patients who received extended SLND at eight tertiary referral centres. All patients were diagnosed with PET/CT scan using either 11C-choline (n=356; 68%) or 68Ga-PSMA (n=169; 32%). The study outcome was under-estimation of tumour burden that was calculated as follows: number of positive lymph nodes at SLND minus number of positive spots at PET/CT scan. Multivariable linear regression analysis was used to test the association between under-estimation of tumour burden and number of positive spots at PET/CT scan. Covariates consisted of: PSA level at SLND, PET/CT tracer (11C-choline vs. 68Ga-PSMA), and number of nodes removed.

Results
The number of positive spots at pre-operative PET/CT scan was 1 in 364 (52%), 2 in 151 (22%), 3 in 101 (15%), and ≥4 in 79 (11%) patients, respectively. The median number of lymph nodes removed at SLND was 19 (IQR: 10, 31). The number of positive nodes was 0 in 110 (16%), 1 in 165 (24%), 2 in 82 (12%), and ≥3 in 338 (49%) patients, respectively. Median under-estimation of tumour burden was 1 (IQR: -1, 4). At multivariable analysis, number of positive spots at PET/CT scan was a significant predictor of under-estimation of tumour burden (linear coefficient: 0.23; p=0.02). The interaction test for the hypothesis that under-estimation of tumour burden varies according to PET/CT tracer was statistically significant (p<0.0001). In particular, under-estimation was relevant with both tracers, but it was more evident with 11C-Choline as compared to 68Ga-PSMA (Figure 1).

Discussion
PET/CT scan significantly under-estimates the real tumour burden of prostate cancer nodal recurrence. In particular, the higher the number of positive spots, the higher the number of positive nodes that are missed by pre-operative imaging. This effect is greater with 11C-Choline compared to 68Ga-PSMA. Our data support the importance of extended nodal approaches.
FOCAL SALVAGE PROSTATIC CRYOABLATION FOR PRIMARY RADIOTHERAPY FAILURE

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Aim of the study
Salvage cryoablation (SC) is a treatment option in case of biochemical failure after primary prostatic radiotherapy (RT). According to AUA guidelines, indication for SC includes patients with: PSA < 10 ng/mL, Gleason ≤ 8, cT1-2, pathologic evidence of locally recurrent disease, negative metastatic workup, no seminal vesicle invasion, life expectancy > 10 years, long PSA doubling time. Salvage focal cryoablation (SFC) has shown success in biochemical recurrence (BCR) free survival. The video shows one of our case of SFC.

Materials and methods
Under general anesthesia, patient is placed in the dorsal lithotomy position. A 7.5MHz biplanar transrectal ultrasound probe, is inserted. We perform "free-hand" transperineal insertion of 3 iceSpere probes in the right prostatic lobe: an anterior, a postero-lateral, a postero-medial one. The cryoprobes should be placed within 1 cm from the prostatic capsule, >0.5 cm from the rectal wall and the urethra, < 2 cm apart from one another. 2 thermocouples are introduced near the urethra and in the pre-rectal area. The Presice® Cryoablation System (Galil Inc) allows for treatment planning, intraoperative control of the freezing and thawing cycles, as well as of the temperatures from the thermosensors. The equipment is tested by activating the probe tips in water and observing iceballs formation. A flexible cystoscopy is performed to check any injury to the urethra or the bladder of the probes. A guidewire is positioned to back-load the urethral warming device, through which warmed saline flows at 38°C-43°C. Two freezing/thawing cycles are performed. Patient is discharged 1 day post-op and urethral catheter is removed at 7 days post-op. Antibiotic prophylaxis was prescribed until the catheter removal and alpha-blockers for 30 days. A retrospective review of patients who underwent SFC at our institution from 2013-2018 was performed. Age at treatment, prior treatment history, PSA nadir, complications, BCR status (nadir + 2 ng/mL) and follow-up data were analyzed.

Results
Between 2013-2018, 13 men with a mean age of 72.3 years underwent SFC for recurrent prostate cancer after RT failed. All patients had biochemical disease relapse according to Phoenix criteria. Unilateral and organ-confined tumor activity was identified by prostate biopsy and mpMRI. 8 patients (61.5%) patients did not experience BCR. 3 patients have experienced BCR, but because of PSA DT > 12 months no treatments have been offered, with a PSA of 3 at 36 months, 5.09 at 3 months and 3.6 at 33 months, respectively. 2 patients with persistent tumor at prostate biopsy and MRI post-CSF underwent: salvage radical prostatectomy and re-cryotherapy. No Clavien-Dindo post-op complication > 2 has been experienced by any patient. 3 patients developed post-SFC urinary incontinence (≤ 1 pad/day).

Discussion
SFC is an effective treatment for localized prostate cancer recurrence after radiotherapy. Although many patients undergoing salvage cryotherapy are not cured, it may improve local control and delay the initiation of long-term hormonal therapy with all of its side effects.
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SUPRAPUBIC PEDICLED PHALLOPLASTY FOR FEMALE TO MALE GENDER DYSPHORIA


Aim of the study
The suprapubic pedicled phalloplasty is one of the reconstructive options for patients with FtoM gender dysphoria.

Materials and methods
During the first phase of the surgical procedure an abdominal flap of cutaneous and subcutaneous tissue, is identified respecting geometrical rules. The final dimensions of the phallus are influenced by the quantity of tissue that can be harvested. We identified a pair of rectangles (12cm x 6cm) side by side, starting from the base of the clitoris, with a semiaarch of 1.5cm in height above.

Results
Once the flap drawing is completed, we cut on the flap edges with the scalpel and we proceed to detach the flap from the underlying planes. If possible, it is useful to save the superficial external pudendal vessels and then incorporate them into the vascular pedicle of the flap itself.
Once the flap has been released and properly prepared, its tubularization is carried out by detached stitches. Any excess of subcutaneous tissue can be removed to facilitate tubularization and improve the cosmetic appearance. Subsequently, the anterior abdominal skin is mobilized above the area from where the flap has been removed. The entire anterior abdominal wall is mobilized up to the inferior rib margin, the lower plane of the dissection is followed by the fascial plane of the rectus abdominis muscles. Then we proceed with the creation of two lateral rotational flaps, necessary to cover the abdominal wall substance defect.

Discussion
Once the flaps are mobilized, the loss of substance is covered and the suture is made creating a transverse pubic scar which extends from one iliac spine to the other.
A MULTI-CENTER ANALYSIS ON SURGICAL TECHNIQUE, OUTCOMES AND LEARNING CURVE OF MALE-TO-FEMALE PENOSCROTAL VAGINOPLASTY


Aim of the study
We evaluated patients who underwent to a Penoscrotal Vaginoplasty (PSV) for a male to female dysphoria in 2 center.

Materials and methods
We retrospectively reviewed clinical records of 90 patients who underwent PSV from January 2005 to January 2017. Two validated methods were used: a scatterplot representation and a splitting group. We selected as primary outcomes the operative time and vaginal depth. Surgical outcomes including blood losses, hospital stay, and postoperative complications such as vaginal stenosis or atresia or urethral meatus stenosis were also evaluated.

Results
The overall median operative time was 245 minutes. Severe intraoperative complications were not reported. The overall incidence of postoperative major complications was 21.7 %, most of them being urethral issues. The splitting group analysis revealed a statistically remarkable difference between groups for the operative time (p < 0.01), the vaginal depth (p = 0.01), the hospital stay (p < 0.01), and the intraoperative complication rate (p = 0.01). On the contrary, no differences were evidenced between the cohorts for the amount of blood loss (p = 0.08). The scatterplot logarithmic analysis demonstrated a clear visible LC for most parameters. The operative time showed a sharp decrease within the first 20-30 cases, reaching a plateau after 40 cases. Considering the analysis of the vaginal depth, the logarithmic scatterplot curve evidenced a slight increase within the first 10 cases, reaching a clear stabilization after nearly 30-40 cases.

Discussion
An evident LC for PSV is detectable, consisting of at least 40 cases needed to the surgical team to develop adequate skills to guarantee a safe and high-quality procedure.
V47

MTF SEX REASSIGNMENT SURGERY: TROMBETTA TECHNIQUE

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Aim of the study
To describe our surgical technique highlighting several steps we experienced differently from the traditional Petrovich technique.

Materials and methods
Surgical equipe consists of two couples of surgeons working together at the beginning and at the end of surgery, separately at the central time. Patient position is lithotomic: two surgeons stand at the hips facing each other, other two sit in front of perineum. Preoperative skin marking and penile length measuring is performed to obtain satisfying results in terms of depth of neovagina and external genitalia reconstruction. Perifunicular fat is saved during orchifuniculectomy to add volume in labia majora construction. Spongy tissue of bulbar urethra and erectile tissue of corpora cavernosa is totally removed. Mucosa of neourethral meatus is everted using 3/0 resorbable suture. Neovaginal cavity is created by smooth dissection of Denovillier fascia. Anterior neovaginal wall consists of penile skin flap, posterior wall of scrotal skin flap. Scrotal and penile flaps are sutured along lateral borders forming a unique tubular flap, apex of neovaginal tubular flap is not sutured. Neoclitoris is proceeded from a piece of dorsal glans together with neurovascular penile bundle that is fixed above the symphysis by 4/0 suture. Neoclitoris/neourethral complex is lodged in a mucosal environment by a two-layered suture to connect both mucosal and spongyosal tissue. Lateral suture of labia majora is done with intradermal self-lock suture thread.

Results
Contemporary surgical working allows shortening of operative time until 4 hours. Preoperative skin marking and measuring of penis length ensures symmetry and gives a preliminary aesthetic and function outcome. Perifunicular fat confers natural aspect to labia majora. Total removal of erectile tissue prevents from dispareunia. Mucosal eversion of neourethral meatus prevents from stenosis. Leaving the apex of tubular neovaginal flap open allows the gain of length after surgery protecting from scar retraction. Adequate isolation of neurovascular bundle permits to reach orgasm by tactile stimulation and prevents from neoclitoral necrosis. Mucosal environment of neoclitoris/neourethral complex is fundamental for natural aesthetic outcome and lubrication. Intradermal lateral suture guarantees good wound healing and less infections.

Discussion
The challenging of male-to-female sexual reassignment surgery requires good surgical technique and well-trained surgeons. The technique we reported has been developed after 30 years of experience and after more than 400 patients treated.
SURGICAL TREATMENT OF COMPLEX PENILE FRACTURE

G. Alei, P. Letizia, A. Rossi (Roma)

Aim of the study
We illustrate the surgical technique used on a patient with a fracture of the urethra and both corpora cavernosa, which occurred during sexual activity.

Materials and methods
The video illustrates the clinical case of a young patient who reported the penile fracture during sexual intercourse in which he was in a supine position and the partner sitting on top of him. The patient reported intense pain, urethralgia and penile hematoma and went to the emergency room where a bladder catheter was positioned. We made a scrotal incision and the colles’ fascia was prepared with some difficulty due to the considerable hematoma and penile degloving was carried out. Once the buck’s fascia had been prepared, the complete fracture of the urethra at the level of the middle third and the fracture of the corpus spongiosum region alongside both corpora cavernosa was evident. The termino-terminal suture of the urethra and cavernous bodies are illustrated. The buck’s fascia and colles’ fascia are sutured and a drain is positioned.

Results
The patient reports normal erections and sexual activity. The video illustrates the urethroscopy performed two months after the surgery showing the scarring area, result of the fracture, and the flow rate at six months from the surgery which shows good urine indices. The photos of the penis in erection nine months after surgery show the penis in axis.

Discussion
Penile fractures are not uncommon and are a urological emergency. The clinical case shows that early surgical repair of both the corpus cavernosum and the urethra is of fundamental importance in cases of complex penile fracture. Diagnosis is usually clinical and urgent surgical exploration guarantees the best aesthetic and functional results.
INFRAPUBIC SURGICAL APPROACH FOR INFLATABLE PENILE PROSTHESIS AMS 700 CX IN PATIENT WITH ERECTILE DYSFUNCTION AFTER SURGERY FOR RECTAL CANCER

P. Letizia, G. Alei, A. Rossi (Roma)

Aim of the study
We report the clinical case of a patient who underwent rectum resection due to cancer, with stoma. Patient with erectile dysfunction and does not respond to the common therapies.

Materials and methods
We carried out infrapubic longitudinal incision and after preparation of the subcutaneous planes the dorsal root of the left corpora cavernosa is reached and clamped between two allis clamps. We proceed with longitudinal corporotomy. Tunneling of the cavernous body initially with Metzenbaum scissor by blunt dissection and subsequently with subrinì dilators up to diameter of 13, bilaterally. A space is created digitally in the right hemiscrotum where the pump will be located. At this point, using the keith needle and the furlow inserter, the prosthetic cylinders of the hydraulic prosthesis AMS 700 CX momentary squeeze with inhibiZone are implanted. The pump is located in the right hemiscrotum, checking its correct orientation. Once the linea alba has been identified and sectioned, the rectus muscles of the abdomen are divided and a space is created digitally where the reservoir of the system can be positioned in the retzius space, it is filled with isotonic solution and the abdominal wall is closed in layers. The corporotomies are closed with Vicryl 2-0, the system is then connected using special kit. Once the optimal functioning of the prosthesis has been verified, we proceed to the suture of the deeper planes with Vicryl 2-0.

Results
The patient reports the perfect functioning of the prosthetic implant and excellent sexual relations.

Discussion
Oncological surgery of the rectum has neurogenic erectile dysfunction as a functional sequela. In cases in which patients do not respond to medical treatments, the prosthetic implant is performed with excellent results.
We have a follow-up at 36 months and the patient has a normal and satisfying sexual activity. There were no complications following surgery or later.
POSTERIOR PERINEAL URETROPLASTY COMBINED WITH SUPRAPUBIC ENDOSCOPIC ACCESS

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Aim of the study
The video shows posterior urethroplasty using progressive perineal surgical access combined with suprapubic endoscopic access in a patient affected by post-traumatic urethral stricture.

Materials and methods
Through a perineal incision the bulbar urethra is isolated and detached from the corpora cavernosa. The section of the Perineal Tendon Center allows the circumferential mobilization of the proximal and membranous bulbar urethra.

Results
The median separation of the corpora cavernosa facilitates the access to the prostatic apex. These maneuvers allow the isolation of the proximal bulbar urethra, membranous urethra and prostatic apex. The membranous urethra is sectioned as close as possible to the prostatic apex at the level of the stricture. Through the suprapubic access a flexible cystoscope is inserted into the bladder and, through the bladder neck, into the prostatic urethra until the stricture. The perineum is transilluminated by the cystoscope and the surgeon, following the light, dissects the prostatic apex and identifies the proximal urethral lumen.

Discussion
After the resection of the scar tissue, the two urethral segments are spatulated and the bulbar-prostatic anastomosis is performed.
In posterior urethroplasty, the progressive perineal approach allows satisfactory access to the prostatic apex. Suprapubic endoscopic access is less aggressive than beniquè because: 1-facilitates the perineal finding of the prostate urethral lumen, 2-preserves urinary continence as it reduces the risk of damaging the bladder neck, which is the only residual sphincter after the dissection of the distal sphincter due to the trauma and scar tissue.
PROSTATE CANCER: WHAT'S NEW IN SURGICAL TREATMENT

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EXPERIMENTAL MODEL OF AN ARTIFICIAL PNEUMOPERITONEUM TO MEASURE THERMAL ENERGY SPREAD DURING BIPOLAR CAUTERIZING

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Aim of the study
At present, robot-assisted laparoscopy (RAL) is the gold standard for nerve sparing radical prostatectomy. In this setting cauterizing haemostasis with monopolar, bipolar or ultrasonic energy is often employed. However the use of these thermal energies near nervous fibers is still debated. We manufactured an experimental sealed plexiglass chamber reproducing the environmental conditions of the pneumoperitoneum in order to assess during bipolar electrocautery the thermal energy spread to adjacent tissue as employed during robot-assisted radical prostatectomy (RARP).

Materials and methods
A sealed plexiglass chamber was manufactured to reproduce the environmental conditions of pneumoperitoneum during RAL, including steady CO2 pressure (12 mmHg) and constant temperature (37°C). Four trocars has been placed to access inside the plexiglass chamber (Fig 1). Two trocars were used for the bipolar instruments, another one for the application of air-seal system and the last one for the utilization of a miniaturized endoscopic camera (MEC) to record the thermal energy spread. Pressure and temperature were monitored by a BP280 (BOSH, Stuttgart, Germany) sensor coupled with an Arduino Uno Rev 3 Board (Arduino, Ivrea, Italy) and connected to a single-board computer. MEC has been developed using a FLIR (Wilsonville, Oregon, USA) Lepton® core mounted in a break-out board developed during the project. The MEC was controlled by a single-board computer, allowing a reliable synchronization of the environmental data with the thermograms and, at the same time, to record the exact time of the beginning and the duration of the surgical electrocautery. A commercial calibrated FLIR C2® thermal camera was placed inside the chamber to allow a comparison between MEC and the reference product. Bipolar electrocautery was performed on pig muscolofascial tissue by power settings of 30 Watt and 60 Watt, with an application time of 2 and 4 seconds. The delivered energy in Joule and the related area in mm² of thermal energy spread was calculated. The electrocauterized tissues were analyzed for enzymatic and histopathological evaluation.

Results
Bipolar instruments used at 30 Watt exhibited a mean (SEM) thermal spread of 32 mm² when applied for 2 seconds and of 49 mm² when applied for 4 seconds. At 60 Watt, bipolar instruments exhibited a mean (SEM) critical thermal spread of 82 mm² when applied for 2 seconds, and 95 mm² when applied for 4 seconds (Fig.2). The area of thermal distribution seems to be related with the delivered energy (Fig.3). Histopathological evaluation showed a correlation between necrotic area and the area of energy delivered.

Discussion
This is the first model which reproduces the thermal damage on adjacent tissue during RAL procedure in the environmental conditions of a standard pneumoperitoneum. Clinical application of these experimental findings could improve the use of bipolar energy during RARP.
WHICH PATIENTS WITH LOW-RISK PROSTATE CANCER ARE STILL RECEIVING RADICAL PROSTATECTOMY? IMPACT OF PATIENT SELECTION ON INVERSE STAGE MIGRATION AT TWO EUROPEAN, TERTIARY REFERRAL CENTERS


Aim of the study
The increasing use of conservative approaches such as active surveillance in selected patients with low-risk prostate cancer (PCa) substantially reduced the proportion of patients with favourable disease characteristics undergoing radical prostatectomy (RP). We sought to describe the stage migration phenomenon towards more aggressive disease characteristics in patients treated with RP in more recent years.

Materials and methods
We evaluated 17,091 patients treated with radical prostatectomy (RP) at two European tertiary referral centers between 2006 and 2016. Among those, 4822 patients were classified as low-risk according to the European Association of Urology risk classification (cT1/T2a, Gleason 6, PSA<10 ng/ml). All patients had complete pathological and follow-up data available. Lowess smoother weighted functions were used to illustrate changes over time with regards to age at surgery, PSA levels, clinical stage, pathological grade group and use of pelvic lymph node dissection (PLND). Multivariable Cox regression analyses were used in order to estimate 5-year biochemical recurrence (BCR) rates according to the year of surgery. Statistical significance of the temporal trends were quantified using linear regression analyses.

Results
The proportion of patients with low-risk disease significantly decreased according to the year of surgery and ranged between 67.1% to 17.6% in the years 2006 and 2017, respectively (p<0.001). Among low risk patients, patient age decreased from 63.8 to 61.8 years between 2006 and 2017 (p<0.001). Median PSA at diagnosis increased from 5.52 ng/mL in 2006 to 6.32 ng/mL in 2016 (p<0.001). The proportion of positive biopsy cores increased from 29.3% in 2006 to 31.6% in 2016 (p<0.001). Overall, 4,469 (92.7%) and 353 (7.3%) had clinical T1 and T2a disease, respectively. The prevalence of individuals with clinical T2a disease increased from 7.6% in 2006 to 11.8% in 2016 (p=0.04). Similarly, the rate of low risk individuals with ≥pT3b/4 disease increased from 1.2% in 2006 to 4.1% in 2016 (p=0.01). The rate of upgrading at final pathology increased from 41.6% in 2006 to 80.5% in 2016 (p<0.001). The use of PLND increased from 20.6% in 2006 to 61.5% in 2016 (p<0.001). Multivariable Cox regression-derived 5-year BCR rates increased from 8.2% in 2006 to 10.4% in 2016 (p<0.01).

Discussion
Contemporary low risk RP patients have higher PSA, clinical stage and proportion of positive cores, as well as a higher risk of upgrading (80%) and pT3b/4 disease at final pathology. This translated into higher recurrence rates in more recent years. These results support the notion that not all low risk PCa patients have favourable pathological outcomes and indicate a more accurate patient selection where contemporary men with low risk PCa considered for surgery are those with more adverse cancer profiles.
ROBOTIC LAPAROENDOSCOPIC SINGLE-SITE RADICAL PROSTATECTOMY (R-LESS-RP) WITH DAVINCI SINGLE-SITE® PLATFORM. CONCEPT AND EVOLUTION OF THE TECHNIQUE FOLLOWING AN IDEAL PHASE 1


Aim of the study
To describe the evolution of Robotic Laparoendoscopic Single-Site Radical Prostatectomy (R-LESS-RP) performed with the daVinci Single-Site Platform® and a home-made multiport aimed to overcome classical drawbacks of LESS still present with this platform.

Materials and methods
Between 09/2015-06/2017 12 patients underwent R-LESS RP for clinical localized prostate cancer. Following a “phase 1 (development stage)” Innovation, Development, Exploration, Assessment, Long-term Study (IDEAL) framework, different solutions were drawn to overcome drawbacks of daVinci Single-Site platform®, included 3 (A, B, and C) multi-ports developed and evaluated in term of advantages/drawbacks concerning ergonomy. The end points of this study were: feasibility, safety, efficacy, by reporting rational description of multiports configuration, demographics, perioperative variables, functional and oncological results.

Results
Semi-flexible robotic 5-mm needle-holder instead of Maryland forceps, 30° lenses up and barbed-suture allowed overcoming limits of robotic-platform. Multiport-C (GelPOINT Advanced-Access® and an extra 8-mm robotic trocar outside the multiport) showed the best compromise to ensure both surgeon and bedside assistant to reproduce a standard robotic procedure. No conversion to either standard robotic or open technique or intraoperative complications occur in any case. Two patients experienced “high-grade” Clavien-Dindo complications. After 12.4 months follow-up, all patients were continent without any sign of biochemical relapse and among 5 preoperative potent patients submitted to nerve-sparing dissection, 4 reported good erectile-function.

Discussion
R-LESS-RP is feasible and safe in the hands of experienced minimally-invasive surgeons. Do date, we recommend a hybrid solution with a home-made multiport and use of an additional standard robotic trocar which allows the use endowrist® technology instruments.
**V51**

**PRELIMINARY EXPERIENCE WITH 3D AUGMENTED REALITY ROBOT-ASSISTED RADICAL PROSTATECTOMY**

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**Aim of the study**
Nowadays in surgery for prostate cancer oncological and functional outcomes have gained equal importance. The implementation of minimally-invasive surgery by new technologies has translated into a more tailored approach. However, the standard preoperative imaging still remains the routine tool for surgical planning and intraoperative decision-making. An intraoperative mental imagination by the surgeon is required. In order to avoid this “building in mind” process, 3D rendering with eventual intraoperative navigation are being introduced in the practice. In this study we present our first experience with augmented reality robot-assisted radical prostatectomy (AR-RARP).

**Materials and methods**
From June to August 2017 all patients candidate for RARP were enrolled in this phase II study. All patients underwent high resolution mpMRI (1mm slices) according to a dedicated protocol. 3D reconstruction was performed by bioengineers. Thanks to a dedicated hardware and Tile-Pro software, the 3D reconstruction was integrated inside the robotic console to perform AR-RARP. Patients were stratified according to the staging at MRI and reconstruction. In case of cT2 PCa intrafascial nerve sparing was scheduled. In such patients a mark was placed on the prostate capsule to indicate the virtual underlying intraprostatic lesion. In case of cT3 Standard Nerve Sparing AR-RARP was scheduled. AR-guided selective biopsy at the level of suspected extra-capsular extension (ECE) was performed. Prostate specimens were then scanned to assess the 3D model concordance.

**Results**
30 patients underwent AR-RARP: 16 with Intrafascial Nerve Sparing technique (cT2) and 14 with Standard Nerve Sparing technique + selective biopsy at the level of suspected ECE (cT3). Histopathological analysis confirmed clinical staging. Overall positive surgical margins rate was 30%, with no positive surgical margins in pT2. In patients whose intraprostatic lesions were marked on the prostate capsule, final pathology confirmed the lesion location. In patients with suspected ECE, 3D-guided selective biopsies performed confirmed the correct location of the ECE. In 11/14 cases (78%) the biopsy was positive for PCa. Prostate specimens were scanned with finding of a good overlap in all the cases. The mismatch between the 3D reconstruction and the scanning ranged from 1 to 5 mm (the 5 mm was recorded at the posterior face of the prostate due to the compression by the endo-coil during MRI). In the 85% of the entire surface the mismatch was < 3 mm.

**Discussion**
In our preliminary experience, AR-RARP seems to be safe and effective. The accuracy of 3D reconstruction was proven. This technology is not devoid of limitations: the 3D virtual models are manually oriented and rigid. Future collaborations between urologists and bioengineers will allow overcoming these limitations.
Aim of the study

Retzius-sparing robot-assisted radical prostatectomy (RSP) is a brand new transperitoneal approach for Robot-Assisted Radical Prostatectomy. As it is performed through the recto-vesical space, it has been argued that the technique could be difficult to be performed in patients with previous major abdominal surgery and possible intraperitoneal adhesions. The objective of the study is to verify if RSP has higher complications in patients operated after a major transperitoneal surgery.

Materials and methods

We conducted a retrospective analysis of our prospectively maintained institutional database, including all the 1330 patients undergoing RSP since 2010 to 2017. We divided our patients into 3 groups: a. no surgery; b. minor abdominal surgery (appendectomy, hernioplasty, cholecystectomy, adrenalectomy); c. major abdominal surgery (small or large bowel resections, peritonitis, trauma surgery, liver or kidney transperitoneal surgery or transplantation) We analyzed all the pre-, intra-, and postoperative features. Complications have been classified according to Clavien Dindo classification. Follow-up was collected during outpatient visits or institutional phone calls.

Results

We identified 966 patients belonging to group a, 301 to group b, 64 to group c. Table 1 describes the anamnestic operations in group c. The 3 groups had different preoperative risk classifications (high risk in 16%, 25% and 30%, respectively - p<0,001) and preoperative PSA (6,6 vs 6,5 vs 8,89 ng/ml - p=0,02). Surgical time trended to be longer in group c, but the data was not statistically significant (175 vs 165 vs 195 minutes, p=0,08); on the other side, the console time for the prostatectomy was similar between the 3 groups (100 vs 100 vs 100 minutes, p=0,76). Median blood loss and transfusion rates were similar between groups. Considering intra- and post-operative complications, we saw no statistically significant differences between the 3 groups: we observed 3,6%, 2,9%, 4,5% grade 3a and 0,8%, 1,2%, and 1,5% grade 3b complications (p=0,99). We had one grade 5 event in group a for an acute myocardial infarction in POD3. Most grade 3a complications were related to lymph node dissection (hembolizations of bleeding iliac or hypogastric branches or lymphocele percutaneous drainages); concerning with grade 3b events, in group a we had 5 laparoscopic evacuations of haematomas, 1 retained drain removal, 1 bowel perforation during removal of an incarcerated drain, 1 occlusion due to bowel herniation from the umbilical port; in group b we had 2 intraoperative bowel lesions during the first access (both of them underwent a delayed bowel resection), 1 fenestration of lymphocele, one hematoma evacuation; in group c one unrecognized intraoperative bowel lesion who underwent a delayed resection.

Discussion

Retzius-sparing radical prostatectomy can be performed in patients with a history of major abdominal surgery. High grade complications occur similarly to non operated cases and remain rare.
DISSECTING LEARNING CURVE OF ROBOTIC RADICAL PROSTATECTOMY: CUSUM ANALYSIS OF SITE-SPECIFIC POSITIVE SURGICAL MARGINS INCIDENCE

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Aim of the study
To explore the learning curves of overall and site-specific positive surgical margins (PSM) after robotic-assisted laparoscopic radical prostatectomy (RARP).

Materials and methods
A total of 268 consecutive patients undergoing RARP by a single surgeon between January 2013 and December 2016 were included in the study. We retrospectively evaluated patient data that were recorded prospectively. The cumulative summation (CUSUM) analysis was used to generate retrospectively the learning curves for overall and site-specific PSM occurrence in the whole experience and stratified by pathological stage. Univariate and multivariate logistic regression analyses were used to evaluate the adjusted odds ratios (OR; 95%CI) for PSM associated with the sequence number (continuous).

Results
The overall PSM rate was 29.8% (24.5% and 51.9% for pT2 and pT3 cases, respectively). The apex was the most common site of PSM (12.3% of cases). A clear PSM learning curve was observed for the overall population (OR=0.99;0.98-0.99; p=0.003). Learning curves with different shapes and turning points have been observed for organ-confined and nonorgan-confined cases and for the different PSM locations. CUSUM for posterolateral PSM showed the expected shape when a learning curve effect is present (OR=0.99;0.98-0.99; p=0.008), although the left PSM curves did not achieved a proficiency status. No clear learning curve effects were observed for the apex and bladder neck locations. The whole experience learning curve was mostly shaped by the posterolateral PSM occurrence in the very early phase, while apex and bladder neck PSM locations contributed mostly to the subsequent trend. A learning curve effect was observed also for the occurrence of multifocal or >3mm PSM (OR=0.99;0.98-0.99; p=0.0004).

Discussion
This is the first study that, using an effective method for surgeons performance self-appraisal, demonstrated that the achievement of stable PSM proficiency involves distinct learning curves depending not only on cancer features but also on the prostatic location being considered. Monitoring the site-specific PSM proficiency can indicate the surgical steps for which there may be still room for further technical refinements.
DEFINING CLINICALLY MEANINGFUL POSITIVE SURGICAL MARGINS IN PATIENTS UNDERGOING RADICAL PROSTATECTOMY FOR LOCALIZED PROSTATE CANCER: A STAGE-BY-STAGE ANALYSIS ON THE RISK OF CLINICAL RECURRENCE


Aim of the study
Although positive surgical margins (PSM) may lead to an increased risk of prostate cancer recurrence, their association with stronger oncological endpoints such as clinical recurrence (CR) is debated. Moreover, the prognostic significance of PSM for each stage has not been fully addressed yet. We aimed at identifying clinically meaningful PSMs associated with CR according to individual patient stage.

Materials and methods
Overall, 2,810 men treated with radical prostatectomy (RP) ± extended pelvic lymph node dissection between 2011 and 2017 at a single referral center were identified. Among those, 344 (12.2%) patients had PSM with details on total length (mm) and focality (single vs multiple). Biochemical recurrence (BCR) was defined as two consecutive PSA ≥0.2 ng/ml, while CR was defined as positive imaging after the onset of BCR. Multivariable Cox regression analyses tested the impact of length and focality of PSM on the risk of BCR after adjusting for confounders. Patients were stratified according to PSM presence and features in three groups based on the presence of PSM, the length (according to the highest quartile) and focality: no PSM vs favourable PSM (single margin <3 mm) vs unfavourable (≥3 mm or multifocal margin). Kaplan-Meier and Cox regression analyses assessed the impact of PSM on CR after stratification according to pathologic characteristics (≤pT3a and grade group ≤3 and pN0 disease vs pT3b/4 and/or pathologic grade group 4-5 and/or pN1)?

Results
Overall, 1,795 (63.8%), 721 (25.7%) and 294 (10.4%) patients had pT2, pT3a and pT3b/4 PCa. Of all men, 420 (14.9%) and 259 (9.2%) patients had grade group 4-5 and pN1 disease. The median PSM length was 2 mm and 204 (59.3%) patients had multifocal PSMs. Median follow-up for survivors was 36 months. Overall, 210 and 40 patients experienced BCR and CR, respectively. The 5-year BCR- and CR-free survival rates were 76.4 and 96.1%. The extent and focality of PSM were significantly associated with the risk of BCR after adjusting for confounders (all p<0.001). Overall, 95 (3.4%) vs 249 (8.9%) patients had favourable vs unfavourable PSM. In patients with ≤pT3a and grade group ≤3 the presence of both favourable and unfavourable PSM significantly increased the risk of BCR (p<0.001) but not the risk of CR (p≥0.1). Conversely, in patients with pT3b/4 and/or grade group 4-5 and/or pN1 only the presence of unfavourable PSM was associated with both BCR and CR (p≤0.01).

Discussion
The presence of PSM is not invariably associated with an increased risk of CR after surgery. Although PSM was indeed generally associated with BCR, the association between PSM and CR was evident only in men with adverse pathological characteristics having a PSM ≥3 mm and/or multifocal. These patients should be considered for additional cancer therapies immediately after surgery.
THE ROLE OF PRIMARY SURGERY AND EXTERNAL BEAM RADIATION THERAPY IN THE MANAGEMENT OF NON-METASTATIC DUCTAL PROSTATE CANCER: 20-YEAR OUTCOMES FROM A SINGLE INSTITUTION EXPERIENCE

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Aim of the study
Ductal carcinoma of the prostate (DAC) is a rare histological subtype of prostate cancer (PC). Although it is reported to be an aggressive tumor, often with locally advanced and/or metastatic disease at presentation, the available literature still lacks of reports on treatment recommendations since there are still controversies about the optimal therapeutic approach. We present our 20-year outcome of multidisciplinary management of non-metastatic DAC (nmDAC).

Materials and methods
A retrospective analysis of our Institutional Urology-Radiation Oncology database was performed. Patients (pts) with nmDAC undergoing radical treatment were included. All these pts were discussed at our multidisciplinary Oncology board in order to highly personalize the treatment. The cohort was divided into three groups according to received treatment: group A underwent surgery (either radical prostatectomy or cystectomy), group B surgery and post-operative radiation therapy (RT, either adjuvant or salvage) and group C RT alone. Statistical analysis was performed using SPSS statistical software v20 (SPSS Inc, Chicago, IL, USA), considering statistically significant p value <0.05. Kaplan-Meier method was used to estimate survival outcome, after adjusting for predictive variable (age, comorbidities, pathological stage, histology).

Results
The features of the population in study are summarized in Table 1. From 1997 to 2016, about 8470 PC pts underwent radical treatment at our Institution, 71 were diagnosed with nmDAC (0.84%): group A with 21 patients (29.6%), group B 27 (38%) and group C 23 (32.4%) (table 1). Histological examination showed 17 pure DAC (23.9%) and 56 mixed DAC and acinar adenocarcinoma (78.9%). At a median follow-up time of 60 and 120 months, overall survival (OS) was 86% and 70% respectively for group A, 100% and 92% for group B, 65% and 49% for group C (p=0.054). Pure DAC undergoing surgery showed an OS at a median follow up of 60 months of 34%, while adding post-operative RT led to an OS of 100% (p=0.029).

Discussion
DAC is a rare, often aggressive subtype of PC, especially in pure form. Our large series seems to support the role of a radical, aggressive, combined therapeutic approach, when feasible, in order to achieve better local disease control and long-term survival outcome.
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Aim of the study
In-bore magnetic resonance (mpMRI)-guided technique represents an innovative method to better achieve an accurate evaluation of index lesion (IL). We reported a single center experience and analyzed clinical management according to biopsies results.

Materials and methods
From 2015 to 2018, 427 patients were submitted to mpMRI-guided biopsies. All procedures were performed by two expert mpMRI radiologists with eight and five years’ experience, respectively. Biopsies were performed on a 1.5T MR scanner (Magnetom Avanto, Siemens Healthineers, Erlangen, Germany) using a commercially available transrectal device (DynaTRIM, Invivo, Gainesville, FL, USA). After calibration of the biopsy device the first sample was obtained using the coordinates provided by the device software to guide the needle along a trajectory to the IL lesion. The trajectory of subsequent samples was manually adjusted to improve localisation to the target. Logistic regression analyses tested independent predictors of PCa and clinically significant PCa (csPCa: GS ≥ 7) detection. Moreover, we analyzed the concordance rate between biopsy and pathological Gleason score (GS). Logistic regression analyses were used to find independent predictors of GS discordance.

Results
Three-hundred-ninety (72.5%) and 118 (27.5%) biopsies were performed for detection and during Active Surveillance (AS), respectively. Reported IL PI-RADS score was highly suspicious for PCa (PI-RADS≥4) in 262 (61.5%) men. Overall, 162 (38%) and 33 (8%) patients had >1 lesion and more than one lesion highly suspicious for PCa at mpMRI, respectively. Median number of cores performed was 4 (3-6). Overall, 233 (54.5%) and 137 (32%) biopsies were positive for PCa and for csPCa, respectively. At MVA analyses, PSA-D (OR:1.3; p=0.048), total number of cores taken (OR: 2.1; p=0.002), cT (cT2 vs. cT1; OR:4.7; p=0.07), high IL PI-RADS score (OR: 5.2; p<0.001) and previous negative biopsies (OR:0.8; p=0.05) were independent predictors of PCa findings. Moreover, age (OR:1.08; p=0.01) and high IL PI-RADS (OR:2.9; p<0.01) were predictors of a csPCA. Active management and AS were then recommended in 184 (43%) and 57 (13%) cases. One-hundred and two (55%) patients were submitted to radical prostatectomy (RP) at our institution. Interestingly, in 39 (38%) patients a GS change was observed between biopsy and RP-specimen. These figures resulted in 29 (28%) risk-group change (75% of them from low to intermediate-risk D’Amico group). At MVA logistic regression analyses, a high number of targets (OR:2.3; p=0.02) and high secondary lesion PI-RADS score (OR:1.2; p=0.05) at mpMRI were independent predictors of GS variation. Finally, the number of lesions (OR: 1.1; p=0.05) and the IL PI-RADS score (OR:4.4; p=0.03) were associated with D’Amico risk group changes.

Discussion
In-bore mpMRI-guided biopsies represent an accurate method to study the IL aggressiveness. However, clinical parameters and mpMRI findings should be taken into account before deciding clinical management of these patients.
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ONCOLOGICAL AND FUNCTIONAL OUTCOMES OF MRI-TARGETED TRANSPERINEAL FREEHAND PROSTATE BIOPSY UNDER LOCAL ANAESTHESIA: DO WE STILL NEED SYSTEMATIC CORES ALONG WITH TARGETED ONES?


Aim of the study
MRI targeted prostate biopsies (TBx) are increasingly used in prostate cancer (PCa) diagnosis. Currently, systematic cores (SC) sampling is recommended together with targeted cores (TC). Whether SC increase clinically significant (CS) PCa or simply increase non CS PCa diagnosis when added to TC compared to TC alone is not known in a local anaesthesia (LA) setting using transperineal freehand (TPF) technique. Our aim was to evaluate the impact of adding SC to TC in TPF TBx under LA.

Materials and methods
A prospective cohort of men underwent LA TPF TBx (TC, n=4 per target + SC) using ESAOTE fusion platform from September 2016 to January 2017 at a single referral centre. We excluded men >80 years, with PSA>20ng/mL or with previous PCa diagnosis. CS PCa was defined according to the START Criteria. Clinical and pathological data, complications, VAS pain scale, IIEF-5 and IPSS were collected before, during and at 40 days from the procedure. MRI and pathology were reviewed by dedicated radiologist using PiradsV2 and pathologist respectively, both blinded to clinical information. Continuous and categorical variables were compared using Mann-Whitney and Fisher or Chi square test respectively.

Results
We included n=213 (TBx). Mean number of cores taken was 15.1±2.2. Overall, clinically significant (CS) PCa detection rate was 52% (n=111 men with CS PCa). Detection rate was 20.7%, 37.8% and 68.6% for PI-RADS 3, 4 and 5 respectively. TC alone diagnosed n=91 CS PCa but would have missed n=20 CS PCa (18%) which resulted positive on SC only. Overall, 2 non-CS PCa were found. Peri-procedural pain was acceptable (VAS 3.2±2.4). Peri-procedural complications included urinary retention in n=2 and vasovagal reaction in n=8 whereas main post-procedural complications were hematuria in 76.0% (lasting 8.8±8.5 days) and hematospermia in 55.0% (lasting 18.8±11.8 days). Three men had post-procedural fever, while no cases of major complications (Clavien ≥3) or sepsis were recorded. IIEF-5 and IPSS were unchanged by the procedure. Overall procedural time was 18.6±5.75min (MRI and TRUS imaging overlap 6.1±3.6min; TC sampling 3.6±2.1min per target).

Discussion
Conclusions. TPF TBx under LA have good CS PCa detection with low peri-and post-procedural complications and perceived pain. SC should be performed together with TC to avoid underdiagnosis of CS PCa.
Aim of the study
Multiparametric magnetic resonance imaging (mpMRI) allows identification of clinical significant suspicious areas. Targeted prostate biopsies by ultrasound fusion biopsy are associated with higher rate of clinically significant prostate cancer (csPCa) detection. The aim of our study was to evaluate our initial casisitic with the Esaote Virtual Navigator System and free hand biopsy technique.

Materials and methods
data were retrospectively collected from 4 tertiary care Italian centres. From 2016 to 2017 we collected 237 patients (pts) submitted to trans rectal or transperineal free hand fusion prostate biopsies performed with Esaote Virtual Navigator System by expert biopsy surgeon. Pts with mpMRI PIRADS-V2 score ≥3 underwent targeted biopsy (3 cores) + systemic random biopsies (12 to 16 cores). Descriptive statistic was used to describe population features. Overall PCa and cs PCa (GS ≥ 3+4) detection was calculated. Correlation between the detection of a histo-pathological clinical significant PCa and the PIRADS-score classification was assessed by univariate logistic regression analyses. Finally Receiver Operating Characteristics (ROC) curve was used to show the predictive accuracy of target vs systematic biopsies on csPCa detection, according to PIRADS score.

Results
Median age was 67 years (IQR 47-80 years). Median PSA value was 6 ng/ml (IQR 1.2-47 ng/ml) Overall, mpMRI detected 34 (14%) PIRADS 5, 133 (56%) PIRADS 4, 70 (29%) PIRADS 3 lesions, respectively. At targeted + random sextant biopsy, PCa was diagnosed in 159 pts (67%), while significant disease was found in 118 pts (50%). Targeted biopsies detected 127 (53%) PCa and 94 (40%) clinically significant PCa. In 23 pts clinically significant PCa was detected in targeted biopsies only, while in 14 cases clinically significant Pca was discovered by sextant biopsies only. Detection rate of significant PCa was 74%, 59%, and 21% respectively for PIRADS 5, 4 and 3. Targeted biopsies detected significant Pca in 74%, 42%, 14% in case of PIRADS 5, 4 and 3 respectively. At univariate analysis higher PIRADS-score was associated with detection of clinical PCa (OR 1.77; CI 1.07-2.27; p <0.001). Specifically, PIRADS 5 was associated with higher risk of clinically significant PCa than 4 and 3: OR 4.51; CI 2.01-10.11; OR 2.62; CI 1.23-3.31; OR 0.27; CI 0.14-0.51, respectively; all p <0.001). The ROC curve showed an AUC of 71% for target biopsies and of 56% for systemic biopsies (p <0.001) in identifying clinically significant PCa.

Discussion
In this initial experience with Esaote Virtual Navigator System, results indicates high PCa detection rate by target biopsies, that are more accurate than random biopsies in detecting clinically significant PCa.
MRI/TRUS fusion transrectal prostate biopsy: is there a correlation between the operator experience and the cancer detection rate?


Aim of the study
MRI/TRUS software fusion-guided transrectal prostate biopsy (fusion biopsy, FB) has become an established diagnostic tool for improved detection of prostate cancer in the last few years. In most Divisions with an established FB program only few urologists are trained in performing this procedure. Of note, the knowledge of the learning curve characteristics could contribute to efficient training and to maintenance of institutional biopsy quality. In this study, we evaluated potential differences in FB detection rate between expert consultants, senior residents and young residents.

Materials and methods
In 05/2014 the Biojet® (D&K Technologies) software for FB was introduced in our Division. The minimum MRI requirements were multiparametric registration including T2w, DCE and DWI, a magnetic field strength of at least 1.5 T and a written report by the radiologist defining the accurate position of the suspected lesion in the prostate according to the PI-RADS scoring system. Despite Biojet® system allows both transrectal and trans-perineal approach, for the purpose of this study we included in our analysis only transrectal FB, and only the index lesions were analysed. The operators experience was defined as follow: consultants had performed at least 10 years of trans-rectal systematic prostate biopsies, whilst senior residents at least two years; young residents started their experience in biopsies with FB after performing at least 15 procedures supported by an experienced operator. Populations and pathological characteristics were recorded. Detection rates for each group (consultants, senior and young residents) were separately evaluated according to PI-RADS (PI-RADS 3 vs. PI-RADS 4-5 lesions), and to the number of previous biopsies (first vs. repeated biopsy). The operative time and percentage of positive cores were then recorded for each group.

Results
Overall, 625 transrectal FB were performed. Stratified population and pathological characteristics and detection rates are reported in Table 1. Of note, no differences were found in detection rate and operative time between the groups. Conversely, consultant had a higher rate of positive cores than resident groups.

Discussion
Our results showed that the detection rate of FB seemed high from the beginning of the learning curve. Consultants had a higher rate of positive cores compared to residents. Our preliminary study supports the adoption of FB into urological practice, thanks to its reproducibility and efficacy, independently to the operator experience.
DIAGNOSTIC ACCURACY OF MPMRI/TRANSRECTAL US FUSION BIOPSY IN MEN WITH PREVIOUS NEGATIVE STANDARD BIOPSY


Aim of the study
prostate multiparametric MRI (mpMRI) and subsequent targeted biopsy has large popularity as a useful tool to improve prostate cancer (PCA) detection in men with clinical suspicion of PCA and previous negative biopsy. The aim of the present study is to compare the diagnostic accuracy of mpMRI/transrectal US fusion biopsy (FB) to standard transrectal random biopsy (RB) for PCA diagnosis in men with clinical suspicion of PCA and previous negative RB.

Materials and methods
from November 2016 to February 2018, 69 patients with positive mpMRI (PIRADS v2 ≥3) and prior prostate biopsy negative for PCA underwent mpMRI/transrectal US FB with Hitachi RVS system and concurrent transrectal 24-cores systematic RB at a single academic institution. The two biopsy procedures were performed by two separate operators, keeping the RB operator unaware of the results of mpMRI and the location of the FB. All MRI scans were performed at our institution by two dedicated uro-radiologists or reviewed by one of the 2 dedicated uro-radiologist and PIRADS re-assigned if performed elsewhere. Each core was processed with sandwich technique in a single biobox and examined by a single dedicated uro-pathologist. Clinically significant PCA (csPCA) was defined as in the PROMIS trial (i.e. Gleason score ≥4 + 3 or a maximum cancer core length 6 mm or longer). Statistical analyses were performed with SPSS v.24.0 software. Continuous variables were reported as median and interquartile range (IQR). K statistic was used to assess the Gleason score concordance between FB and RB.

Results
Median age at biopsy was 64 years (IQR 60-68) and median total PSA was 7,4 ng/ml (IQR 5,8-10,7), with a median prostate volume at US of 69 ml (IQR 50-90). PIRADS score was 3 in 26%, 4 in 60% and 5 in 4% of the patients. Overall, 28/69 (40%) had a PCA diagnosis at biopsy. In 8 patients both FB and RB were positive (28%), while 14 were positive at RB only (50%) and 6 at FB only (21%). Stratifying the results by PIRADS score, overall PCA detection was 33% in PIRADS 3, 44% in PIRADS 4 and 100% in PIRADS 5. As far as csPCA is concerned, a total of 14 CspCa were diagnosed (20%), 12 CspCa were correctly identified by FB, 5 with both methods, and 7 with RB. Thus, FB alone would have missed 2/14 CspCa (14%) while RB alone would have missed 7/14 csPCA (50%), of which 2/7 would have anyway been diagnosed as non-csPCA and 5/7 would have been undiagnosed at RB. Stratifying by PIRADS score, csPCA detection was 17% in PIRADS 3, 22% in PIRADS 4 and 67% in PIRADS 5. Finally, Gleason score did not show a good concordance between FB and RB, with a k value of 0.22.

Discussion
FB provides an adjunct value to RB in the detection of any PCA and csPCA in men with previous negative biopsy and prostate mpMRI. The present data support the adoption of FB as an adjunct to RB in this specific clinical setting.
DETECTION OF PROSTATE CANCER: COMPARISON BETWEEN “IN-BORE” MRI-GUIDED BIOPSIES AND COGNITIVE TRANSPERINEAL-ULTRASOUND-GUIDED BIOPSIES

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**Aim of the study**
To compare prostate cancer detection rate (PCaDR) and clinically significant prostate cancer detection rate (csPCaDR) between Magnetic Resonance imaging-guided biopsies (MR-PB) and cognitive transperineal ultrasound-guided prostate biopsies (TP-PB).

**Materials and methods**
For this prospective study, approved by our Institutional Review Board, between November 2017 and March 2018, 86 men with clinical suspicion for PCa underwent mpMRI. When a suspicious lesion was found (PI-RADS 4 or 5 lesions, according to the PIRADSv2 scoring system) a targeted biopsy was performed by MRI-PB (arm A, 45 Patients, 67.6 y, PSA 12.1 ng/mL, PSAd 0.27) or TP-PB (arm B, 41 Patients, 69.4 y, PSA 13.6 ng/mL, PSAd 0.27). We compared PCaDR and csPCaDR (Gleason ≥7) between the techniques.

**Results**
Prostate cancer was diagnosed among 34 patients in arm A (PCaDR 75.6%) and 30 patients in arm B (PCaDR 73.1%) (p=0.4001). Clinically significant prostate cancer was diagnosed among 23 patients in arm A (csPCaDR 51.1%) and 14 patients in arm B (csPCaDR 34.1%) (p=0.0449). Among PI-RADS 4 lesions PCa was diagnosed in 19/29 (65.5%) and 19/30 (63.3%, p=0.4305), csPCa in 9/19 (47.4%) and 7/19 (36.8%, p-value=0.2555) in arm A and B, respectively. Among PI-RADS 5 lesions PCa was diagnosed in 15/16 (93.8%) and 11/11 (100.0%, p=0.1991) csPCa in 14/15 (93.3%) and 7/11 (63.6%, p =0.0288) in arm A and B, respectively.

**Discussion**
MRI-TP could play a crucial role in the detection of PCa by reducing the detection of clinically insignificant PCa and maximizing the detection of clinically significant PCa.
Aim of the study
Whether or not adding systematic biopsy to targeted biopsies in patients with a lesion detected at mpMRI is still a controversial topic. We aimed at identifying those patients who can avoid systematic biopsy at the time of mp-MRI targeted biopsy relying on individual patient probability to harbour clinically significant prostate cancer (csPCa) outside the index lesion.

Materials and methods
We identified 437 patients who underwent mpMRI of the prostate with subsequent fusion targeted and concomitant systematic biopsy at a single European tertiary referral centre between 2013 and 2017. All patients underwent 1.5 T mpMRI study using an endorectal coil and all men were either biopsy naïve or received a previous negative biopsy. The study outcome was csPCa, defined as Gleason at biopsy ≥7, outside the index lesion. Multivariable logistic regression analysis (MVA) was performed to develop a predictive model for the study outcome. Predictors included age at biopsy, PSA (ng/ml), prostate volume (ml), PIRADS v.2 (2 vs. 3 vs. 4 vs. 5), number of MRI lesions and previous biopsy (naïve vs. negative). The predictive accuracy (PA) was quantified using the AUC and the calibration plot method. Multivariable-derived coefficients were used to develop a novel risk-calculator. External validation of the model was performed into a population of 488 patients who underwent mpMRI of the prostate with subsequent targeted and concomitant systematic biopsy at a single North American tertiary referral centre from 2013 to 2017, using the predetermined regression coefficient.

Results
Overall, 222 (50.8%) patients had csPCa. At MVA, age at biopsy (OR: 1.03; p=0.04), prostate volume (OR: 0.98; p=0.01), previous negative biopsy (OR: 0.48; p=0.003), PIRADS 4 (OR: 3.23, p=0.03) and 5 (OR: 8.04, p<0.001), were independent predictors of csPCa. The multivariable model had a PA of 76.3% and the calibration plot was excellent. Four pre-biopsy risk groups were defined based on the risk calculator: low-(<15%), intermediate- (15-40%), high- (40-55%) and very high-risk (>55%). Omitting systematic biopsies in patients with a calculated risk <15% (low-risk group), would have spared 16% of systematic biopsies at the cost of missing 7% of csPCa. External validation of our nomogram showed a PA of 75% and the calibration plot was good. The application of our risk-calculator in the external validation cohort would have spared 20.9% of systematic biopsies at the cost of missing 4.9% of csPCa.

Discussion
We provided evidence that patient characteristics and mpMRI data may help physicians to reliably select patients suitable for a targeted biopsy alone. A risk-calculator based on patient characteristics and mpMRI data was developed and externally validated to discern patients who might avoid systematic biopsy and possible related side effects.
THE ROLE OF STANDARD BIOPSY DURING AN MRI-TRUS FUSION TARGETED BIOPSY: A TWO COHORT STUDY IN PREVIOUS NEGATIVE BIOPSY AND ACTIVE SURVEILLANCE PATIENTS


Aim of the study
MRI-TRUS Fusion targeted prostate biopsy (MRI-TRUS TB) is more accurate than standard TRUS guided biopsy (TRUS SB) in order to detect prostate cancer (PCa), however there are still concerns weather include a SB into a MRI-TRUS TB procedure in both first biopsy and re-biopsy settings. Purpose of our study was to investigate the potential benefit in terms of Detection Rate and pathological stratification of a contextual SB during an MRI-TRUS TB in a re-biopsy setting.

Materials and methods
Inclusion criteria were: 1) a raised PSA serum level with a previous negative biopsy; 2) an enrollment in an active surveillance (AS) program. All Pts had a suspicious area at the mpMRI (1.5T magnet with endorectal coil). Patients in AS underwent to MRI-TRUS TB Alone or MRI-TRUS TB + SB weather the biopsy was performed respectively within 4 months the AS enrollment or near the one-year re-biopsy, respectively. Not indolent Prostate Cancer (niPCa) was defined by the presence of Gleason Score (GS) ≥ 7 or more than two Gleason 6 cores retrieved at biopsy.

Results
The clinical, radiologic, and pathological characteristics are listed in Table 1. Of 104 Pts, 58 (%) underwent to MRI-TRUS TB + SB while 46 (%) to MRI-TRUS TB Alone. The two groups were homogeneous regarding most of clinical and radiological data, except for prostate volume (median value 50 vs 40 cc; IQR 39,5 - 61,25 vs 35 - 50, respectively) and radiological dimension of the index lesion (13 vs 10 mm; IQR 10 - 16,25 vs 10 - 12, respectively). Median number of targeted and random cores per patient were respectively 6 (IQR, 4-6). And 11,5 (IQR 10-12). Between the MRI-TRUS TB + SB and MRI-TRUS TB alone cohorts no significant differences were found in terms of overall PCa Detection Rate (DR) (77,6% vs 69,6% respectively; p=0,36) and not indolent PCa Detection Rate (niDR) (58,6% vs 65,2% respectively; p=0,49). The MRI-TRUS TB Alone cohort showed a higher niPCa/PCa ratio (93,8% vs 75,6%; p=0,03) due to the lower number of indolent tumor diagnosed (Table 2). Moreover, at the MRI-TRUS TB + SB sub-analysis, a significantly higher niDR was obtained at the MRI-TRUS TB (24,1% vs 48,3%, respectively; p=0.01)(Table2) with a concomitant more accurate GS stratification (Table 3).

Discussion
In a well selected population with a suspicious area at the mpMRI (patients with a raised serum PSA with a previous negative biopsy or a confirmatory biopsy after the AS program enrollment) a contextual Standard Biopsy (SB) might be unnecessary and eventually harmful due the possible indolent tumor diagnosis.
COGNITIVE VERSUS SOFTWARE-ASSISTED REGISTRATION: DEVELOPMENT OF A NEW NOMOGRAM PREDICTING PROSTATE CANCER AT MRI-TARGETED BIOPSIES


Aim of the study
Multiparametric magnetic resonance (mpMRI) is gaining acceptance to guide targeted biopsy (TB) in prostate cancer (PC) diagnosis. We aimed to compare the detection rate of software-assisted fusion TB (SA-TB) vs. cognitive fusion TB (COG-TB) for PC and to evaluate potential clinical features in detecting PC and clinically significant PC (csPC) at TB.

Materials and methods
This was a retrospective cohort study of patients with rising and/or persistently elevated PSA undergoing mpMRI followed by either transperineal SA-TB or transrectal COG-TB. The analysis showed a matched-paired analysis between SA vs. COG-TB without differences in clinical or radiological characteristics. Differences among detection of PC/csPC among groups were analyzed. A multivariable logistic regression model predicting PC at TB was fitted. The model was evaluated using the receiver operating characteristic-derived area under the curve, goodness of fit test, and decision-curve analyses.

Results
191 and 87 patients underwent SA-TB or COG-TB respectively. The multivariate logistic analysis showed that SA-TB was associated with overall PC (OR= 5.70; p<0.01) and PC at TB (OR= 3.00; p<0.01) but not with overall csPC (p=0.40) and csPC at TB (p=0.40). A nomogram predicting PC at TB was constructed using PI-RADS v2.0, age, PSAd and biopsy technique, demonstrating improved clinical risk prediction against a threshold probability of 10% with a c-index of 0.83.

Discussion
In patients with PC suspicion, software-assisted biopsy detects most cancers and outperforms the cognitive approach in targeting MRI visible lesions. Furthermore, we introduced a pre-biopsy nomogram for the probability of PC in TB.
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**“SATURATION TARGET BIOPSIES” - CAN A REDUCTION IN BIOPSY CORES MAINTAIN ACCURACY OF MPMRI SUPPORTED TARGET AND SYSTEMATIC TRANS-PERINEAL PROSTATE BIOPSIES?**


**Aim of the study**

TPB in combination with multi-parametric MRI (mpMRI) has high yield and accuracy in diagnosing prostate cancer (PCa). The high number of cores makes it difficult to offer TPB under local anesthetic in a high volume practice. The objective of this study is to validate the diagnostic accuracy of mpMRI and TPB against definitive histological diagnosis from robot-assisted radical prostatectomy (RARP) specimens and use this data to test a model of reduced biopsy core numbers and focal distribution.

**Materials and methods**

Analysis and modeling was performed using a prospectively collected database evaluating mpMRI-based TPB. We validated mpMRI and TPB histology using histological specimens from RARP. Reports of mpMRI were generated using a Likert scale based on PIRADS. A TB of 2-4 cores (mean 2.4) was taken from each mpMRI lesion followed by 18-24 SB (mean 23.8) using the Ginsburg protocol. Data was examined for overall detection rate of PCa (CDR) and clinically-significant prostate cancer (csPCa; csCDR) (ISUP 2014), tumour location and Gleason score. Concordance was analysed between each Likert group (5,4,3), TB, SB and RARP histology. We subsequently applied a new biopsy distribution model (“Saturation TB”) using 2-4 TB, 2 SB (BSB) and 3-8 cores from sectors adjacent to that containing the target lesion and tested this against RARP histology. We retrospectively applied this to all patients with a positive mpMRI who had undergone TPB. Concordance of outcome parameters was analysed.

**Results**

690 men had a positive mpMRI followed by TPB between March 2012 and June 2016. 84 patients subsequently underwent RARP for PCa. All 84 patients had ≥1 mpMRI lesions with Likert score ≥ 3 (Likert 5=46; Likert 4=28; Likert 3=10). 18 cases had >1 lesion. 73/84 (87%) patients had TB positive for PCa. mpMRI identified a suspicious lesion confirmed as PCa on RARP histology in 83 patients (98.8%). Comparing index lesion detection for csPCa, the sensitivity of TB alone (0.869 - 95% CI: 0.797-0.941) was inferior to SB (0.964 - 95% CI: 0.925-1) and combined TB/SB (1 - 95% CI: 1). Applying the “Saturation TB” model to patients who underwent RARP, CDR and csCDR was 98.8% (95% CI: 0.965-1) and 90.1% (95% CI: 0.836-0.966), respectively. “Saturation TB” model applied to our cohort of 690 patients reduced CDR and csCDR compared to combined TB/SB from 71.7% (495/690) to 63.6% (439/690) and 46.8% (323/690) to 42.3% (292/690), respectively. “Saturation TB” demonstrates 88% and 91% concordance with combined TB/SB for CDR and csCDR, respectively.

**Discussion**

Our results demonstrate the accuracy of mpMRI and combined TB/SB. “Saturation TB” can deliver detection rates superior to TB and SB alone and within 90% of combined TB/SB. This model may allow TPB to be performed in an outpatient setting, avoiding the costs and inefficiencies associated with operating theatres.
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PROSTATE FUSION BIOPSY USING ESAOTE PLATFORM: ONCOLOGICAL AND FUNCTIONAL OUTCOMES OF A PROSPECTIVE SINGLE CENTRE STUDY


Aim of the study
Nowadays the diagnosis of the prostate cancer (PCa) relies on the freehand targeted fusion biopsy (TBx) which can be performed in ambulatory setting using the transrectal or transperineal route. Transperineal freehand (TPF) approach under local anaesthesia (LA) is still few reported in literature, while many authors speak about the transrectal procedure carried out under general anaesthesia. This study aims to describe our technique of TPFTBx under LA using one of the many different commercially available platform (ESAOTE Navisuite myclass 5.0) and to report our initial oncological and functional results.

Materials and methods
At our centre, San Giovanni Battista Hospital, Turin, from September 2016 to January 2018, two prospective cohorts of men underwent LA TPFTBx (4 cores per target (TC) + systematic biopsy (SBx) without the core of the area already sampled by TC, if applicable) or LA TPFSBx (12 cores) respectively. Clinical and pathological data were collected before, during and at 40 days from the procedure including complications, procedural timings, VAS pain scale, IIEF-5 and IPSS. Men >80 years, with PSA>20ng/mL or with previous PCa diagnosis were excluded. MRI and pathology were reviewed by dedicated radiologist using PI-RADSv2 and pathologist respectively, both blinded to clinical information. Clinically significant Prostate Cancer (CSPCa) was defined according to the START Criteria. Oncological and functional outcomes were evaluated for TPFTBx. Functional TPFTBx outcomes were then compared with the TPFSBx cohort to investigate the impact of TC addiction. Continuous and categorical variables were compared using Mann-Whitney and Fisher or chi² test respectively.

Results
We included n=213 (TBx) and n=149 (SBx) men. No baseline differences were recorded except for the number of Bx naïve men (FBx 53.5%; SBx 81.9%; p<0.001) and of cores taken (FBx 15.1±2.1; SBx 12.1±0.3; p<0.001). CSPCa TBx detection was 52.0% (20.7%, 37.8% and 68.6% for PI-RADS 3, 4 and 5 respectively). If not performing SBx along with TC n=20 (18.0%) CSPCa would have been missed. In terms of functional outcomes no significant differences amongst FBx and SBx were present in peri-procedural pain (p=0.42), peri-procedural complications (urinary retention n=2, p>0.99; vasovagal reaction n=8, p>0.99) and in post-operative complications (hematuria 76.0%, p=0.73 and hematospermia 55.0%, p=0.56). No cases of Clavien ≥3 complications, infections or sepsis were recorded. IIEF-5 and IPSS did not significantly vary from pre- to post-procedural assessment and amongst the two groups (ΔIPSS p=0.22; ΔIIEF-5 p=0.19). Longer timings were required to perform FBx (18.6±5.8 TPFTBx vs SBx 12.1±3.2, p<0.01).

Discussion
LA-TPFTBx in ambulatory setting is feasible and safe. However SBx should still be performed along with TC in the light to avoid under-diagnosis of CSPCa. Compared to SBx, TPFTBx requires longer procedural timings but shows similar complication rates and tolerability.
SEXUAL DYSFUNCTION AND GENDER IDENTITY SURGERY

P216 SEXUAL DYSFUNCTION IN MEN WITH PRE-DIABETES - RESULTS FROM A CROSS-SECTIONAL STUDY

P217 PREVALENCE AND CLINICAL CORRELATIONS OF PREMATURE EJACULATION IN ITALIAN MALES: RESULTS FROM AN OBSERVATIONAL, NON-INTERVENTIONAL, CROSS-SECTIONAL, EPIDEMIOLOGICAL STUDY (IPER-M)

P218 CLINICAL PROFILES OF PATIENT SUFFERING FROM PREMATURE EJACULATION AND HIS PARTNER: RESULTS FROM AN OBSERVATIONAL, NON-INTERVENTIONAL, CROSS-SECTIONAL, EPIDEMIOLOGICAL STUDY (IPER)

P219 GENERAL AND SEX PROFILE OF WOMEN WITH PARTNER AFFECTED BY PREMATURE EJACULATION: RESULTS OF A LARGE OBSERVATIONAL, NON-INTERVENTIONAL, CROSS-SECTIONAL, EPIDEMIOLOGICAL STUDY (IPER-F)

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P224 NOMOGRAM PREDICTING EFFICACY OF COLLAGENASE CLOSTRIDIUM HISTOLYTICUM (CCH-XIAPEX®) IN PATIENTS WITH PENILE CURVATURE

P225 ADVANTAGES AND EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVE THERAPY IN PEYRONIE’S DISEASE PAIN
SEXUAL DYSFUNCTION IN MEN WITH PRE-DIABETES - RESULTS FROM A CROSS-SECTIONAL STUDY


Aim of the study
Erectile dysfunction (ED) is causally related to diabetes mellitus (DM) and can also be considered as a useful marker for many forthcoming cardiovascular diseases (CVDs). Prediabetes (pDM) is considered a risk factor for the further development of both DM and CVDs. The association between pDM and ED has been scantily analysed. We aimed to assess the association between pDM and sexual health in a cohort of Caucasian-European men seeking medical help for ED as their primary complaint.

Materials and methods
Demographic, clinical and laboratory data from 372 consecutive men were analysed. Health-significant comorbidities were scored with the Charlson Comorbidity Index (CCI; categorized 0 vs ≥1). Patients were invited to complete the IIEF-EF domain (then categorized according to Cappelleri's criteria). Men were defined as having pDM if they had: (i) fasting plasma glucose concentration between 100 and 125 mg/dL; (ii) 2-h plasma glucose concentration in the 75 g oral glucose tolerance test from 140 mg/dL to 199 mg/dL (American Diabetes Association 2015). Hypogonadism was defined as total testosterone (tT) <3 ng/ml. Descriptive statistics and logistic regression models tested the association between clinical predictors and PreDM status and severe ED.

Results
Overall, pDM was found in 86 (23.1%) patients. Men with pDM had lower total testosterone (p=0.036), higher triglycerides (p<0.05) and higher total cholesterol values (p=0.024) than those without pDM. Hypogonadism was more frequently reported by pDM+ men than those pDM- (34.3% vs. 22.3%; p=0.046). The IIEF-EF domain score was lower in pDM+ than in pDM- patients (12.7 vs. 16.2; p=0.02). A higher rate of CCI>1 (p=0.03) and a higher rate of severe ED (47.7% vs. 30.8%; p=0.013) were more frequently found in pDM+ than in pDM- patients. Multivariable logistic regression analysis showed that age (OR 1.03; p=0.01), lower tT (OR 0.81; p=0.02) and severe ED (OR 3.37; p=0.004) achieved independent predictor status for +pDM, after accounting for BMI, CCI, alcohol consumption and cigarette smoking. Similarly, age (OR 1.02; p=0.02) and +pDM (OR 2.02; p=0.02) were independent predictors of severe ED, after accounting for other clinical variables.

Discussion
One in five men seeking medical help for new onset ED showed glucose values suggestive for unrecognized pDM status. Men with +pDM reported worse hormonal and metabolic profiles, along with a higher risk of severe ED, than those without pDM. Older age, lower tT values and severe ED were independent predictors of +pDM and could be used to better identify those patients who could benefit most from hypoglycaemic preventive measures in the everyday clinical practice.
PREVALENCE AND CLINICAL CORRELATIONS OF PREMATURE EJACULATION IN ITALIAN MALES: RESULTS FROM AN OBSERVATIONAL, NON-INTERVENTIONAL, CROSS-SECTIONAL, EPIDEMIOLOGICAL STUDY (IPERM)

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Aim of the study
Primary aim was to determine the prevalence of PE in the male adult population in Italy.

Materials and methods
Adult men aged 18 to 80 years old, sexually active were randomly sampled from the patient lists of General Practitioners in Italy and were included in this observational, non-interventional, cross-sectional epidemiological study from January to July 2015. Subjects were asked to fill: a general questionnaire regarding anthropometric data, lifestyle, education, occupation, economic conditions, general health status, co-morbidities and sexual habits; the Premature Ejaculation Diagnostic Tool (PEDT); the International Index of Erectile Function (IIEF-5) the Sexual Quality of Life Questionnaire-Male (SQoL-M).

Results
1,104 subjects were recruited. Mean age was 45.6 years. Mean prevalence of Premature Ejaculation based upon PEDT score (≥ 11) was 18.5%, while 12.4% referred a self-reported IELT < 1 minute. Prevalence of PE proportionally increased with age. 64.6% of patients presented lifelong PE versus 35.4% of patients who reported acquired PE. Estimated prevalence of coexisting PE and Erectile Dysfunction (ED) is 7.0%. Furthermore, overall quality of sexual life was significantly worse in PE (p= 0.006). Enrolled male subjects reported an overall rate of sexual problems in their partners of about 30%. 40.4% of PE patients did not seek help for their dysfunction. No significant differences were noted between PE+ and PE- patients in terms of BMI, alcohol consumption, smoking habits, physical activity, education, economic conditions and marital status.

Discussion
PE presents an high prevalence in Italian population and it increases with age and heavily affects patient’s and his partner’s quality of life. Encouraging data exists concerning the percentage of patients seeking help for their condition.
CLINICAL PROFILES OF PATIENT SUFFERING FROM PREMATURE EJACULATION AND HIS PARTNER: RESULTS FROM AN OBSERVATIONAL, NON-INTERVENTIONAL, CROSS-SECTIONAL, EPIDEMIOLOGICAL STUDY (IPER)

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Aim of the study
The primary objective of this study is to extrapolate clinical features of PE patients and partners of men affected with PE in order to draft a profile that can be of support for physicians in the frame of a couple in which there is a PE patient.

Materials and methods
We performed an observational, non-interventional, cross-sectional epidemiological [Italian Premature Ejaculation Research (IPER)] on a cohort of adult males (IPER-M sub-study) and females (IPER-F sub-study) randomly sampled from a General Practitioners database, by applying the same methodology for both cohorts. The female sample is constituted by an independent cohort of woman who reported having a partner with PE. Inclusion criteria were: adult men and women aged 18 to 80 years, sexually active with any kind of ethnicity. For both IPER-M and IPER-F cohorts a general questionnaire was administered. In detail, the IPER-M study population was asked to fill in the following validated self-administered questionnaires: Premature Ejaculation Diagnostic Tool (PEDT), International Index of Erectile Function (IIEF-5) and Sexual Quality of Life Questionnaire-Male (SQoL-M), while female patients from IPER-F cohort were asked to complete the following validated questionnaires: adapted from Female Sexual Distress Scale (FSDS-R-PE), Sexual Quality of Life Questionnaire-Female (SQoL-F), Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS); furthermore female patients were asked to report about their partner’s ejaculation time (self-reported IELT) and presence of sexual dysfunctions (including no interest for sex, lack of or delayed orgasm, pain during ejaculation, anxiety and lubrication problems). The statistical significance level (p) was set at ≤ 0.05.

Results
For the IPER-M and IPER-F sub cohorts, 1104 and 1109 patients were included in the study, respectively. The mean age of IPER-M and IPER-F samples was 45.6 years and 45.1 years respectively. No differences were noted between PE+/PE- patients in both IPER-M and IPER-F sub-cohorts in terms of alcohol consumption, smoking habits, physical activity nor stress condition in everyday life, employment, economic class and marital status. The prevalence of PE increases proportionally with age, both in the IPER-M sub cohort and in the IPER-F sub cohort as reported by the partners of patients with PE. In both IPER-M and IPER-F sub cohorts, PE+ patients reported a significantly lower frequency rate of sexual intercourse, worse QoL (p=0.006 and p<0.0001, respectively), and increased anxiety status (p<0.0001 for both subgroups) than the PE- population.

Discussion
Data from this study shows that in a couple in which there is a patient with PE there is a significant sexual dissatisfaction for both partners, which is accompanied by a progressive reduction in the frequency of sexual contact as well as the onset of a state of anxiety. Taking this into a full framing of the sexual quality of the couple is essential to optimize the results of the PE therapy of male partner.
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GENERAL AND SEX PROFILE OF WOMEN WITH PARTNER AFFECTED BY PREMATURE EJACULATION: RESULTS OF A LARGE OBSERVATIONAL, NON-INTERVENTIONAL, CROSS-SECTIONAL, EPIDEMIOLOGICAL STUDY (IPER-F)

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Aim of the study
The primary objective of this study was to assess the effect of premature ejaculation (PE) on female sexuality in female partners of men affected from PE. Secondary objectives were: 1) to assess the impact of PE on female sexual quality of life; 2) to assess the presence of sexual problems of the male partner; 3) to evaluate the prevalence and characteristics of comorbidities.

Materials and methods
Adult women aged 18 to 80 years old, sexually active were randomly sampled from the patient lists of General Practitioners in Italy and were included in this observational, non-interventional, cross-sectional epidemiological study. Subjects were asked to fill: a general questionnaire regarding anthropometric data, lifestyle, marital status, education, occupation, economic conditions, general health status, co-morbidities and sexual habits; the Sexual Quality of Life Questionnaire-Female (SQoL-F), the Female Sexual Distress Scale (FSDS-R-PE), the Self-rating Depression Scale (SDS) and Self-rating Anxiety Scale (SAS). In addition, female reported about their partner’s ejaculation time and presence of sexual dysfunctions.

Results
3,104 females were included. Mean age was 45.1 years. Female with PE partners presented an higher percentage of sexual dysfunction and reported more anxiety compared to female partners of men not affected from PE (42.69% vs 20.56% and 30.95% vs 15.34%, respectively). In addition, they referred more sexual dysfunction in their partners. Hypertension, hypercholesterolemia, arthritis, heart diseases, thyroid disease, a history of menopause or hysterectomy resulted significantly more prevalent in women with PE partners.

Discussion
Female partners of PE patients present an increased prevalence of sexual distress, a reduced quality of sexual life and an increased anxiety score when compared to women whose partners are not affected from PE.
PELVIC MUSCLE FLOOR REHABILITATION AS A THERAPEUTIC OPTION IN LIFELONG PREMATURE EJACULATION: LONG-TERM OUTCOMES


Aim of the study
Premature ejaculation (PE) represents one of the commonest male sexual dysfunctions, and PE is often associated with being unaware of the role of the pelvic floor in the control of ejaculation. Aim: The aim of the study was to evaluate the long-term outcomes (intravaginal ejaculatory latency time, IELT and PE diagnostic tool, PEDT) of pelvic floor muscle (PFM) rehabilitation in patients afflicted with lifelong PE.

Materials and methods
A total of 154 male patients were recruited for this prospective study. Out of them, 122 patients (79.2%) completed the protocol training. All the subjects had lifelong PE with a baseline IELT ≤ 60 seconds and PEDT (6) test > 11. The patients were all treated with PFM rehabilitation. To evaluate the effectiveness of PFM rehabilitation, we compared the mean IELT and PEDT values of the patients after 3, 6, 12, 24 and 36 months of treatment.

Results
At the end of the training, all patients became conscious of the role of the pelvic floor in the control of ejaculation. A total of 111 (90.9%) of the 122 patients gained control of their ejaculation reflex, with a mean IELT and PEDT of 161.6 seconds and 2.3, respectively, at week 12 of PFM rehabilitation. Both values statistically improved when compared with initial IELT and PEDT of 40.4 seconds and 17.04, respectively (p value < 0.0001). All the patients who completed the training were followed-up for at least two years, and 95 out of 122 (77.8%) completed the follow-up of 36 months. After two years of follow-up, 16 out of 111 (14%) patients dropped out of the study voluntarily. At the 24th and 36th month stages of follow-up, 64% and 56% of patients maintained satisfactory ejaculation control, respectively.

Discussion
The PFM rehabilitation protocol is easy to perform, with no reported adverse effects. Although it has not yet been standardized, the long-term results reported in this study suggest that it may be considered as a therapeutic option for patients with PE.
SIX MONTH COMPARISON BETWEEN AVANAFIL 200 MG AND SILDENAFIL 100 MG IN ERECTILE DYSFUNCTION THERAPY AFTER NERVE SPARING PROSTATECTOMY

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Aim of the study
In the last decade, research efforts have tried to reduce surgical invasivity and improve functional outcomes including preservation of postoperative sexual function because prostate cancer is increasingly recognized at an early age. Avanafil is a new PDE5i but there is little experience in literature for its use in post prostatectomy E.D. therapy. In this study we evaluated the efficacy and safety of avanafil 200 mg vs Sildenafil 100 mg as a drug for post-prostatectomy nerve sparing rehabilitation.

Materials and methods
We enrolled 231 candidates for nerve sparing robot assisted prostatectomy from January 2015 to September 2017 with following preoperative criteria: CCI≤1, ECOG ≤1, IIEF 15≥ 17, EHS≥ 2, positive response to Sep q2 and Sep q3, QoL≤ 3 and finally, at least, one sexual intercourse every 2 week and no hypogonadism or neurological disorder. Using Research Randomizer patients were divided into two groups: avanafil 200 mg (A group) and sildenafil 100 mg group (S Group). Patients began therapy 3 times/week on the tenth day post operative. EHS, IIEF-5, SEP, GAQs and QoL were re-evaluated at sixth months after the first administration of PDE5i.

Results
Only 160 were eligible for study. Both groups were of 80 patients. 12 patients discontinued therapy in A group while 8 patients in S group and switched to intracavernose injections. IIEF in A group reaches an average of 18.34 vs the group s which reaches an average of 18.20 without statistically significant difference (p = 0.872). The A group showed QoI averages of 3.05 while the S group of 2.478 and intragroup variation was statistically significant (p <0.05). Ehs showed a statistically significant difference between the two groups (2.02 Agroup 3.05 S group) S group which showed higher penile rigidity (p <0.0001). 72 patients of "S group" vs 58 patients of "A group" of responded positively to the sep q2 test (90% vs 75%, p=0.022) and at the sep q3 test, 75% vs 72.5%, p=0.857. At Gaq q1 test, a percentage of 95% vs 85% and at Gaq 2 test 95% vs 87.5% answered positively (p=0.065; p=0.161). Adverse events occurred in 16 patients in the S group 20% and in 4 patients in A group 5%.

Discussion
Therapy with Avanafil 200 mg compared to the same therapy with Sildenafil 100 mg showed a lower ability to allow an effective erection only in the initial phase of sexual intercourse. However Avanafil 200mg showed greater safety in its administration showing a lower presence of side effects.
IMPACT OF TIME FROM DIAGNOSIS TO TREATMENT ON ERECTILE FUNCTION OUTCOMES AFTER RADICAL PROSTATECTOMY


Aim of the study
Concerns have been raised regarding the impact of delaying treatment for prostate cancer (PCa) on both oncological and functional outcomes after surgery. We analysed the impact of time from diagnosis to treatment on erectile function (EF) outcomes after radical prostatectomy (RP).

Materials and methods
Complete data were available for 827 patients submitted to RP at a single academic center from 2002 to 2017. Preoperative clinical variable including age, comorbidities, tPSA, clinical stage (cT) and biopsy Gleason score were available for every patient. Time from diagnosis to treatment was defined as the interval between biopsy and RP. Preoperative risk-groups were defined according to the D’Amico’s risk classification. EF after surgery was assessed with the International Index of Erectile Function-EF domain (IIEF-EF) questionnaire; EF recovery was defined as an IIEF-EF≥22. Cox regression analyses tested the impact of time to surgery on the probability of postoperative EF recovery. Kaplan-Meier analysis compared the cumulative incidence of EF recovery according to different times from diagnosis to RP. As a second aim, the impact of time to surgery on EF outcomes was tested in a sub-cohort of patients eligible for active surveillance (AS).

Results
Overall, 306 (37%), 422 (51%) and 99 (12%) patients were diagnosed with low, intermediate and high risk PCa, respectively. Of all, 148 (17.9%) were eligible for AS but eventually preferred surgical treatment. Patients were surgically treated at a median (IQR) time of 3.5 (2.1, 5.5) months from biopsy; a total of 152 (18%) and 22 (2.7%) patients were treated after 6 and 12 months from biopsy diagnosis. Median (IQR) follow-up was 24 (12,48) months. The overall probability of EF recovery after RP was 32% (95% CI: 29-36) at 24 months post-RP. At Cox-regression analysis, time from biopsy to surgery was not significantly associated with the chance of post-RP EF recovery (HR: 1.01; 95% CI: 0.96-1.05; p=0.6) after accounting for age at surgery, baseline IIEF-EF score, comorbidities, type of surgery (open vs. robotic RP) and PCa risk category. Similarly, at Kaplan-Meier analysis, the cumulative incidence of EF recovery after RP did not differ among patients treated within 6, from 6 to 12 and after 12 months from biopsy (p=0.3). Similar results were obtained in the sub-cohort of patients eligible for AS.

Discussion
Delaying surgery does not affect EF recovery outcomes after RP. Of clinical relevance, patients may be reassured preoperatively regarding their chance of EF recovery after RP in the case of a delayed treatment. Larger cohorts are needed to test the impact of delaying surgery for more than 12 months from diagnosis on postoperative EF outcomes.
Sildenafil 25 mg film formulation + C. Clostridium Hystoliticum vs. C. Clostridium Hystoliticum alone for the treatment of Peyronie’s disease: a matched pair comparison analysis


Aim of the study
The aim of the study was to determine the role of Sildenafil 25 mg film formulation twice a day in the improvement of curvature after treatment of collagenase of clostridium hystoliticum in penile curvature due to Peyronie disease.

Materials and methods
The analyses were based on prospectively collected data of a cohort of 161 patients who were treated with Sildenafil 25 mg + CCH or CCH alone for PD, between April 2017 and April 2018. The post treatment protocol during collagenase consist in a modeling of the penis during the erection, the aim is to maximize the collagenase effect in terms of decreasing of the curvature. We administered sildenafil film formulation 2 times a day, one during the morning and one more during the evening exactly 30 minutes before the modeling session (between 30/60 seconds of modeling). Adjustment variables consisted of age, penile curvature and IIEF-15 at baseline, using 1:1 propensity-score matching. Propensity scores were computed using a logistic regression model with the dependent variable defined as the odds of receiving Sildenafil 75 mg + CCH or CCH alone and the independent variables as age, penile curvature and IIEF-15 t baseline. Subsequently, covariate balance between the matched groups was examined. Overall, 50 patients were considered subdivided into the following 25 patients who received Sildenafil 75 mg + CCH (group A) and 25 who received CCH alone (group B). Primary outcome of the study was the change in penile curvature after treatment while secondary outcomes were the change in sexual function (IIEF-15) and in Peyronie disease questionnaire (PDQ) and its sub-scores, PDQ-PS (psychological symptoms), PDQ-PP (penile pain) and PDQ-BD (bother disease).

Results
Overall, mean penile curvature was 47.0° (SD 21.88), the mean IIEF-EF was 23.56 (SD 4.10) and the mean PDQ was 27.06 (SD 13.55). After the treatment, we observed a mean change for penile curvature of -17.8 (SD 9.79) in group A and -25.6 (SD 9.05)(p<0.01), for IIEF-EF of 1.36 (SD 1.77) in group A and 2.28 (SD 2.33) (p=0.03), for PDQ-PS of -3.04 (SD 2.95) in group A and of -2.12 (SD 2.06) in group B (p=0.11), for PDQ-PP of -1.0 (SD 4.48) in group A and of -0.88 (SD 2.04) (p=0.60), for PDQ-BD of -5.84 (SD 4.58) in group A and of -4.16 (SD 4.45) (p=0.60) and for FSFI of 3.8 (SD 2.45) in group A and of 2.72 (SD 2.28) in group B (p=0.14). We found a rate of global satisfaction of 70.83% in group A and of 84.0% in group B (p=0.27).

Discussion
In this observational, matched-pair comparison between Sildenafil 25 ODT + CCH vs. CCH alone, we demonstrated that combination therapy was superior than CCH alone in terms of penile curvature and erectile dysfunction improvement. We hypothesize that PDE5-I could act by enhancing the penile modelling.
NOMOGRAM PREDICTING EFFICACY OF COLLAGENASE CLOSTRIDIUM HISTOLYTICUM (CCH-XIAPEX®) IN PATIENTS WITH PENILE CURVATURE


Aim of the study
Peyronie's disease (PD) has a devastating effect on patients and their partners. Several non-surgical therapies have been tried in PD. However, their efficacy remains questionable, as well-designed, placebo-controlled trials have failed to confirm favourable results. Collagenase clostridium histolyticum (CCH-Xiapex®) is the only licensed product for the treatment of PD as it has demonstrated safety and efficacy in several well-designed clinical trials. The aim of our study was to evaluate the safety and efficacy of Xiapex after the first injection and to build-up a nomogram able to identify predictive factors of penile curvature improvement (-20.0 degrees).

Materials and methods
A multicentric, single-arm prospective study included patients managed with Collagenase clostridium histolyticum (CCH-Xiapex®) using a new shortened protocol of three injections at 4 weekly intervals. Patients were evaluated by history, examination, ICI test. Patients with calcified plaque and ventral curvature have been excluded. The parameters assessed included pre and post treatment evaluation of the angle of curvature, the IIEF-15, Global Assessment of Peyronie's Disease, and Peyronie's disease questionnaires (PDQ) performed at baseline and after the first injection. Partners were evaluated with FSFI (Female Sexual Function Index) questionnaire. Penile block was performed using Lidocaine 2%. All patients had an intra-lesional injection of CCH (0.9mg) into the plaque at the point of maximal curvature. Patients were instructed to perform a stretching and a modelling manoeuvre for 4 weeks. Vacuum device was used in patients suffering from Erectile dysfunction. Median difference with the Hodges-Lehmann test was performed to evaluate clinical efficacy after treatment (StataCorp. 2015).

Results
In total 137 patients completed the study protocol. Median age was 56.0 (IQR 45.0-65.0), median partner's age was 53.0 (IQR 43.0-56.0) and median PC was 30.0 (IQR 30.0-60.0). After the final follow-up we observed a median change for PC of -20.0 (IQR 17.5,20.0; p=0.00), for IIEF-EF of -1.0 (IQR -2.0, -1.0; p=0.00), for IIEF-OF of -0.5 (IQR -1.0, -0.5; p=0.00), for IIEF-SD of -1.0 (IQR -1.0, -0.5; p=0.00), for IIEF-IS of -1.0 (IQR -1.5, -1.0; p=0.00), for IIEF-OS of 1.0 (IQR -1.0, -0.5; p=0.00), for PDQ-symptoms of 2.5 (IQR 2.0, 2.5; p=0.00), for PDQ-pain of 1.0 (IQR 1.0, 1.5; p=0.00), for PDQ-bother of 3.5 (IQR 3.0, 4.5; p=0.00) and for FSFI of -4.0 (IQR -4.0, -3.5; p=0.00). Overall median satisfaction was 8.0 (IQR 7.0-9.0). We observed ecchymosis in 108 patients (80.0%) and haematoma in 17 (12.6%). Figures 1 graphically shows the multivariable effect of each variable on the probability of PC improvement after treatment in the form of a nomogram. The c-index for the model was 0.93.

Discussion
We observed clinical improvement of PC, patients' and partners' sexual function after treatment with CCH for Peyronie's disease. This nomogram can be useful for patients in order to predict results after CCH treatment.
ADVANTAGES AND EFFECTIVENESS OF EXTRACORPOREAL SHOCK WAVE THERAPY IN PEYRONIE'S DISEASE PAIN


Aim of the study
While surgery is the mainstay of therapy for Peyronie disease requiring correction of angulation, interest has grown in the application of extracorporeal shockwave therapy (ESWT) as a minimally invasive approach for the treatment of the pain correlated with the Peyronie disease. This treatment aims to induce angiogenesis in the penile cavernous tissue and, because of its lithotriptic power, it can be used to break plaques in induratio penis plastica. The aim of the study is to determine the role of ESWT in the management of pain correlated to PD.

Materials and methods
A total of 325 patients, between 39 and 72 years old, affected with Peyronie's disease in the active phases, with pain during sexual intercourse, were enrolled into a prospective trial. All patients were administered ESWT with protocol treatment of one session per week for 8 weeks, 3000 shockwaves with 0.25 ml/mm² of energy and 5 Hz of frequency. Penile curvature was measured by a goniometer after achieving an artificial erection using Alprostadil (Viridal®, Schwarz Pharma, Monheim, Germany). The plaque size was measured with a ruler and sexual function assessed by the International Index of Erectile Function (IIEF-15). Severity of ED was classified as severe (IIEF-15 score 10), moderate (IIEF-15 score 11-16), or mild (IIEF-15 score 17-25). Moreover, to measure the impact and severity of Peyronie's disease symptoms we used the Peyronie's Disease Questionnaire (PDQ) which analyzes 3 domains, including psychological and physical symptoms, penile pain and symptoms bother. The results were evaluated at baseline and at 3 months after the treatment. End points were improvement of plaque size, penile length in erection, penile curvature and sexual function and were decrease of pain between baseline and after treatment with ESWT.

Results
Overall, the median (IQR) Plaque size at baseline was 1.80 (1.40-2.20) cm² and the Post-Treatment median (IQR) was 1.50 (1.30-2.00) cm² (P < 0.001); the median (IQR) penile length in erection at baseline was 13 (12-14) cm and the Post-Treatment median (IQR) was 14 (13-15) cm (P < 0.001); the median (IQR) penile curvature at baseline was 30 (20-35)° and the Post-Treatment median (IQR) was 25 (20-30)° (P < 0.001); the median (IQR) VAS at baseline was 7 (7-8) and the Post-Treatment median (IQR) was 3 (3-6) (P < 0.001). There was an improvement in each of the IIEF questionnaire domains and all three PDQ domains clinically significant (P < 0.001). No adverse effects have been recorded.

Discussion
ESWT significantly improves all the domains of IIEF, including Erectile Function, Sexual Desire, Orgasmic function, Intercourse and Overall Satisfaction and it improves PDQ domains. There is a significant improvement in the pain and penile curvature, and a reduction in the plaque size. ESWT offers a safe, minimally invasive option to the management of patients with PD.
PROSTATE CANCER: COMPLICATIONS AND FUNCTIONAL OUTCOMES

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PROPOSAL OF A NOVEL PROCEDURE-SPECIFIC CLASSIFICATION SYSTEM FOR POSTOPERATIVE COMPLICATIONS IN PATIENTS UNDERGOING ROBOT-ASSISTED RADICAL PROSTATECTOMY


Aim of the study
Although robot-assisted radical prostatectomy (RARP) might have better perioperative outcomes than open RP, a non-negligible proportion of Prostate cancer (PCa) patients undergoing RARP experience postoperative complications. The Clavien-Dindo system is commonly used to report complications. However, it was not specifically developed for RARP and it might misclassify complications in this setting. We aimed at developing a system predicting prolonged length of stay (pLoS) and/or readmission patients with detailed perioperative data undergoing RARP.

Materials and methods
205 consecutive patients who received RARP ± pelvic lymph node dissection (PLND) between December 2016 and August 2017 were identified. Perioperative data were prospectively collected by physicians during an interview at 30-day after surgery. Data on complications according to the Clavien-Dindo system, length of stay (LoS) and readmission were collected. The most frequent complications after RARP were identified and univariable analyses assessed their impact on a LoS above the median (3 days) and/or 30-day readmission. Complications associated with the risk of pLoS and/or readmission were included in a risk score. The presence of other complications conferred a score of 1, one of the complications associated with pLoS and/or readmission conferred a score of 2 and ≥2 of them a score of 3. The accuracy of the risk score after 200 bootstraps was assessed using the ROC-derived area under the curve (AUC) and was compared with the Clavien-Dindo system.

Results
Median age was 64.7 years. Overall, 150 (75.4%) patients underwent a PLND. Median operative time, blood loss and length of stay were 185 min, 150 ml and 3 days. Overall, 53 patients (25.9%) experienced 30-day complications. Overall, 40 (19.5%), 28 (13.7%) and 29 (14.1%) reported complications during hospitalization, after discharge and were readmitted. Complications were graded as Clavien-Dindo 1, 2 and ≥3 in 20 (9.8%), 24 (11.7%) and 9 (4.3%) patients. The most frequent complications were fever (n=11, 5.4%), anastomotic leakage (n=10, 4.9%), acute bleeding or hematoma (n=8, 3.9%) and lymphocele (n=7, 3.4%). Only anastomotic leakage, bleeding and lymphocele were associated with pLoS and/or readmission (all p≤0.04) and were included in the risk score. The proportion of pLOS and/or readmission was 55.6%, 76.5% and 80% for a risk score of 1, 2 and 3. This risk score had an AUC of 76%, which was significantly higher than the accuracy of Clavien-Dindo system in this series (72.5%; p=0.03).

Discussion
We developed and internally validated a novel RARP-specific risk score to classify complications after RARP. Its use would facilitate both reporting and grading of postoperative outcomes in PCa patients undergoing RARP with higher accuracy as compared to the Clavien-Dindo system when predicting prolonged LoS and readmission.
IMPACT OF METABOLIC SYNDROME ON FUNCTIONAL OUTCOMES AND COMPLICATIONS AFTER RADICAL PROSTATECTOMY

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Aim of the study
Despite the important systemic changes associated with metabolic syndrome (MetS), very little is known about the impact of the syndrome on recovery after radical prostatectomy (RP) for prostate cancer. A better knowledge of these aspects could be important in patients’ selection and counselling. The aim of this study is to understand the associations between MetS, functional outcomes and complications after radical prostatectomy.

Materials and methods
All the patients who underwent RP with open retropubic or robotic approach for histologically confirmed prostate cancer at our institution between 2000 and 2010 were identified. The presence of MetS prior to RP was ascertained using a modified version of the IDF-AHA/NHLBI criteria. MetS was defined when at least 3 of the following criteria were present: obesity, hypertension, diabetes mellitus or elevated fasting glucose, dyslipidemia. Clinical and pathological data included age at surgery, pre-surgery PSA, clinical stage, biopsy GS, urinary and sexual function in the preoperative phase; pGS, pT, pN stage, margin status, prostate and tumor volume were collected in the postoperative phase. Complete data about early and late (>90 days) surgical complication were collected, including hemorrhage, fistula, wound infection, septic complication, bladder neck contracture/stricture. Functional data about urinary continence and sexual potency at 1 year were collected using validated questionnaires. Pearson’s Chi-Square Test, Fisher’s Exact Test, Wilcoxon-Mann-Whitney Test and/or Exact Wilcoxon-Mann-Whitney Test were used for statistical analysis, as appropriate.

Results
5758 patients were included. Median age at surgery was 62 years (IQR 57-67) and preoperative PSA 5.4 (4.0-7.7). MetS was present in 1021/5758 patients (17.7%). Postoperative continence (no pads) was significantly less likely in MetS patients (75.4% vs 82.6%, p<0.01), despite no difference in preoperative continence. Erections without any therapy were reached in 23.8% on non-MetS and 15.2% of MetS patients (p<0.01) while erections with pharmacological therapy were present in 32.0% of non MetS and 26.6% of MetS patients (p<0.01), in this case a significant difference in preoperative function was seen (11.3% preoperative impotence in non MetS vs 18.8% in MetS, p<0.01). The presence of MetS was significantly correlated with more severe degrees of incontinence and impotence. Would infection was significantly more common in MetS patients (5.8% vs 3.9%, p<0.01), while no difference was seen in all the other early and late surgical complications.

Discussion
Men with MetS are at higher risk of incontinence and impotence after radical prostatectomy and this should be an important aspect of these patients’ counseling, and warrant further development of risk-reducing strategies. From the complications standpoint, RP is a safe procedure even in the MetS setting.
ERECTILE FUNCTION AND ONCOLOGIC OUTCOMES FOLLOWING OPEN RETROPUBIC AND ROBOT-ASSISTED RADICAL PROSTATECTOMY: RESULTS FROM THE LAPAROSCOPIC PROSTATECTOMY ROBOT OPEN TRIAL


Aim of the study
Whether surgeons perform better utilising a robot-assisted laparoscopic technique compared with an open approach during prostate cancer surgery is debatable. To report erectile function and early oncologic outcomes for both surgical modalities, stratified by prostate cancer risk grouping.

Materials and methods
In a prospective nonrandomised trial, we recruited 2545 men with prostate cancer from seven open (n=753) and seven robot-assisted (n=1792) Swedish centres (2008-2011). Clinometrically-validated questionnaire-based patient-reported erectile function was collected before, 3 mo, 12 mo, and 24 mo after surgery. Surgeon-reported degree of neurovascular-bundle preservation, pathologist-reported positive surgical margin (PSM) rates, and 2-yr prostate-specific antigen-relapse rates were measured.

Results
Among 1702 preoperatively potent men, we found enhanced erectile function recovery for low/intermediate-risk patients in the robot-assisted group at 3 mo. For patients with high-risk tumours, point estimates for erectile function recovery at 24 mo favoured the open surgery group. The degree of neurovascular bundle preservation and erectile function recovery were greater correlated for robot-assisted surgery. In pT2 tumours, 10% versus 17% PSM rates were observed for open and robot-assisted surgery, respectively; corresponding rates for pT3 tumours were 48% and 33%. These differences were associated with biochemical recurrence in pT3 but not pT2 disease. The study is limited by its nonrandomised design and relatively short follow-up.

Discussion
Earlier recovery of erectile function in the robot-assisted surgery group in lower-risk patients is counterbalanced by lower PSM rates for open surgeons in organ-confined disease; thus, both open and robotic surgeons need to consider this trade-off when determining the plane of surgical dissection. Robot-assisted surgery also facilitates easier identification of nerve preservation planes during radical prostatectomy as well as wider dissection for pT3 cases. For prostate cancer surgery, an open operation reduces erection problems in high-risk cancers but has higher relapse rates than robotic surgery. Relapse rates appear similar in low/intermediate-risk cancers and the robot appears better at preserving erections in these cases.
FUNCTIONAL OUTCOMES AND COMPLICATIONS OF OPEN VERSUS ROBOT-ASSISTED SALVAGE RADICAL PROSTATECTOMY: RESULTS OF A MULTICENTRE STUDY


Aim of the study
Salvage radical prostatectomy (sRP) has always been related with low quality functional outcomes and high morbidity. A wide contemporary serie of robotic (RsRP) vs open (OsRP) sRP is investigated to determine and compare functional outcomes.

Materials and methods
Between 2000 and 2016, we retrospectively enrolled 615 men who underwent sRP at 18 tertiary referral centres. Clavien Dindo score was used to collect complications. Erectile function (EF) was evaluated with IIEF questionnaire before and according to the type of therapy needed to obtain erections after sRP and urinary continence (Con) was determined with the number of pads/day used; both were assessed before sRP, at 6 and/or 12 months. We excluded men with insufficient data or a follow-up <6 months. Categorical variables were compared with Chi-square or Fisher’s exact tests; continuous variables with Wilcoxon-Mann-Whitney; analysis of variance for repeated measures was used to determine Con trends.

Results
We included 395 men (186 OsRP and 209 RsRP) who underwent sRP after primary active treatments. At baseline, Gleason Score (slightly higher in RsRP, p=0.0159), the CCI (higher in RsRP (2.17 ±2.4 vs OsRP 0.85 ±1.32; p<0.01)) and the lymph-node template used (more extended for OsRP (p<0.01)) were the only significant differences amongst the two groups. The RsRP group included a high number of previous mono or bilateral (19.75% vs 8.33%) nerve sparing surgery was higher in (p=0.01). OsRP had shorter operating time (213.6 vs 227.9 min; p<0.01), longer hospital stay (HS) (5.6, IQ 3-7, vs 2.9, IQ 1-4 days, p<0.01) and higher mean blood loss (BL) (714.9 vs 221.7 mL; p<0.01); however, post-operative transfusions showed no differences (4.61% of men receiving ≥1 unit; p=0.09). No significant differences were present in men experiencing at least 1 complication (34.9%, p=0.66) or 1 major (Clavien ≥3) complication (10.1%, p=0.16). Acute renal failure (OsRP 2.96 vs 0%, p=0.04) and anastomotic strictures (OsRP 17.7% vs 7.7%, p=0.01) were the only significant differences amongst the two groups in terms of complications. Rectal injury was rare (2.96% of OsRP vs 0.5% of RsRP; p=0.055). At 6 months EF was similar in the two groups (p=0.076), but at 1 year was higher in RsRP (52.5% having no erections vs 69.8% in OsRP, p=0.03). Con was higher for RsRP both at 6 (22.3% vs 38.1% in OsRP having severe inCon using ≥3 pads/day, p=0.02) and 12 months (severe inCon 19.8% vs 34.2% in OsRP, p=0.04).

Discussion
If performed in tertiary referral centres, sRP involves acceptable functional outcomes and complication rates. Although complication rates remain comparable amongst the two groups, RsRP yields shorter HS, lower BL and may improve EF and Con recovery when compared to OsRP.
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PSYCHOLOGICAL AND FUNCTIONAL IMPACT OF DIFFERENT PRIMARY TREATMENTS FOR PROSTATE CANCER: A COMPARATIVE PROSPECTIVE ANALYSIS

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Aim of the study
Cancer diagnosis represents a potential challenge for patients’ psychological adjustment. Psychological distress (PD) is a well-recognized phenomenon connected with cancer diagnosis and the most common forms of PD are anxiety and depression. Despite an increased interest on disease-related Quality of Life (QoL) among men with prostate cancer (PC), less attention has been given to the psychological impact of primary treatments PC patients. The aim of the study was to comparatively evaluate the psychological and functional impact of different primary treatments in patients with prostate cancer (PC) and no evidence of disease progression after therapy.

Materials and methods
We conducted a single-centre prospective non randomized study from January 2014 to June 2017 using functional and psychological questionnaires in PC cases submitted to radical prostatectomy (RP), external radiotherapy (EBRT) or active surveillance (AS). The final population of 220 cases was evaluated at baseline and during the follow-up at 1-, 3-, 6-, 12-month interval after therapy. Patients self-completed questionnaires on urinary symptoms and incontinence (ICS male SF and IPSS), erectile function (IIEF-5), bowel function (UCLA-Prostate Cancer Index), psychological distress (PD), anxiety and depression (HADS, PHQ-9, PDI).

Results
In our population, baseline socio-demographic (family status, education, employment) characteristics more than clinical parameters (only PSA) of the tumor were significantly (p<0.05) associated with the variations in questionnaires scores (both functional and psychological) during the post-treatment follow-up. Several significant differences among the three groups of treatment were found regarding the total score or the sub-scores of the functional questionnaires. Regarding PD, cases submitted to RP showed stable scores during all the 12 months of follow-up whereas cases submitted to RT showed a rapid significant worsening of scores at 1-month interval and persistent also at 6- and 12-month interval. Cases submitted to AS showed a slight and slow worsening of scores only at 12-month interval, when values reached those reported in RT group. Significant associations among the scores of different functional and psychological questionnaires were found in group A (RP) and B (RT) but mainly not in Group C (AS). In particular PD and depression resulted to be more associated with urinary symptoms than sexual function worsening whereas anxiety resulted to be associated either with urinary symptoms or sexual function worsening.

Discussion
The results of our comparative and prospective analysis could be used to better inform treatment decision-making. Patients and their teams might wish to know how functional and psychological aspects may differently be influenced by treatment choice. Information on the short and long term effect of treatments on functional and psychological aspects should be provided to patients during treatment decision-making.
EARLY VERSUS STANDARD CATHETER REMOVAL AFTER COMPLETE ANATOMICAL RECONSTRUCTION DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY: RESULTS FROM A PROSPECTIVE SINGLE-INSTITUTIONAL RANDOMIZED TRIAL (RIPRECA)


Aim of the study
To evaluate urinary retention rate, discomfort and postoperative functional outcomes of early (3rd postoperative day, POD) vs standard catheter removal (5th POD) in patients treated with robot assisted prostatectomy (RARP) for clinically localized prostate cancer (PCa).

Materials and methods
A prospective randomized trial was conducted from Sept 2016 to May 2017 at our Institution. Patients candidated for RARP were randomized into two groups (Group A: 3rd POD catheter removal vs. Group B: 5th POD catheter removal). Exclusion criteria consisted of previous urethral or prostate surgery. All patients received a complete anatomical reconstruction where both posterior and anterior layers were recreated. Patients with intraoperative negative anastomosis leakage test (with 250 cc of saline mixed with methylene blu) were included. Urinary retention rate after catheter removal was recorded. Functional outcomes were evaluated with administration of the following questionnaires at dismissal and at 1, 3 and 6 months: ICIQ-M-LUTS, IPSS, IIEF5. Postoperative discomfort was quantified with abdominal, urethral and perineal VAS score at dismissal and 1 month after surgery. Finally, early urinary continence rate was assessed with PAD test at dismissal and at 1 month.

Results
Overall 77 (50.3%) and 76 (49.7%) underwent early and standard catheter removal respectively. Urinary retention was experienced in 3 (3.9%) and 1 (1.3%) cases in group A and B respectively (p=0.3). Continence rate at dismissal was 53.3% (n 41) and 46% (n 35) in group A and B (p=0.4) while at 1 month was 72% (n 55) and 76% (n 58) in group A and B (p=0.5) respectively. ICIQ mLUTS voiding and incontinence score at dismissal (p=0.75 and 0.12) and at 1 months (p=0.8 and 0.11) showed no differences between the two groups. Median ICIQ mLUTS voiding symptoms and IPSS score were comparable at 3 (p=0.38 and 0.56) and 6 months (p=0.18 and 0.17). Conversely, urethral discomfort at dismissal was significantly higher (p=0.02) in patients who underwent standard catheter removal. At 1 month uroflowmetry, median maximum flow rate was comparable between group A and B (17 vs 18 ml/s; p=0.29) while median voided volume was higher for 5th POD catheter removal group (179 vs 234 ml; p=0.05).

Discussion
Early catheter removal represents a feasible and safe option in patients treated with RARP and complete anatomical reconstruction. Our findings may promote the adoption of this strategy in order to decrease hospital stay and patient discomfort.
Aim of the study
Early continence recovery after different approaches of radical prostatectomy (RP) still represents a matter of debate. With the purpose of improving the recovery of continence, we described and previously published total anatomical reconstruction (TAR) technique during robot-assisted RP (RARP). In the present study we reported the outcomes of the whole cohort of patients underwent RARP with TAR in our Institution with a mid-term follow-up.

Materials and methods
Since June 2013 to March 2017, 953 patients with prostate cancer (cT1-3, cN0, cM0) underwent RARP with TAR (posterior reconstruction in triple layer, urethro-vesical anastomosis and anterior reconstruction in double layer) performed by a single surgeon. Lymph-nodes dissection was performed if the risk of lymph nodal metastasis was over 5%, according to the Briganti updated nomogram. Preoperative, intraoperative, postoperative and pathological variables were analysed. Continence was assessed at 1, 4, 12, 24 and 52 weeks after catheter removal. Patients were defined as continent when no pads or one safety pad were used. Data were analysed using R 3.2.0 (R Foundation for Statistical Computing, Vienna-A, http://www.R-project.org).

Results
Median catheterization time was 5 (IQR 5-6) Transfusion, urinary retention and urine leakage rates were 0.8%, 3.2% and 1.2%, respectively. No strictures of the urethro-vesical anastomosis were recorded. Overall positive surgical margins rate was 20.6% (5.9% in pT2). 746 (78.33%), 766 (80.41%), 880 (92.31%), 908 (95.36%) and 925 (97.10%) patients were continent at 1, 4, 12, 24 and 52 weeks from catheter removal, respectively.

Discussion
The TAR technique confirmed promising results in terms of recovery of urinary continence, which remained stable during the first year of follow-up. Of note, no anastomosis strictures and a low rate of urine leakages were recorded. Comparative studies are needed to support the level of evidence of the reported results.
NERVE SPARING ROBOT ASSISTED RADICAL PROSTATECTOMY: UPDATED RESULTS OF A PHASE II STUDY OF APPLICATION OF CHITOSAN MEMBRANES ON THE NEUROVASCULAR BUNDLES


Aim of the study
Robotic technology in surgery for prostate cancer improved the functional outcomes thanks to the more precise nerve-sparing technique. Following radical prostatectomy, erectile dysfunction and incontinence are two sequelae. Nowadays, support nerves regeneration increases studies in bio-medical field and the introduction of biomaterials in clinical practice. Among these, chitosan has good results in neurosurgery for trauma. The aim of this study was to evaluate functional results with the application of chitosan membranes on the neurovascular bundles (NVBs) after nerve-sparing Robot-Assisted Radical Prostatectomy (RARP) and their eventual improvement.

Materials and methods
From July 2015 to March 2017, were enrolled 132 patients with prostate cancer and pre-operative IIEF > 17. Patients underwent nerve-sparing RARP with intraoperative application of chitosan membranes (CM). Preoperative, intraoperative, postoperative, pathological and functional variables and oncological results were analyzed. Continence was defined if 0 pad or 1 safety pad was used; potency was defined with reporting valid erections for intercourse or masturbation (score >2 to Question 2 of the EPIC-Sexual Assessment Questionnaire). The functional results were evaluated at 1, 2, 3, 6 and 12 months after catheter removal. The control group (nCM) was a cohort of consecutive patients to whom CM were not applied.

Results
The protocol did not worsen oncological results nor increase operative time, blood losses, peri- and post-operative complications. Nerve sparing technique was bilateral interfascial nerve-sparing in 81, interfascial / intrafascial in 35 and bilateral intrafascial in 16 patients. In the CM group 44 (33,3%), 58 (43,9%), 75 (56,8%), 84 (63,6%) and 92 (69,6) patients were potent at 1, 2, 3, 6 and 12 months after surgery, respectively. In the nCM group potent patients were found to be 40 (30,3%), 54 (40,9%), 63 (47,7%), 74 (56%) and 77 (58,3%), respectively (p-value >0.05). Focusing on patients who underwent intrafascial bilateral nerve-sparing, 8 (50%), 10 (62,5%), 12 (75%), 13 (81,2%) and 13 patients (81%) reported recovery of potency in the CM group at 1, 2, 3, 6 and 12 months after surgery, respectively; in the nCM group 6 (37,5%), 7 (43,7%), 9 (56,2%), 9 (56,2%) and 10 patients (62,5%) recovered potency (p-value >0.05). Recovery of urinary continence was similar in both the groups.

Discussion
The application of chitosan membranes on the NVBs during RARP is safe and feasible. In the patient who receive the CM, preliminary functional results show an earlier recovery of sexual potency; this vantage is maintained up to one year of follow-up. No substantial differences in the recovery of continence were recorded. Randomized multicentric studies are mandatory to confirm these preliminary findings after CE-mark achievement.
THE BOLLENS’ STITCH: A MODIFIED TECHNIQUE FOR ROBOT-ASSISTED RADICAL PROSTATECTOMY


Aim of the study
to report our preliminary results with a modified Bollens’ stitch during robot-assisted radical prostatectomy (RARP).

Materials and methods
form January 2018 onwards, a consecutive series of patients undergoing RARP at our center for localized prostate cancer (PCa) were prospectively enrolled. Those with a medical history of urethral stenosis were excluded. At the beginning of the reconstructive surgical step, a modified Bollens’ stitch was always performed (using 3/0 absorbable mono-filament sutures subtended between the arcus tendineous of the levator ani muscle and the rectourethralis muscle, bilaterally). Anthropometrics, clinical and histopathologic tumor characteristics were recorded. Operative times, post-operative complications, days of catheterization and length of hospital stay were also taken into account. Lower urinary tract symptoms (LUTS) and urinary incontinence (UI) were assessed at baseline, at catheter removal and 1 month after surgery by means of validated questionnaires (International Prostate Symptoms Sore – IPSS; International Consultation on Incontinence Questionnaire, short form – ICIQ-sf). The number of pads used per day after RARP was also considered as a parameter to objectivate the severity of post-operative UI.

Results
overall, 90 patients were enrolled. Median age was 65 (IQR 59/69) yrs and body mass index was 25 (IQR 23/27) kg/m². Before RARP, patients complained for moderate LUTS but nobody reported UI. One out of four patients was continent at catheter removal, on post-operative day two. Continence rates quickly improved and 72 % of the patients were fully continent 3 months after surgery. Acute urinary retention occurred to 10 patients (11%) and required catheter re-placement, that was always performed easily without the need for hospitalization or cystoscopy. No Clavien-Dindo ≥ 3 complications were reported.

Discussion
the Bollens’ stitch, originally conceived for standard laparoscopy, is feasible and safe also during RARP. Advancing its membranous segment, this stitch restores the physiologic position of the urethra and simultaneously modifies the shape of the rhabdosphincter from horse-shoe to circular. This ensures a prompt recovery of the urinary continence after radical prostatectomy, which is crucial when an early removal of the urinary catheter is attempted.
IS THE ICIQ-SF QUESTIONNAIRE RELIABLE IN PREDICTING QOL OUTCOMES? RESULTS OF A PROSPECTIVE SINGLE-CENTER STUDY

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Aim of the study
Aim of the study was to assess the correlation between ICIQ-SF and EORTC QLQ-C30-QoL in a cohort of patients submitted to robot-assisted radical prostatectomy (RARP) at a single center. Likewise, we sought to test the association between ICIQ-SF and satisfactory QoL at different time points.

Materials and methods
Complete data were available for 392 patients operated between September 2009 and August 2016. Data were prospectively collected in a compulsory regional database (Flemish Cancer Registry). Pre- and postoperative ICIQ-SF and EORTC QLQ-C30-QoL questionnaires were available for each patient. Linear regression analyses were used to assess correlation between ICIQ-SF and QoL scores. QoL was defined as satisfactory (≥91), intermediate (81-90) and poor (≤80). Best cut-off methodology and univariable analysis were used to identify two different ICIQ-SF categories significantly associated to satisfactory QoL outcomes. Multivariable analysis (MVA) was used to assess the correlation between ICIQ-SF and QoL, at different time points, after adjusting for other clinical and pathological variables (i.e., age at surgery, pathological stage (pT), N stage (N), Gleason Score (GS), Erectile function (EF; defined by IIEF-EF domain score), and biochemical recurrence (BCR)).

Results
Mean follow-up was 13.5 months (median 13, range 12-43). Before surgery, 81% of patients reported an ICIQ-SF score of 0. At baseline, 176 patients had QoL scores of 100 (45%). At 12-mos assessment, 52.6% (n=206) of patients had QoL scores ≥80 and 52% (n=203) had an ICIQ-SF ≤2. At linear regression analysis, 12-mos ICIQ-SF scores were significantly associated to 12-mos QoL (p<0.001, β -1.75). At 1-mo assessment, the best ICIQ-SF cut-off associated to 12-mos satisfactory QoL was 2, while the best cut-off value was 5 at 3- and 12-mos (all p ≤0.003). At 1 month EF and ICIQ-SF ≤2 were associated with satisfactory QoL at 12-mos evaluation (all p=0.001). At 3 months, only ICIQ-SF ≤5 was associated to satisfactory QoL scores (p=0.001, OR 5.0, 95%CI: 1.93; 9.71). At 12 months, both ICIQ-SF and EF scores emerged to be predictors of satisfactory QoL (p=0.001, OR 8.2, 95%CI: 2.7; 14.2 and p=0.005, OR 1.07, 95%CI: 1.02; 95%CI: 1.133, respectively).

Discussion
To the best of our knowledge, this is the first prospective, single center study comparing ICIQ-SF findings and the QoL outcomes addressed using the EORTC QLQ-C30, in a cohort of patients submitted to RARP. The ICIQ-SF showed to be highly correlated with satisfactory QoL at 12-mos assessment as from 1 month after surgery. Accordingly, ICIQ-SF assessment can help in patients counseling after surgery.
TOTAL ANATOMICAL RECONSTRUCTION DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY: FUNCTIONAL AND ONCOLOGICAL OUTCOMES AFTER 3 YEARS FOLLOW-UP


Aim of the study
Early-, mid-, and long-term oncologic and functional results are currently available for robot-assisted laparoscopic radical prostatectomy (RARP). Several technical improvements have been proposed during the evolution of this kind of surgery. Previously we described and published total anatomical reconstruction (TAR) technique during RARP. This study population has been prospectively followed over time and recently all patients completed the first three years follow-up after the intervention. The aim of present study is to report the 3-years functional and oncological outcomes of this cohort of patients.

Materials and methods
The enrolment phase began in June 2013 and ended in November 2014. The follow-up period was formally closed in November 2017. RARP were performed with TAR technique. When indicated, unilateral or bilateral nerve sparing (NS) procedure (classified according to Pasadena) and extended pelvic lymph-nodes dissection (LND) were performed. Patients were defined as continent if they did not use any pads or used one safety pad per day. For the purpose of this study, urinary continence was reported at 1, 3, 6 months, and then every year until the 36th month after surgery. In patients underwent NS RARP, potency was defined as the ability to achieve an erection sufficient for penetration with or without the use of a PDE5-i. Potency was reported at 1, 3, 6, and 12 months and then every year until the 36th month after surgery. Serum PSA levels were measured at 1, 3, 6 and 12 months, then every year. Patients who underwent adjuvant therapies during the follow-up period, such as radiotherapy (RT) or hormonal treatment (HT), were recorded. Biochemical Recurrence (BCR) was denoted as 1) any postoperative cancer treatment, or 2) PSA above 0.2 ng/ml with a single repeated measurement for confirmation.

Results
252 patients were included in this study. Surgical margins rate was 20.6% in the overall population, 5.9% in pT2, and 14.68% in pT3 prostate cancers. 24 patients underwent adjuvant RT and/or HT. 10 patients experienced a BCR during the follow-up and were treated with RT and/or HT. The continence rate was 89.3% (225 pts), 94.4% (238 pts), 98.0% (247 pts) 96.03% (242 pts), 93.65% (236 pts) and 94.04% (237 pts) at 1, 3, 6 months, and 1, 2, 3 years after surgery, respectively. 31 patients underwent full NS procedures; the erectile function recovery rate was 30.15% (76 pts), 57.53% (145 pts), 65.07% (164 pts), 80.15% (202 pts), 82.93% (209 pts) and 76.98% (194 pts) at 1, 3, 6 months, and 1, 2, 3 years after surgery, respectively.

Discussion
In our experience, the TAR technique allowed to obtain very good functional outcomes without compromising oncological results.
TIPS AND TRICKS TO RETROGRADELY APPROACH THE NEUROVASCULAR BUNDLES

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Aim of the study
The literature has shown that the retrograde approach, which involves the dissection of the bundle from the apex to the prostate base, has advantages in terms of early recovery of sexual power compared to the anterograde approach, which on the opposite is based on a dissection from the base to the apex. However, it is not always easy to perform a retrograde approach, especially in advanced cases. Our aim is to provide in this video some tips and tricks to retrogradely approach the neurovascular bundles.

Materials and methods
In this video we are presenting some extracts of cases of RALP which can be helpful to show some tips and tricks that are useful to retrogradely approach the neurovascular bundles.

Results
It can be useful to maximize the development of the posterior plane before approaching retrogradely the neurovascular bundles. The medial isolation of the bundle can facilitate retrograde approach. Performing a retrograde approach, it can be useful also, not to insist on realizing the apical part of the bundle. In fact at the apex level, if the dissection of the peduncle attached to the base of the prostate gland has not been made yet, tractions and lesions of the bundle may be created, and they can affect postoperative functional recovery. Only after dissection of the bundle in a retrograde fashion at the base of the prostate through a roll backward of the prostate it is possible to maximize the exposure of the apical part of NVB and accomplish the apex dissection, limiting as much as possible neuropraxia damages.

Discussion
We believe that using these Tips and Tricks it could be possible to perform retrograde approaches also in cases of advanced disease.
PATIENTS ADHERING TO STANDARDIZED PROTOCOLS FOR FUNCTIONAL OUTCOME ASSESSMENT AFTER RADICAL PROSTATECTOMY SHOW HIGHER RATES OF RETURN TO PRE-OPERATIVE STATUS: IMPLICATIONS FOR POSSIBLE SELECTION BIASES


Aim of the study
Functional outcomes after radical prostatectomy (RP) should be evaluated by validated questionnaires. However, it is possible that men accepting to fill questionnaires are those with higher satisfaction after surgery. We hypothesized that men following standardized objective assessments are those who are more likely to gain full functional recovery, thus potentially introducing a selection bias and artificially inflating the results obtained.

Materials and methods
Data on 1,676 consecutive patients submitted to RP at a single tertiary care center were included. All were assessed at 1-3-6 and 12 months after RP. Of these, 571 (34.1%) responded to questionnaires including ICIQ-SF and IIEF. Urinary continence (UC) was defined as an ICIQ score ≤5 and Erectile Function (EF) as an IIEF-EF ≥22. The remaining 1,105 (65.9%) were interviewed via telephone at the same time points. UC in this case was defined as ≤1 pad/day, EF as erection firm enough for completing a satisfactory intercourse. Patients filling both ICIQ-SF and IIEF-EF (n=571) and patients having only telephonic interviews (n=1105) were matched for age, BMI, CCI, pre-op IIEF-EF, PSA, pT stage, Gleason score and adjuvant RT. Univariable and multivariable (MVA) analyses were used to assess the relationship between clinical, pathological and functional variables and responsiveness to questionnaires after matching. Covariates consisted of early biochemical recurrence (PSA≥0.2 ng/ml within 6 months after RP), post-operative complications, nerve sparing (NS) surgery, early UF and EF (within 3 months after RP) recovery.

Results
Overall, 571 patients (34.1%) responding to questionnaires were matched with 571 non-responders. After matching, the two groups were homogeneous in terms of all aforementioned variables (all p ≥ 0.1). Among pts responding to questionnaires, the 3, 6 and 12-mo UC recovery rates were 44.6%, 63.5% and 77.8% vs 42.1, 52.7 and 59.9% for those not responding to questionnaires (p<0.001). Among those responding to questionnaire the 3, 6 and 12 months EF recovery rates were 7.5, 18.7 and 47.8% vs 2.7, 10.6 and 39.2% for those not responding to questionnaire (p=0.003). At MVA, early EF and UF recovery, post-op complications and NS surgery were associated with responsiveness rates (all p ≤0.01). Specifically, patients were 10.1 and 1.27 more likely to fill-in questionnaires if they experienced EF and UC recovery within 3 month after RP (all p<0.0001).

Discussion
Men adhering to standardized protocols for functional outcome assessment are those with more favorable outcomes. Patients with an early EF and UF recovery are indeed 15 and 2 times more likely to respond to questionnaire compared to patients with poor outcomes. These results highlight possible selection biases, which in turn can artificially inflate functional outcomes after RP.
RENAL AND ADRENAL TUMORS: NEW EVIDENCE

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TRANSPERITONEAL VERSUS RETROPERITONEAL LAPAROSCOPIC ADRENALECTOMY: PERIOPERATIVE OUTCOMES AFTER MORE THAN TWENTY YEARS SINGLE SURGEON'S EXPERIENCE

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Aim of the study
Laparoscopic adrenalectomy (LA) is the gold standard treatment for adrenal masses < 6 cm. To gain access to the adrenal lodge laparoscopically, a transperitoneal (TP) or retroperitoneal (RP) approach can be performed. Many studies in Literature evaluated the postoperative outcomes of laparoscopic adrenalectomy on the basis of the surgical approach. The aim of this study was to compare the perioperative outcomes of the TP and RP laparoscopic adrenalectomies treated in our Center focusing on intra and postoperative complications.

Materials and methods
We retrospectively extracted data of all LAs treated in our Center from March 1995 to February 2018. All the procedures were performed by the same surgeon. The laparoscopic approach was chosen on the basis of the surgeon’s preference. The patients were divided in two groups according to the laparoscopic approach (TP vs RP). Demographics, adrenal mass characteristics, intraoperative, postoperative and pathological data were extracted. For the purpose of this study, an evaluation of the overall intraoperative and postoperative complications (stratified as minor and major complications according to Clavien-Dindo Classification) was performed. The two groups were compared using Student’s t-test for the continuous variables and chi-square test for categorical variables (p<0.05 considered significant).

Results
392 patients were included in the study: 158 were treated with TP approach, whilst 234 were treated with RP approach. Demographics, adrenal mass characteristics, intraoperative, postoperative and pathological data, stratified per approach group, are reported in Table 1. No significant differences were found in terms of demographics and preoperative characteristics, except for the BMI, which was significantly higher in RP group (mean BMI: 25.1 + 2.69 Kg/m² vs 23.86 + 1.88 Kg/m² for RP and TP group respectively, p=0.006). The only intraoperative variable that resulted significantly higher for the RP group was the mean blood loss (63.9 + 91.6 ml vs 52.8 + 21.7 ml for RP and TP group respectively, p=0.03). No differences were found in terms of intra- and postoperative complications, even when stratified in major and minor. Postoperative and pathological variables were also comparable between the two groups.

Discussion
As shown in the present study, when LA is performed by expert surgeons, the surgical approach doesn’t seem to have influence on the postoperative surgical outcomes and complications. The difference in terms of blood loss, despite significant between the two groups, has not clinical relevance. The significant difference in terms of BMI reflects the choice of the surgeon in selecting for retroperitoneoscopy heavy patients, in which the adrenal lodge access could be more challenge if a transperitoneal approach is performed.
ACTIVE SURVEILLANCE AND PERCUTANEOUS CRYOABLATION OF SMALL RENAL MASSES: COMPARISON OF MID-TERM ONCOLOGICAL OUTCOMES

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Aim of the study
Partial nephrectomy (PN) is considered the standard approach for small renal masses (SRMs), AS and ablative therapies represent emerging strategies for older and comorbid patients due to the indolent behaviour of most SRMs and to the high competing risk mortality. Aim of this study was to compare the mid-term oncological outcomes of active surveillance (AS) and percutaneous cryoablation (PCA) in patients with small renal masses (SRMs).

Materials and methods
Data regarding PCA and AS in patients with a single T1a renal tumors were collected prospectively at two large academic centers. 60 patients underwent PCA since 2011 and 77 patients were enrolled in a AS protocol since 2008. Only patients with a follow-up of at least 6 months were included. The most frequent indications for AS were severe comorbidities (48,1%), <15 mm renal masses (23,4%) and advanced age (15,6%). All patients in AS were followed with a standardized protocol including serial imaging (US, CT or MRI) every 6 months during the first 3 years and every year thereafter. Tumor progression was defined as the reach of a 4 cm threshold in maximum diameter or a tumor volume doubling time <12 months. All PCA procedures were performed with a percutaneous approach. A double freeze-thaw cycle was performed using a mean of 2 up to 4 sealed argon 17G cryoprobes per patient. Tumor progression after PCA was defined as a new nodular enhancement in the ablation zone or the enlargement of the ablated tumor 3 months after the treatment.

Results
Patient characteristics are displayed in Table 1. 14 masses showed dimensional progression during AS and 9 were surgically removed after a median follow-up of 30 months. 3 patients in the PCA group experienced progression and underwent a repeat ablation with a median follow-up of 24 months. Progression free survival (PFS) at 2 years was 94,8% and 95,0% for AS and PCA group, respectively. None of the patients progressed to metastatic disease. Overall survival (OS) at 2 years was 93,5% and 95,0% in the AS and PCA group, respectively. In the PCA group the complication rate was 5% (Clavien grade 1-2).

Discussion
Good quality studies comparing the oncological outcomes of AS and PCA are lacking. Comparing AS to an active treatment isn't an easy task due to the different definitions of the oncological endpoints such as PFS. With these limitations this study shows that both AS and PCA represent viable and safe treatment options for elderly and comorbid patients with SRMs.
RISK FACTORS FOR COMPLICATIONS AFTER LAPAROSCOPIC ADRENALECTOMY: OUR EXPERIENCE AFTER 392 PROCEDURES


Aim of the study
Laparoscopic adrenalectomy (LA) has become the gold standard surgical treatment for unilateral adrenal masses without radiological signs of malignancy and a diameter ≤ 6 cm. Lesions larger than 6 cm, suspicious of malignancy or high BMI were historically considered relative contraindications for laparoscopy as these conditions may increase the complication rate. Aim of this study is to evaluate predictors for intraoperative and postoperative complications, by reviewing our Institutional database.

Materials and methods
We retrospectively reviewed our prospectively maintained Institutional database and we extracted data of patients with a single adrenal mass treated with LA in our Centre from 03/1995 to 12/2017. All the surgeries were performed by the same surgeon. Demographics (age, gender, BMI, ASA score, Prior abdominal surgery), adrenal mass characteristics (c-size and side), perioperative (laparoscopic approach, operative time, blood losses, length of stay) and pathological data (malignancy) were collected. Intraoperative and postoperative complications (stratified according to Clavien-Dindo classification) were recorded and analyzed. Multivariate linear regression analysis was used to identify relationships between complications (intra and postoperative) and the other demographic, perioperative and pathological variables. All variables were previously tested using a univariate model (statistical significance set at p<0.05).

Results
392 patients were included in the present study: 186 (47.4%) were males, median age, mean BMI and median ASA score were 55 (44:64) years, 24.8 (+1.7) and 2 (2:2), respectively. 100 patients (25.5%) had previous abdominal surgery. Concerning adrenal lesions, mean size was 4.1 (+2.6) cm, with 185 (47.2%) right sided. Considering perioperative variables 234 (59.7%) LAs were performed with retroperitoneoscopic approach, the mean operative time and blood loss were 87.13 (+29.6) min, and 60.44 (+66.67) ml, respectively. Median length of stay was 5 (4:5) days. 78 (19.8%) of the adrenal masses were malignant. Intraoperative and overall postoperative complications rate were 3% (12/392) and 7.1% (28/393). Clavien > 2 grade was recorded in only 10 pts (2.5%). At multivariate analysis the prior abdominal surgery resulted to be a predictor of intraoperative complications (p=0.005). When considering postoperative complications, the multivariate analysis showed a significant correlation with the age at surgery (p=0.02) and malignancy at pathology (p=0.006).

Discussion
With this study we demonstrated that LA, when performed in experienced hands, offers an optimal safety profile with a low rate of intra and postoperative complications. A previous abdominal surgery can increase the risk of intraoperative complications. The postoperative complications seem to be more frequent in case of elderly patients or patients with adrenal malignancy, even if the Clavien Grade of the vast majority of these complications is low.
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PREDICTORS OF FUNCTIONAL IMPAIRMENT AFTER MINIMALLY INVASIVE PARTIAL NEPHRECTOMY. A MULTIVARIATE ANALYSIS


Aim of the study
The main feature of nephron-sparing surgery is the preservation of renal function (RF). Most of the studies focused on functional evaluation after partial nephrectomy (PN) consider the eGFR as a surrogate measure of postoperative renal function. Nevertheless, although easy and practical, eGFR lacks accuracy, because it is expression of the global renal function, not taking in account the compensation given by the contralateral kidney. In this setting, renal scan (RS) has gained popularity in the evaluation of postoperative functional impairment, because it gives a more precise estimation of the effective renal function of the operated kidney. However, few studies in Literature are still available. The aim of this study is to evaluate which factors can influence the RF, when evaluated by RS.

Materials and methods
We retrospectively analyzed our prospectively-maintained database and extracted data of all PNs from 2011 to 2017, considering only the patients with a renal functional assessment performed before and 3 months after surgery by serum Creatinine (SCr), eGFR and RS parameters (Split renal function – SRF and Effective Renal Plasma Flow – ERPF). Demographics (age, gender, BMI and Charlson’s index), tumor characteristics (c-size and PADUA score), functional baseline data (presence of solitary kidney, preoperative SCr, e-GFR, SRF and ERPF), intraoperative data (operative time, management of renal artery, warm ischemia time, blood losses) and postoperative complications (stratified according to Clavien-Dindo classification) were collected and analyzed. All variables were tested using a univariate model, in order to identify the ones related to the postoperative functional impairment, expressed as ERPF drop. A multivariate linear regression analysis was then performed to identify which of the variables was confirmed to influence the postoperative renal function (statistical significance set at p<0.05).

Results
206 patients were included. Demographics, functional and perioperative results are reported in Table 1. At univariate analysis cT, PADUA score, preoperative eGFR, management of renal artery, complications stratified per Clavien grade demonstrated a significant correlation with the ERPF drop. At multivariate regression analysis cT (p=0.03), preoperative eGFR (p=0.02) and complications stratified per Clavien grade (p<0.0001), were confirmed to be significant predictors of ERPF drop. PADUA score showed a trend of correlation with the functional impairment, without reaching statistical significance (p=0.054).

Discussion
In our experience the presence of large and complex renal tumors, a poor preoperative renal function and the occurrence of major postoperative complications were found to be directly related with a functional impairment after PN. In experienced hands, in which the warm ischemia time is minimized, it doesn’t seem to impact the postoperative RF.
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LEFT LAPAROSCOPIC ADRENALECTOMY FOR ADRENAL CARCINOMA

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\textbf{Aim of the study}
In 1992 Gagner and his colleagues described the first laparoscopic adrenalectomy. Since then, this approach has gradually supplanted open access as the gold standard of most adrenal lesions. Laparoscopic adrenalectomy for suspicious malignant lesion is controversial. The aim of this video is to describe the feasibility of laparoscopic adrenalectomy in patients with large adrenal lesions and previous abdominal surgery.

\textbf{Materials and methods}
A 59-years-old patient came to our attention after detection of a nodular solid mass of about 96x75 mm at left adrenal gland. Her medical history included appendectomy, exeresis of ovarian cysts and hysterectomy for uterine fibroids. Abdominal CT scan confirmed a solid mass of 68 Hounsfield Unit with contrast enhancement of 93x76mm at the left adrenal gland compressing the left upper renal pole. Hormone screening resulted negative for suspected functioning adrenal lesion. The patient underwent transperitoneal left laparoscopic adrenalectomy. First she was placed in right lateral decubitus. The Hasson’s trocar was then placed in the left periumbilical site by incision of 1.5 cm and then 2 trocars of 5 mm and 1 of 10 mm were placed under vision. After the incision of the peritoneum at the Toldt line and medialization of the descending colon, including the tail of the pancreas, the left renal vein and left adrenal vein were isolated. The latter was sectioned after Hem-o-lok placement. Numerous collateral venous circles were ligated with clips and the adrenal mass was separated from the upper renal pole. The adrenal mass was dissected from the renal artery, the quadratus lumborum and the psoas. Afterwards the mass was laterally isolated from the abdominal wall and the adrenalectomy was completed. Finally the adrenal mass was extracted by endobag and the tubular drainage was inserted.

\textbf{Results}
There were no post-operative complications. The duration of the procedure was 225 minutes. The blood losses were 250 cc. Drainage was removed on the first post-operative day. The patient was discharged on the third day. Histological examination presented cortico-adrenal carcinoma of 9 cm, Weiss 4 and negative resection margins. The CT scan performed 1 month after the procedure showed no evidence of residual disease. The patient is currently in treatment with Mitotane, six months after surgery.

\textbf{Discussion}
A proper preoperative work up and a laparoscopic experience are fundamental in order to treat safely these cases. In selected cases, transperitoneal laparoscopic adrenalectomy for cortico-adrenal carcinoma is a feasible and effective procedure with reduced postoperative course and reduced blood loss.
SURGICALLY-INDUCED HYPERTENSION AND CARDIOVASCULAR MORBIDITY FOLLOWING TREATMENT FOR LOCALIZED KIDNEY CANCER: THE IMPACT OF NEPHRONS LOSS


Aim of the study
Nephrons loss due to surgery for kidney cancer increases the risk of chronic kidney disease and has several sequelae that may compromise patient general health status. Previous investigations observed lower cardiovascular events after nephron-sparing surgery [NSS] relative to radical nephrectomy [RN]. The aim of the study is to investigate the effect of NSS on each specific cardiovascular category taking into account the temporal pattern of presentation.

Materials and methods
2,056 patients diagnosed with a single cT1-2 renal mass treated with NSS or RN at three tertiary care Institutions and collected into a prospective database were assessed. Study outcomes were: 1) surgically-induced hypertension [HT], defined either as de-novo diagnosis of HT requiring medication or worsening of previous HT requiring therapy modification 2) major cardiovascular events [MCE], defined as coronary heart disease, cerebrovascular event, thromboembolic event, dysrhythmias and peripheral arteriopathy. Smoothed Poisson cumulative curves were used to assess the rates of HT and MCE. Multivariable competing regression analysis [MVA] tested the effect of NSS vs. RN on the outcomes after adjustment for age, gender, renal function, comorbidities, previous cardiovascular status, diabetes, smoking history, tumour size and year of surgery. Mann-Whitney U test was used to compare time to HT vs. time to CVE.

Results
The proportion of patients treated with NSS and RN were 61 and 39%, respectively. After a median follow-up of 51 months (interquartile range 19-100), the 5-year HT and MCE rates resulted 2.5 and 10% after NSS and 3.1 and 7.4% after RN, respectively. At MVA, RN was associated with higher HT risk (Hazard ratio [HR] 2.06; 95% Confidence interval [CI] 1.12-3.79; p=0.02) but similar MCE risk (HR 0.82; CI 0.57-1.2, p=0.3) relative to NSS. Conversely, previous history of HT (HR 0.22; CI 0.11-0.44; p<0.0001) and previous history of MCE (HR 0.21; CI 0.08-0.56; p=0.002) were associated with a lower HT risk. Age (HR 1.05; CI 1.03-1.07; p<0.0001) and smoking history (HR 1.53; CI 1.05-2.22; p=0.03) were associated with higher MCE risk. Time from surgery to HT was shorter than time to MCT (median 18 vs. 37 months; p=0.01).

Discussion
Surgically-induced HT is an early event after surgery while MCE occur later. Relative to RN, NSS showed an independent protective effect on HT but not on MCE.
BELOW THE LIMIT OF 75 ML/MIN EVERY UNIT OF GLOMERULAR FILTRATION RATE COUNTS: ASSESSING THE ROLE OF RENAL FUNCTION ON CANCER-RELATED MORTALITY IN RCC


Aim of the study
The hypothesis that the amount of renal function could influence oncological outcomes is supported by anecdotal literature. Aim of the study is to determine whether renal function is related to cancer specific mortality (CSM) post surgery for renal cancer.

Materials and methods
Retrospective analysis of 3,457 patients who underwent radical (38.6%) or partial nephrectomy (61.4%) for cT1-2 renal cancer at 5 academic Italian Institutions between 1990 and 2015. Estimated glomerular filtration rate (eGFR) calculated by the Chronic Kidney Disease Epidemiology collaboration (CKD-EPI) equation. CSM was analyzed in uni- and multivariable competing risk framework and described as cumulative incidence function (CIF, i.e. the % of patients dying from kidney cancer factoring in death from other causes); eGFR was incorporated into the model as a time-dependent covariate and the relationship with CIF was investigated in detail. Predictors for multivariable models were selected by competing risk random forests method and backward elimination.

Results
Median follow-up time was 61 months. At univariate competing risk analysis, eGFR was associated to CSM (subhazard ratio 0.70, p<0.001). eGFR vs CIF were graphically related according to a "piecewise" linear relationship, with a breakpoint at 75 ml/min. For eGFR <75 ml/min, a 2% additional risk of mortality for every ml/min decrease in eGFR (SHR=0.981, p=0.005) was found at multivariable analysis, whereas no association between eGFR and CSM was found for eGFR >75 ml/min. Retrospective design with inherent biases in data collection represents a limitation.

Discussion
When eGFR <75 ml/min, renal function and CSM are linearly and inversely related.
A NEW PROPOSAL TO IMPROVE THE SURVEILLANCE OF RENAL CELL CARCINOMA PATIENTS AFTER SURGERY

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Aim of the study
An individualized, risk-based approach to renal cell carcinoma (RCC) surveillance that balance the risk of recurrence versus the risk of non-RCC death was recently proposed and supported by the EAU guidelines. The aim of the present study was to develop an individualized competing-risk model that balance the risk of cancer specific mortality (CSM) versus the risk of non-RCC death, after considering the survivorship after surgery.

Materials and methods
We identified 1,879 M0 RCC patients treated with radical or partial nephrectomy between 1987 and 2014 at a single tertiary care referral centre. By using multivariable competing-risks regression models we identified the predictors of CSM at the time of surgery and with the time elapsed from surgery, namely in patients who survived 1- (n=1,725) and 5-year after surgery (n=981). Predictors consisted of year of surgery, age at surgery, Charlson comorbidity index, gender, pathological tumour stage, pathological nodal stage and Fuhrman grade. A competing-regression and survival-based risk calculator was created to simplify individual risk estimation of 10-year CSM-free survival rate.

Results
The median follow-up was 70 months. Overall, 167 (8.9%) patients died of RCC and 236 (12.6%) patients died of non-RCC death. In multivariable competing risk regression analyses, year of surgery, pathological tumor stage, pathological nodal stage and Fuhrman grade represented independent predictors of CSM (all p<0.03). In multivariable competing risk regression analyses in patients who survived 1-year after surgery, pathological tumor stage, pathological nodal stage and Fuhrman grade remained independent predictors of CSM (all p<0.004). When we focused our analyses exclusively in those patients who survived 5-year after surgery, pathological T3-T4 stage and age at surgery reached the independent predictor status (all p<0.02). A risk calculator was constructed (Figure 1) to allow the estimate of the individual risk of 10-year CSM-free survival rate according to demographic, cancer characteristics, time elapsed from surgery and risk of non-RCC death.

Discussion
The patient’s risk of CSM changes with time and competing comorbid conditions may influence this risk. We developed an individual risk calculator that helps the clinicians to improve the patient counselling and follow up strategies according to the time elapsed from surgery and the competing cause mortality.
IT IS TIME TO DIFFERENTIATE THE FOLLOW-UP SCHEDULE OF LOW-RISK RENAL CELL CARCINOMA ACCORDING TO THE HISTOLOGICAL SUBTYPE


Aim of the study
European Association of Urology, National Comprehensive Cancer Network and American Urological Association provide follow-up guidelines for surgically treated Renal Cell Carcinoma (RCC). However, these guidelines are not supported by good quality evidence. The potential exposure of the patients (pts) to the risks connected to unnecessary ionizing radiations is an important factor to consider. Aim of this study was to evaluate the oncological outcomes in a large cohort of pts to better tailor follow-up schedules of pts that underwent surgery for RCC.

Materials and methods
We enrolled 1932 pts surgically treated for sporadic pT1 pN0, M0 RCC from 7 Italian Academical Centers with minimum follow-up of 6 months. The exclusion criteria were: high nuclear grade, presence of intratumoural necrosis, lymphovascular invasion, collecting system invasion, rare histological RCC subtype and positive surgical margin. Recurrences were classified in accordance to their location: abdomen, chest, multiple districts and other sites (including central nervous system, bone and skin).

Results
Median age of the pts was 60 years (53-70). 1174 pts underwent partial nephrectomy and 758 radical nephrectomy. Histological subtype of the specimens were: 1491 Clear Cell RCC (ccRCC), 244 papillary RCC (pRCC) and 197 chromopobe RCC (chRCC). Median follow-up was 90 months (36-125). 145 (7,5%) pts developed a recurrence. Site and rate of recurrences are reported in table 1. Statistical analysis identifies a significant difference in the incidence of all site recurrences among all histological subtypes (P=0,0017); significant statistical difference was observed also in the incidence of primary chest recurrences for all histological subtypes (P=0,002). In the chRCC subgroup no chest recurrences were observed. 20 pts with ccRCC have a chest recurrence, 13 of them more than 5 years from surgery.

Discussion
According to our data currently guidelines for RCC surveillance potentially expose a considerable number of pts to unnecessary chest examinations. Furthermore concluding follow-up after 5 years could lead to lose many primary chest recurrences in pts with ccRCC. In conclusion chest follow-up schedules should be differentiated and tailored on the basis of histological subtype.
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TREND OF USE OF ADJUVANT AND SALVAGE RADIATION THERAPY AFTER RADICAL PROSTATECTOMY AND IMPACT ON LONG-TERM OUTCOMES: RESULTS FROM THREE HIGH VOLUME CENTERS OVER THE LAST TWO DECADES


Aim of the study
Adjuvant (ART) and salvage radiation therapy (SRT) represent two therapeutic options for men with prostate cancer (PCa) at high risk of metastatic progression after radical prostatectomy (RP). Concerns associated with ART include possible overtreatment and overexposure to possible treatment-related side effects. However, whether avoiding immediate RT and eventually postpone it at the first sign of progression is comparable in terms of efficacy is currently unknown. We aimed to address trends in use of ART and SRT to evaluate long-term outcomes of both approaches.

Materials and methods
The study cohort included 40,223 RP patients from three tertiary referral centers in Europe and in the United States between 2001-2016. ART was delivered within 6 months from RP based on tumour characteristics and/or physician preferences. SRT was delivered for biochemical recurrence (BCR) after RP (two consecutive PSA >0.2ng/ml). Annual ART rates and expected annual percentage change (EAPC) were calculated for the overall study population and for pT3, pT2R1 and pN1 patients. Similarly, SRT rates and EAPC were calculated for all BCR patients with pT3, pT2R1 or pN1 PCa. Logistic regression explored the relationship between year of diagnosis and the use of ART and SRT. Cox regression analyses tested cancer specific mortality (CSM) according to year of diagnosis.

Results
Overall, 11,577 (28.8%), 3,326 (8.0%) and 3,236 (8.1%) harboured pT3, pT2R1, pN1 PCa. Of these, 1,862 pT3 (16.1%), 191 pT2R1 (5.7%) and 943 pN1 (29.1%) received ART. Of all patients, 4,588 (11.4%) experienced BCR and 2,484 (54.1%) received sRT. Between 2000-2016, the rate of ART decreased from 8.1 to 1.6% (EAPC: -2.6%, p=0.02). The annual ART rate decreased in all patient categories, namely pT3 (EAPC: -4.1%, p<0.001), pT2R1 (EAPC: -7%, p<0.001) and pN1 (EAPC: -5.6%, p<0.001) diseases. Conversely, the annual sRT rates for BCR patients increased for pT2R1 (EAPC: +3.3%, p=0.001) and pN1 (EAPC: +3.3%, p=0.011) while remained stable for pT3 (p=0.5%) PCa. At multivariable logistic regression analyses, year of diagnosis was associated with lower rate of ART for patients with pT3 (OR: 0.84, p<0.001), pT2R1 (OR: 0.83, p<0.001) and pN1 (OR: 0.82, p<0.001) PCa. Conversely, year of diagnosis was associated with higher rate of SRT for patients with pT2R1 (OR: 1.14, p=0.002) and pN1 (OR: 1.10, p<0.001) PCa. At multivariable Cox regression analyses, year of diagnosis was not predictor of higher CSM (HR: 0.99, p=0.7).

Discussion
We found a decreasing use of ART in all categories tested. In parallel, the use of SRT increased in patients harbouring pT2R1 and pN1 PCa. Despite these changes, CSM rates did not vary overtime. Therefore, we have witnessed a decreasing use of aRT without an increase in CSM, which might have been controlled by increasing use of SRT in selected patients.
THE PROGNOSTIC SIGNIFICANCE OF PERSISTENTLY ELEVATED PSA AFTER RADICAL PROSTATECTOMY IS HIGHLY ASSOCIATED WITH PATHOLOGICAL STAGE: IMPLICATIONS FOR TIMELY USE OF SALVAGE TREATMENTS


Aim of the study
Patients with PSA persistence after radical prostatectomy (RP) are at increased risk of clinical recurrence (CR). However, it is unclear which post-operative PSA cut-off is more predictive of progression. We aimed at identifying the first PSA cut-off associated with an increased risk of CR in a stage-by-stage analysis.

Materials and methods
Overall, 846 prostate cancer (PCa) patients with PSA persistence defined as a PSA ≥0.1ng/ml at 6-8 weeks after RP performed at two centers between 1994 and 2017 were identified. Uni and multivariable Cox regression analyses assessed the impact of the first PSA level, stage (pT2-3a vs pT3b-4), nodal status (pN0 vs pN1) and grade group (≤7 vs 8-10) on the risk of CR. An interaction with the first PSA level and the probability of CR according to stage, nodal status and grade was tested. A nonparametric curve graphically explored the relationship between 10-year CR-rates and the first PSA level after stratifying patients according to stage, nodal status and grade. A PSA cut-off predicting the risk of CR was derived from the nonparametric curve. The CR-free survival was compared between patients above and those below the cut-off.

Results
Median age at RP and first PSA after surgery were 64 years and 0.31 ng/ml. Overall, 275 (32.5%), 213 (25.2%) and 165 (19.5%) patients had pathological grade group 4-5, pT3b-4 and pN1 PCa. Median follow-up was 104 months and 149 patients experienced CR. The 10-year CR-free survival was 79.1%. The first PSA level (HR: 1.01; 95%CI: 1.0-1.01), pN1 status (HR: 1.63; 95%CI: 1.07-2.46) and grade group 4-5 (HR: 1.79; 95%CI: 1.24-2.59) were associated with CR. The impact of the first PSA level on the risk of CR differed according to nodal status (p<0.001) but not by grade or stage (all p>=0.1). An increase in the rate of CR at 10-year was observed for pN0 patients with a first PSA >0.25ng/ml. The 10-year CR-free survival were 85.9 vs 76.1% for a first PSA ≤0.25 vs >0.25ng/ml (p<0.001). In pN1 the risk of CR increased according to the first PSA without a plateau, with a 10-year CR-free survival rate of 59%.

Discussion
The first PSA level after RP should further stratify node-negative men where the optimal definition of meaningful PSA persistence associated with 10-year CR was 0.25 ng/ml. These data should be used to tailor the optimal timely salvage therapy in these men.
Aim of the study
PSA doubling time (PSADT) has been shown as a significant predictor of cancer recurrence after salvage radiation therapy (SRT). We hypothesized that oncological benefit of concomitant hormonal therapy (HT) varies significantly by PSADT.

Materials and methods
The study included 430 node negative patients who received SRT for PSA rising after RP. All patients received local radiation to the prostate and seminal vesicle bed at seven tertiary referral centres, whereas the irradiation of the pelvic lymph nodes area and the concomitant HT administration was left at the discretion of the treating physician. The study outcome consisted of clinical recurrence (CR) after RT that was identified by imaging. Multivariable Cox regression analysis was used to test the association between CR and PSADT. Covariates consisted of: pT stage, pathologic Gleason score, PSA level at RT, RT field, and use of concomitant HT. The relationship between PSADT and CR-free survival rate at 8 yr was explored graphically using the multivariable function Lowess.

Results
Overall, 60 (14%) patients had ≥pT3b disease, 61 (14%) had pathologic Gleason ≥8, and 141 (33%) received concomitant HT. Median PSA level at SRT was 0.50 ng/ml (IQR: 0.29, 0.91), and median PSADT was 10 months (IQR: 6, 18). At a median follow-up of 105 months, 88 (21%) patients developed CR. At multivariable analysis, PSADT (HR: 0.97, p=0.003) was a significant predictor of CR. The association between PSADT and CR was significantly different by HT administration during SRT (p<0.0001 by an interaction test). Specifically, concomitant HT provided the highest benefit at PSADT <12 months. On the other hand, it did not show a significant effect in patients with PSADT >24 months (Figure 1).

Discussion
The oncological benefit of concomitant hormonal therapy greatly depends on PSADT. Our data suggest a clear benefit of HT combined with SRT in patients with short PSADT, while patients with long PSADT may be spared from systemic therapies.
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THE PROGNOSTIC ROLE OF EARLY PSA RESPONSE AFTER SALVAGE RADIATION THERAPY: LONG-TERM RESULTS FROM A MULTI-INSTITUTIONAL STUDY


Aim of the study
Different predictors of outcome after salvage radiation therapy (SRT) for PSA rising after radical prostatectomy (RP) have been identified. However, the prognostic role of first PSA level after SRT has never been tested before. This is crucial since the response to treatment is a major predictor of all available treatments for prostate cancer (PCa). We hypothesized that first PSA level after SRT is a significant predictor of distant metastasis after SRT.

Materials and methods
The study included 1209 patients who received SRT for PSA rising after RP at seven tertiary referral centres. All patients received local radiation to the prostate and seminal vesicle bed, whereas the irradiation of the pelvic lymph nodes area was left at the discretion of the treating physician. The study outcome consisted of clinical recurrence (CR) after SRT that was identified by imaging. Patterns and timing of CR after SRT were reported. PSA decrease ratio (PSADR) was calculated as follows: (PSA at SRT – PSA after SRT) / PSA at SRT * 100. Patients were stratified in four groups according to PSADR: ≥66% (group 1), ≥33% and <66% (group 2), ≥0% and <33% (group 3), <0% (group 4). Kaplan Meier plots depicting CR-free survival were reported according to groups. Multivariable Cox regression analysis was used to test the association between CR and first PSA level after SRT.

Results
Median PSA level at SRT was 1.00 ng/ml, whereas median PSA level after SRT was 0.03 ng/ml. The PSADR had the following distribution: group 1 (n=888; 73%); group 2 (n=145; 12%); group 3 (n=97; 8%); group 4 (n=79; 7%). At a median follow-up of 91 months from RP, 128 (11%) developed CR. The first site of relapse was prostatic fossa (n=15; 12%), pelvic lymph nodes (n=32; 25%), retroperitoneal lymph nodes (n=19; 15%), bone (n=52; 41%), and other sites (n=10; 8%). Median time from SRT to CR was 111 months (IQR: 68, 153). At multivariable analysis PSA level after SRT was a significant predictor of CR (HR: 1.37, p=0.004). Kaplan Meier plots depicting CR-free survival according to PSADR were reported in Figure 1.

Discussion
Clinical recurrence occurs in roughly 10% of men treated with SRT at long-term follow-up. The first PSA after SRT is a strong predictor of clinical recurrence. In particular, patients without any PSA response (PSADR<0%) represent the category with the worst prognosis thus potentially suitable for multi-modal treatments.
EARLY SALVAGE RADIOThERAPY FOR PATIENTS TREATED WITH RADICAL PROSTATEctOMY AND ADVERSE PATHOLOGIC FEATURES: PRELIMINARY RESULTS FROM “EASY-1 (EARLY SALVAGE RADIOThERApY-1) PROTOCOL”

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Aim of the study
The aim of this study is to evaluate the early oncologic benefit of a strict surveillance protocol and early salvage radiotherapy (sRT) in the postoperative management of prostate cancer (PCa) patients with intermediate-high risk of recurrence after surgery.

Materials and methods
We prospectively enrolled 136 PCa patients submitted to RP between October 2016 and February 2018 at our Institution and included in a IRB-approved follow-up protocol (EASY-1: EArly Salvage RadiotherapY-1). Inclusion criteria were: PCa patients treated with RP; pT2 PCa with positive surgical margins (R1) or pT3a regardless surgical margins status or pT3b with negative surgical margins (R0); PSA undetectable at 40 days after surgery. Lymph node invasion was considered as exclusion criteria. The surveillance protocol included PSA dosage every two months after surgery during the first year, then every three months during the second and third year, followed by PSA every 4 months till the fifth year. Early sRT has been performed for patients with biochemical relapse (two consecutive values of PSA ≥0.2 ng/ml). 68Ga-PSMA PET/CT was performed before early sRT.

Results
Our analyses included 122 patients with a minimum follow up of 2 months. The median (IQR) follow-up of the entire population was 10 (6-12) months. Patients were stratified into two groups according to presence of BCR. Table 1 depicts preoperative patients’ characteristics. Overall, 5 (4.1%) experienced BCR. Median preoperative PSA was 6.4 ng/ml. Men who experienced BCR had a significantly higher clinical Gleason grade groups compared to individual without BCR (p=0.03). Between two group we did not found significant difference concerning preoperative characteristics. Table 2 shows the pathologic characteristics of our population. Overall 30 (24.8%), 59 (48.8%), 23 (19%) and 9 (7.4%) patients revealed pT2R1, pT3aR0, pT3aR1 and pT3bR0 disease, respectively. Lymphadenectomy was performed in the 76.6% of cases, all resulted as pN0. Patients with R1 were 46.3% (80% in cases with BCR and 43.1% in cases without BCR; p=0.2). Considering R1 patients, a positive surgical margin ≥3 mm have been found in 44.7% of men without BCR and in 75% of patients with BCR (p=0.2). The median (IQR) time to BCR was 8 (7-9) months. Out of 5 patients with BCR, 4 were submitted to early sRT (1 person refused the proposed treatment). The median (IQR) time of early sRT was 11 (9-13) months after RP (Table 3). The BCR free survival rate was 93.7% at 1 year (Figure 1).

Discussion
Strict surveillance with PSA monitoring every two months during the first year after surgery and early detection of BCR can avoid aRT and spare sRT within 1 years follow up in a consistent proportion of PCa patients with intermediate-high risk of recurrence after RP. The survival benefit of such aggressive surveillance and modulated early sRT needs to be evaluated at longer follow up.
WHAT IS THE OPTIMAL FIELD OF POST-PROSTATECTOMY RADIATION THERAPY? LONG-TERM RESULTS FROM A MULTI-INSTITUTIONAL STUDY


Aim of the study
The optimal field of radiation therapy (RT) after radical prostatectomy (RP) remains controversial due to the lack of current prospective, randomized evidence. We hypothesized that the benefit of whole pelvis radiation therapy (WPRT) compared to irradiation of prostatic fossa (PFRT) depends on clinical and pathological variables.

Materials and methods
The study included 732 patients who received either adjuvant RT (n=210; 29%), or salvage RT for PSA rising after RP (n=463; 63%), or RT for PSA persistence after RP (59; 8%) at seven tertiary referral centres. All patients received local radiation to the prostate and seminal vesicle bed (PFRT), whereas the irradiation of the pelvic lymph nodes area (WPRT) was left at the discretion of the treating physician. The study outcome consisted of clinical recurrence (CR) after RT that was identified by imaging. Multivariable Cox regression analysis was used to predict CR in patients that received PFRT only. Predictors consisted of pathologic stage (≤pT3a vs. ≥pT3b), Gleason score (≤7 vs. ≥8), number of lymph nodes removed, PSA level at RT (ng/ml), RT dose (Gy), and concomitant HT administration (no vs. yes). The predictive model was used to calculate the CR risk at 10 yr after RT for each patient. We plotted the observed CR rate at 10 yr against predicted CR risk at 10 yr, according to RT field (PFRT vs. WPRT).

Results
Overall, 493 (67%) received PFRT and 239 (33%) were treated with WPRT. At a median follow-up of 105 months after RT, 131 (20%) patients developed CR. At multivariable analysis, WPRT was associated with lower risk of CR compared to PFRT (HR: 0.73, p=0.02). The interaction test for the hypothesis that the impact of RT field varied according to CR risk was statistically significant (p<0.0001). The benefit of WPRT became significant when the predicted risk of CR calculated by multivariable analysis exceeded 10% (Figure 1).

Discussion
In the post-prostatectomy setting, whole pelvis radiation therapy provides better cancer control in patients with a predicted risk of clinical recurrence greater than 10%. In these patients, such an extended field radiation may be considered. On the contrary, whole pelvis radiation therapy may be spared in patients with a lower risk of clinical recurrence.
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PROSTATE BIOPSIES BEFORE PRE-SALVAGE RADICAL PROSTATECTOMY: DO THEY RIGHTLY CONFIRM THE FINAL HISTOLOGY?


Aim of the study
The choice to undergo salvage radical prostatectomy (sRP) after primary non-surgical treatment in case of biochemical recurrence of prostate cancer (BCR) depends on positivity of prostate biopsy (Bx). Latest EAU Guidelines identify an important role of sRP if confirmatory pre-sRP biopsy (cBx) reveals a Gleason Score (GS) ≤7. However not many results about cBx in large cohorts have been reported. Our purpose was to assess pre-sRP prostate Bx detection rate; to verify the GS concordance (Conc) of cBx and first diagnostic biopsy (fBx, before PCa first line treatment) with the final sRP specimen GS; to analyse the GS Conc between the fBx and cBx GS.

Materials and methods
Between 2000 and 2016, 615 patients undergone sRP after BCR at 18 tertiary referral centres have been scheduled. Baseline information included age, PSA, TNM, imaging and previous treatments. We excluded men without these data collected and also those ones undergone sRP without cBx or fBx. FBx, cBx and sRP GS sums were categorised in ≤6, 7, 8, 9 and 10. Cohen’s Kappa coefficient was used for Conc to consider inter-rater agreement. Detection rate, Conc, upgrading (UpGr, first procedure GS score lower than the following procedure GS) and downgrading (DownGr, defined viceversa) were reported as number of events and percentages.

Results
We scheduled 400 patients with negative imaging for extra-nodal metastasis. Mean age was 65.8±7.9 ys, initial and pre-sRP PSA were 15.3 and 6.34 ng/mL respectively. CBx detection rate was 90.9% (n=340) with the remaining 9.1% (n=34) having no PCa diagnosis due to radiation injury or absence of tumour being detected; of these n=4 (11.4%) revealed pT0 although only one had subsequent BCR. On the sRP sample pathological stage was pT2 in 44.6%, pT3 in 53.9%. 5 sRP were not evaluable due to radiation injury or had no tumour (pT0). 26 men did not undergo biopsy before sRP. Conc, UpGr and DownGr between cBx and sRP specimen were 63.7% (n=202), 23% (n=73) and 13.3% (n=42); agreement was fair (k=0.487). Conc, UpGr and DownGr between fBx and cBx were 36.3%(n= 102, 58.7%(n=165) and 5%(n=14); agreement was poor (k=0.126). Conc, UpGr and DownGr between fBx and sRP specimen were 32.8% (n=97), 63.2% (n=187) and 4% (n=12) respectively, also with poor agreement (k=0.076).

Discussion
Pre-sRP prostate biopsy is crucial in the diagnostic pathway in case of BCR after primary non-surgical treatment. However, it must be noted that in a considerable portion of cases was detected a higher GS at the final histology of the sRP specimen. The lone original diagnostic biopsy cannot be used to plan treatment in case of PCa recurrence for in more than half of the cases an upgrading is recorded.
Aim of the study
Salvage Radical Prostatectomy (sRP) is an effective curative choice for men with biochemical recurrence (BCR) after primary treatment. Through this multicentre study, we examined oncological and functional outcomes of a wide contemporary series of sRP.

Materials and methods
In a multicentre study of 18 tertiary referral centres, 615 patients with BCR underwent sRP from 2000 and 2016. We retrospectively collected pre-, intra- and post-procedural clinical and pathological data. Information about erectile function (EF) and urinary continence (Con) was noticed/detected before sRP, at 6 and/or at 12 months. No men with a follow-up <6 months or unavailable data were included. Wilcoxon-Mann-Whitney test was used to compare continuous variables; χ² or Fisher's exact tests to assess categorical ones.

Results
We included 395 men. As primary treatments, 66.8% of patients underwent radiotherapy, 3.5% cryotherapy, 22.3% HIFU, 3% brachytherapy and 22.3% other primary treatments. Mean PSA and age pre-sRP were 6.36 (IQ 2.5-7.3) ng/ml and 66.3 (IQ 61.8-70.5) years, respectively. No extra-nodal metastasis were present, n=143 (37.1%) men were on HT whereas n=15 (3.8%) had castration resistant prostate cancer (CRPC). Mean ASA score was 2.17 ±0.78. A super-extended lymphadenectomy, including retroperitoneal nodes, was performed in 1.74% (n=6) whilst 14.1% (n=44) underwent a nerve sparing procedure. Mean operating time was 221.159 (IQ 150-250) min, with a mean blood loss of 439.979 (150-500) mL. Final pathology revealed that n=152 (43.43%) patients had a GS ≥8, whereas n=215 (54.7%) had local extra-prostatic extension (T stage ≥3) and n=62 (18.73%) had positive nodes. Positivity on surgical margins was reported in n=165 men (50.9%). At least one major (Clavien ≥3) complication occurred in n=40 patients (10.1%). One year later, only 8.1% had spontaneous or PDE-5 erections and 25.9% were gravely incontinent (≥3pads/day). At a median follow up of 3 (IQ 1.7-4.9) years, 150 (48.39%) men had BCR and n=81 (20.47%) had CRPC. Five-year overall and cancer specific survival were 95.02% and 96.2% respectively.

Discussion
sRP relies a considerable improvement in term of oncological outcomes in short to medium period. Rates of BCR and positive surgical margins are still quite high; the assessment of functional outcomes underlines remarkable rates of major complications and severe incontinence and low rates of preservation of the erectile function. Large long-term prospective series of sRP are needed to confirm the results of our study.
THE PATHOLOGIC LANDSCAPE OF PROSTATE CANCER AT SALVAGE RADICAL PROSTATECTOMY FOR LOCAL RECURRENT FOLLOWING HIGH-INTENSITY FOCUSED ULTRASOUND THERAPY: HIGH RATE OF ADVERSE PROGNOSTIC FEATURES AND MULTI-FOCAL DISEASE BOTH WITHIN AND OUTSIDE THE ABLATION ZONE

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Aim of the study
High-intensity focused ultrasound (HIFU) is an experimental treatment option for selected men with unifocal, localized, significant prostate cancer. There are sparse data on the pathologic outcomes and MRI staging accuracy in men with local recurrence who progress to salvage RARP (sRARP).

Materials and methods
To describe in detail the patterns of histopathologic recurrence and sensitivity of pre-RP MRI for sRARP post-HIFU. We analyzed outcomes of 34 men identified from a prospective institutional RARP database who underwent sRARP from 2012-2017 after primary HIFU. Outcome measurements and statistical analysis Clinico-pathological characteristics pre-HIFU and pre-sRARP (post-HIFU) were compared against sRARP histopathology. In-field recurrence (IFR), out-of-field disease (OFD), positive surgical margins (PSM), and sensitivity of pre-sRARP MRI.

Results
Median age was 64 (IQR 60-66) years, PSA 7.8 (6.0-9.0) ng/mL, ISUP group 2 (70.6%), and MCCL 7 (5.1-8.0) mm. 55.9% had multifocal disease pre-HIFU and 47.1% had cancer outside the treatment field. Median time to failure was 16 months. Indications for sRARP were IFR 55.8%, OFD 20.6%, or both 23.5%. On sRARP histopathology, recurrence was multi-focal in 94.2% and apical in 85.3%. Significant (ISUP≥2) IFR, OFD, or both were found in 97.1%, 81.3%, and 79.4%, respectively. 82.4% experienced adverse reclassification at sRARP compared to pre-HIFU and 67.6% compared to pre-sRARP. The PSM rate was 38.2% (30.8% pT2, 42.9% pT3; 14.7% apical, 23.5% posterolateral), with 85% of PSMs in-field despite attempted wide excision. The sensitivities of post-HIFU MRI for IFR, OFD and T3a/b were 81.8%, 65.4% and 10.0% respectively.

Discussion
Histopathologic upgrading, upstaging, and PSM were significant in men failing primary HIFU despite attempted wide excision. Disease was under-estimated by MRI/ targeted biopsy. The high IFR rate demonstrates HIFU occasionally fails to ablate the tumour in vivo, in addition to the risk of recurrence outside the ablation zone.
NATURAL HISTORY OF PATIENTS AFFECTED BY NODAL RECURRENCE FROM PROSTATE CANCER TREATED WITH SALVAGE LYMPH NODE DISSECTION WITHOUT ADDITIONAL TREATMENTS


Aim of the study
Salvage lymph node dissection (SLND) represents a possible treatment option for patients affected by nodal recurrence of prostate cancer after radical prostatectomy (RP). However, these patients are usually treated in a multi-modal approach with the association of systemic therapies such as hormonal therapy (HT), and the outcomes of patients treated with SLND alone remains largely unknown. Therefore, we reported oncological outcomes of patients who received SLND without any additional treatment.

Materials and methods
The study included 292 patients who received SLND at eight tertiary referral centres without any immediate post-operative additional treatment. The study outcomes consisted of biochemical recurrence (BCR: defined as PSA >0.2 ng/ml during follow-up after SLND), clinical recurrence (CR: detected by imaging in case of BCR), and cancer-specific mortality (CSM). Furthermore, HT-free survival was assessed. Multivariable Cox regression analysis was used to test the association between HT administration and the following predictors: pathological Gleason at RP (≤7 vs. 8 vs. ≥9), time from RP to BCR, number of positive spots at PET/CT scan, age at SLND, PSA level at SLND, number of nodes removed, number of positive nodes (0 vs. 1 vs. 2 vs. ≥3), and PSA level at 1 month after SLND.

Results
Median follow-up of the patient population was 32 months (IQR: 14, 55). Overall, 212 (73%) patients developed BCR, 126 (43%) patients developed CR, and 15 (6%) patients died for prostate cancer. At last follow-up, 83 (29%) patients did not receive any additional salvage treatment. Specifically, frequency, proportion, and median time to salvage treatments administered for cancer recurrence were the following: HT (n=163; 56%; 9 months); radiation therapy (n=92; 36%; 7 months); chemotherapy (n=22; 8%; 9 months); second SLND (n=10; 4%; 37 months); other treatments (n=8; 3%; 17 months). In particular, HT-free survival at 1, 2, and 3 years were 55%, 50%, and 43%, respectively. At multivariable analysis, the following factors were significantly associated with need of HT administration after SLND: pathological Gleason score ≥9 (HR: 2.22, p<0.0001), number of positive spots at PET/CT scan (HR: 1.10, p=0.41), number of positive nodes ≥3 (HR: 3.69, p<0.0001), and PSA level at 1 month after SLND (HR: 1.08, p<0.0001).

Discussion
Roughly 40% of patients managed expectantly after SLND remained free from additional salvage treatments at three-year follow-up. Patients remained free from systemic treatment were those with lower grade disease and less extensive nodal dissemination. These patients may be those in whom adjuvant treatments after SLND may be spared. Therefore, if patients are properly selected, a significant number of them can be free from additional treatments at intermediate follow-up.
DEFINING BIOCHEMICAL RESPONSE AFTER SALVAGE LYMPH NODE DISSECTION IN PATIENTS TREATED FOR NODAL RECURRENCE OF PROSTATE CANCER: RESULTS FROM A LARGE MULTI-INSTITUTIONAL SERIES


Aim of the study
The definition of biochemical response (BR) to salvage lymph node dissection (SLND) for nodal recurrence of prostate cancer remains challenging. Previous retrospective series identified post-operative PSA level <0.2 ng/ml as an arbitrary cut-off. However, the response to SLND may be importantly influenced by pre-operative PSA level and use of concomitant hormonal therapy (HT). Therefore, we aimed at identify an optimal definition for BR after SLND.

Materials and methods
The study included 408 patients who were diagnosed with PET/CT scan and received SLND at eight tertiary referral centers. All patients had complete clinical, pathological, and follow-up data. To avoid influences of HT on PSA values, only patients who did not receive any pre-operative and/or immediate post-operative HT were included. To combine the impact of pre-operative and post-operative PSA levels, we defined PSA decrease ratio (PSADR) as follows: \( \frac{\text{PSA at SLND} - \text{PSA after SLND}}{\text{PSA at SLND}} \times 100 \). The study outcome was clinical recurrence (CR) after SLND that was identified by imaging. Multivariable Cox regression analysis tested the association between CR and PSADR. Covariates consisted of pathological Gleason at RP (≤7 vs. 8 vs. ≥9), number of positive spots at PET/CT scan, age at SLND (yr), number of nodes removed at SLND, and number of positive nodes at SLND (0 vs. 1 vs. 2 vs. ≥3). The relationship between PSADT and CR-free survival rate at 3 yr was explored graphically using the multivariable function Lowess. The PSADR cut-off (determined with Lowess) was then compared with the current definition of BR (namely PSA <0.2 ng/ml) using decision curve analysis (DCA).

Results
Median (IQR) of PSA level pre- and post-SLND were 2.5 (1.4, 5.0) and 0.45 (0.0, 1.6) ng/ml, respectively. The PSADR had the following distribution: ≥66% (n=262; 64%); ≥33% and <66% (n=60; 15%); ≥0% and <33% (n=34; 8%); <0% 4 (n=52; 13%). At a median follow-up of 33 months, 213 (52%) patients developed CR. At multivariable analysis, PSADR was inversely associated with the risk of CR (HR: 0.99; p=0.22). Using the statistical function Lowess, a linear reduction of CR-risk at 3 yr was observed by PSADR ranging from -200% to 66%. On the contrary, the curve reached a plateau when PSADR was >66% (Figure 1). Using DCA, the new definition of BR as PSADR >66% provided higher clinical net benefit compared to the current definition.

Discussion
We defined PSADR combining information from pre- and post-operative PSA level. We should consider biochemical response as the reduction of PSA level by at least two thirds of pre-operative PSA value. This new definition outperformed the current definition based on post-operative PSA level only.
Aim of the study
Biochemical recurrence after radical prostatectomy (RP) for prostate cancer (PCa) is routinely treated with radiotherapy (RT), or androgen deprival therapy. 18F-Choline PET-CT is an assessed technique to localize early PCa recurrence, even with low PSA values. Salvage lymph node dissection (sLND) is an increasingly considered technique to manage early localized recurrence in PCa. Aim of our study is to report the perioperative outcomes in patients treated with sLND in patients with node-recurrent PCa.

Materials and methods
Since March 2014 we prospectively collected the clinical data of patients with node-recurrent PCa with relapse under the inferior mesenteric artery. Preoperative imaging consisted in 18F Choline PET/CT, total body scan. Biochemical recurrence and metastasis were assessed postoperatively. Previous adjuvant radiotherapy was not an exclusion criterion. All patients were considered eligible to surgery after a multidisciplinary approach.

Results
Nine patients were submitted to Robotic Salvage Lymphadenectomy since March 2014. All the patients received an extended pelvic sLND. Mean age was 66.8 years (SD: 4.0), mean PSA 1.74 (SD: 1.54) ng/mL, median years from surgery (YFS) was 1 (IQR: 1-4). Pathological GS was 7 in six patients (66.6%) and 8 in three patients (33.3%). TNM staging was pT2c in six patients (66%), pT3a in two patients (22%) and pT3b in one patient (11%). Two patients (22%) were submitted to previous lymphadenectomy and one (11%) had a node-disease (pN1) at the time of RP. Surgical margins were positive in one patient (11%). No surgical complication occurred. The mean number of nodes removed was 30.67 (SD: 15.3). Mean number of positive nodes found was 1 (SD: 1). Mean follow up time (months) was 22.2 (SD: 9.1). Mean PSA at last follow up was 0.15 (SD: 0.18). Within one month after surgery, PSA was undetectable (≤0.02 ng/ml) in 44.4% of patients, without further biochemical recurrence. Three patients (33%) had a reduction in PSA values (PSA <0.2 ng/ml). One patient (11%) had a stable PSA after surgery and another one (11%) had an increased PSA after surgery: these patients started androgen deprival therapy (ADT) for two years.

Discussion
In our limited experience robotic sLND for node-recurrent PCa seems to be a safe procedure, with acceptable perioperative outcomes. According to our experience, sLND may delay ADT for the further development of PCa metastasis.
KIDNEY CANCER: NEPHRON-SPARING SURGERY

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BIOMARKERS DETECTING THE ACUTE KIDNEY INJURY IN CASE OF ELECTIVE NEPHRON-SPARING SURGERY: PRELIMINARY RESULTS AND ANALYSIS IN A PROSPECTIVE COHORT STUDY


Aim of the study
Patients undergoing nephron sparing surgery (NSS) for renal tumors are at risk of acute kidney injury (AKI). In this scenario, novel biomarkers for AKI have become a research priority for the limited diagnostic accuracy of serum creatinine to early detect AKI. Urine tissue inhibitor of metalloproteinase 2 (TIMP-2) and insulin-like growth factor binding protein 7 (IGFBP7) are considered new reliable and promising biomarkers. The aim of the present study was to investigate the role of other available biomarkers in predicting early AKI development.

Materials and methods
From May 2017 to January 2018, adult patients treated with robotic NSS for localized renal cell carcinoma (RCC) were enrolled in our centre. All patients had a normal coagulative assessment and preoperative eGFR (CDK-EPI 2009) >45ml/ml. Blood and urine samples were obtained to assess sCr, sCys C, albuminuria and urinary concentration of [TIMP-2]*[IGFBP7] pre and postoperatively at 4, 12 and 24h after surgery. AKI was defined and classified according to the KDIGO criteria; subclinical AKI was defined when the product of the urinary concentration of [TIMP-2]*[IGFBP7] (NephroCheck™) was >0.3 within 4-12 hours. In subclinical AKI group, linear regression models were used to assess the correlation between NephroCheck™ and sCys C, albuminuria, proteinuria and NGAL at 4, 10 and 24h following surgery.

Results
Overall, 42 Patients had a median age of 62 (IQR 18-85) years. Tumors had a median PADUA score of 7 (6-9). Overall, 18 (43%) patients developed a clinical AKI based on sCr and/or urine output, 12 (28.5%) patients had a subclinical AKI characterized by an increase of biomarkers with normal sCr and 12 (28.5%) had no variation of biomarkers and sCr. In those patients who developed a subclinical AKI, only NGAL (p = 0.02 R2 = 0.87) was significantly associated with an increase of NephroCheck™ >0.3. Conversely, none of other biomarkers had a statistically significant association to NephroCheck™ increase at 4, 10 and 24 hours (Table 1).

Discussion
In patients undergoing NSS, serum biomarkers may be complementary to sCr measurement for the detection of early or subclinical AKI. NGAL seems to be the most sensitive biomarker for subclinical AKI. The increase of NGAL within 4 hours after surgery might also implement medical treatment strategies to prevent AKI development.
Aim of the study
An increasing number of localized kidney cancers is being diagnosed in elderly people, raising the issue of which is the optimal surgical management in this subset of patients. The aim of this study is to compare surgical, functional and oncological outcomes of partial (PN) versus radical nephrectomy (RN) in a multi-institutional cohort of elderly patients from 23 European, US and Asian Institutions (REnal SUrgery in the Elderly - RESURGE - project).

Materials and methods
A retrospective analysis of the RESURGE dataset was performed, focusing on patients ≥80 years. A PN group and a RN group were identified. Differences between the two groups were measured by Pearson chi-square test and Mann-Whitney u-test. A multivariable Fine and Gray competing risk analysis (including age, comorbidity, pathological tumor diameter, stage and grading and type of surgery) was used to assess the relationship with cancer specific survival (CSS).

Results
585 patients were included (mean age 82.8 ± 2.5, range 80-94 years; 48% female) of whom 364 (62.2%) underwent RN and 221 (37.8%) PN. Patients of both groups showed similar features, except for older age in RN group (83.1 vs 82.4 years, p=0.008). Baseline renal function was similar, with median value close to CKD3 limit (RN vs PN 58.7 vs 60.4 ml/min, p=0.836). RN group had larger, more advanced and aggressive tumors at clinical staging and final pathology. Open, laparoscopic and robotic approaches were used in 61%, 37%, 1% and 52%, 19% and 28% of RN and PN, respectively. Perioperative morbidity was similar in terms of blood loss (300 vs 352 cc, p=0.157) and complication rates (intra-operative 8.6% vs 11.5%, p=0.259; post-operative 25.8% vs 24.5%, p=0.716; Clavien≥3 post-operative 5.0% vs 5.8%, p=0.168). At 6 months after surgery PN showed higher residual renal function (eGFR 51.6 vs 39.7 ml/min, p=0.001). At a median follow-up time of 39 months, 20% of patients died due to renal cancer, 11% for unrelated causes. Competing-risk regression model showed that the factors independently related to CSS were age and type of surgery (subhazard ratios 1.13 and 0.44, p=0.026 and 0.052, respectively).

Discussion
Indication to PN in octogenarian is mainly driven by tumor’s features. PN provides better preservation of renal function without increasing perioperative morbidity. Cancer specific mortality is not negligible, despite patients’ age. After accounting for confounders and competitive causes of mortality, PN and younger age are related to lower cancer-specific mortality.
ONCOLOGIC OUTCOMES IN PATIENTS TREATED WITH PARTIAL NEPHRECTOMY FOR LOCALIZED RENAL CELL CARCINOMA: RESULTS FROM A PROSPECTIVE MULTICENTRE ITALIAN STUDY (THE RECORD 1 PROJECT)


Aim of the study
The aim of the study was to analyse the oncologic outcomes in patients treated with partial nephrectomy (PN) for renal cell carcinoma (RCC) and to search for predictive factors of renal recurrence in a multicentre prospective observational study (RECORd 1 Project).

Materials and methods
Overall, 1055 patients treated with PN for cortical renal tumors were prospectively recorded from 2009 to 2012 in Italian centres. Of these, 98 patients were lost at follow-up and 363 had benign histology. An oncologic follow-up was recorded in 594 patients with a histologic diagnosis of RCC. Local and distant recurrence were defined as an ipsilateral tumor and as a contralateral tumor or distant metastasis of identical histologic type. Disease-free survival (DFS) was defined as the survival free from any RCC recurrence. Kaplan-Meier analyses assessed time to local, distant recurrence and DFS. Cox proportional hazard regression model was fitted to investigate predictors of DFS.

Results
Patients had a median age of 63.5 (IQR 53-72) years and an ECOG score ≥1 in 34.2% of cases. Surgical indication was relative and imperative in 14.2% and 5.6% of cases, respectively. Multiple lesions were treated in 4.7% of cases. Renal tumors had a mean diameter of 3.0 cm (cT1a: 78.5%, cT1b: 18.5%, ct2: 3%), growth pattern was >50% and entirely endophytic in 24.2% and 2.5% of cases. Patients were treated with open, laparoscopic and robotic approaches in 52.8%, 34.2%, 13% of cases. A simple enucleation and standard PN were performed in 45.9% and 54.1%. ccRCC, pRCC, chRCC, unclassified RCC and others renal tumors were 68.5%, 15.1%, 10.7%, 0.8% and 4.9%, respectively. Nuclear Fuhrman grade (FG) was 1-2, 3-4 and undetermined in 70%, 14.4% and 15.6%. Upstaging to pT3a and positive surgical margins (SM) were registered in 5.9% and 3.7%. Median follow-up was 73.9 (IQR: 52.3-90.6) months. The actuarial 5-year local, distant recurrence-free survival was 94.1% (standard error [SE] 1.1%) and 96.3% (SE 0.9%), respectively. The 5-year DFS was 92.8% (SE 1.2%). Figure 1 shows Kaplan-Meier curves stratified for clinical tumor stage, surgical margins and upstaging. At multivariable analysis, after adjusting for age, ECOG score ≥1 (HR 2.39, 95%CI 1.10-5.21), cT2 vs cT1 stage (HR 3.69, 95%CI 1.80-7.55), positive surgical margins (HR 4.8, 95%CI 2.87-14.21), upstaging to pT3a (HR 3.28, 95%CI 1.47-7.28) were independent predictors of disease recurrence.

Discussion
Patients submitted to PN for localised RCC had a 5-yr DFS of 92.8%. In our study, low performance status, higher tumor stage, positive surgical margins and upstaging to pT3a were independent predictors of disease recurrence.

Aim of the study
To analyse the predictive factors and develop a surgical nomogram for predicting the likelihood of postoperative surgical complications.

Materials and methods
We prospectively evaluated 4308 patients who had surgical treatment for renal tumors between January 2013 and December 2016 at 26 urological Italian Centers (RECORd 2 project). Postoperative complications occurring within 30 days of surgery were graded using the modified Clavien-Dindo scale. A multivariate logistic regression for surgical complication was performed. The area under the receiving operator characteristic (ROC) curve (AUC) was used to quantify predictive discrimination. A nomogram was created from the multivariable model. Internal validation processes were performed using bootstrapping with 200 repetitions.

Results
Overall, 2584 patients undergone PN were evaluated for the final analyses. The American Society of Anesthesiologists physical status (ASA PS) score was 2 (IQR 2-3). Clinical T1b and T2 were 24.3% and 3.3% of the cases. Median PADUA score was 7 (IQR 6-8). Overall, 34.3%, 27.7%, 38% of patients underwent open, laparoscopic and robotic PN. Enucleation was performed in 36.1% of patients. Postoperative surgical complications were recorded in 264 (10.2%) of patients: 5.9% were Clavien 2, 2.4% Clavien 3 and 0.2% Clavien 4a. the full multivariable model, age (OR 1.01, 95% CI 1.00-1.03, p=0.03), ASA PS score (OR 1.281, 95% CI 1.00-1.62, p=0.046), clinical T2 versus T1a stage (OR 2.03, 95% CI 1.13-3.67, p=0.01), PADUA score (OR 1.16, 95% CI 1.05-1.25, p=0.001), preoperative anaemia (OR 2.20, 95% CI 1.58-3.05, p<0.001), open (OR 2.87, 95% CI 1.94-4.27, p<0.001), and laparoscopic (OR 1.73, 95% CI 1.13-2.64, p=0.01) versus robotic approach were significant predictive factors of postoperative surgical complications, while CCI and ECOG scores, surgical indication, baseline creatinine, centre caseload and enucleoresective strategy were not. The full model had an area under the ROC curve of 73.1%. The area under the ROC curve maintained above 70% if the comorbidity and performance status scores (72.4%, p=0.14) and clinical tumor stage and PADUA score (71.1%, p=0.09) were removed from the full model (Figure 1 a-b). Comparing to the full model, a reduced model without surgical approach and resective strategy reduced the area under the ROC curve to 69.6% (p<0.001) and decreased to 68.7% (p<0.001) if also centre caseload was removed (Figure 1).

Discussion
We developed and validated a nomogram for predicting postoperative surgical complications after PN using preoperative and surgical variables from a wide multicentre prospectively-recorded Italian dataset. Such information might allow a more accurate individual risk stratification of complications in patients undergoing PN.
A SNAPSHOT OF NEPHRON SPARING SURGERY IN ITALY: A PROSPECTIVE, MULTICENTER REPORT ON CLINICAL AND OPERATIVE DATA (THE RECORD 2 PROJECT)


Aim of the study
Nephron-sparing surgery (NSS) is the standard of care for the surgical management of clinically localized renal tumors. Aim of this study was to provide a snapshot of the clinical and intraoperative data of a representative proportion of patients undergone NSS in Italy.

Materials and methods
We evaluated 4308 patients who had surgical treatment for renal tumors between January 2013 and December 2016 at 26 urological Italian Centers (RECORD 2 project). Preoperative, radiological, operative data were recorded on an online web-based prospectively maintained database. Surgical eras (2013 vs. 2016 and year periods 2013-2014 vs. 2015-2016) were compared. High volume centres (HVCs) were considered as centres performing >40 NSS/year.

Results
Overall, 2584 patients undergone NSS were evaluated for the final analyses. In the most recent years, patients undergoing NSS were found to have a significantly higher relative and imperative surgical indication (p<0.001), with a significantly higher Eastern Cooperative Oncology Group (ECOG) performance status (p<0.0001) and American Society of Anaesthesiologists physical status score (p=0.04). However, Charlson comorbididy index (CCI) and age-adjusted CCI remain constant over the period considered. Patients were treated for a significantly higher rate of tumors with dislocated/infiltrated urinary calyceal system (p<0.0001) and sinus involvement (p<0.01) in the last years. PADUA and RENAL scores significantly increase over time (p=0.01 and p<0.0001, respectively). 51.7%, 63.6%, 73.5%, and 77.7% of patients were treated in HVCs in 2013-2014-2015-2016, respectively (p<0.0001). Overall, enucleoresection was the most widely adopted technique over time (57-69%). However, enucleation was significantly more used in the last years (p<0.0001). The open approach (OPN) constantly decrease during years, the laparoscopic approach (LPN) remains approximately constant and the robot assisted approach (RAPN) increases. Use of off-clamp procedures significantly decrease over time (p<0.0001), while warm ischemia time (WIT) remained constant. The use of haemostatic agents significantly decreased in the last era (p<0.0001) [Figure1].

Discussion
The utilization rate of NSS in Italy is increasing over time, even in less performant patients with higher rate of relative and imperative indications and in more complex renal masses. RAPN is expanding and OPN constantly decreases. This study shows a negative trend for off-clamp procedures, although with high rate of limited WIT, and for the use of haemostatics agents in NSS.
PERITUMORAL LOSS OF VOLUME: A NEW TOOL TO ESTIMATE THE FUNCTIONAL IMPAIRMENT AFTER PARTIAL NEPHRECTOMY


Aim of the study
In the balance of the factors involved in the post partial nephrectomy (PN) renal impairment, loss of healthy parenchyma removed with the tumor, ischemic injury and devascularization of healthy parenchymal areas close to the suture of the renal defect have to be considered. The surgical complexity of the tumor, evaluable with nephrometric scores, can be related to the functional postoperative damage, nevertheless a reliable method to estimate the volume of perilesional healthy parenchyma lost with surgery is still lacking. Aim of the study is to propose a simple mathematical tool to calculate the volume of perilesional parenchyma potentially damaged after PN and to test its correlation with the loss of renal function, evaluated by renal scan (RS).

Materials and methods
All the patients with a pre- and postoperative RS were retrospectively selected from our prospectively maintained database. For the purpose of the study we developed a mathematical formula to calculate the volume of perilesional healthy parenchyma (physically or functionally) lost after the surgery. The formula included the radius of the mass (considering the lesion to be a sphere), the growth pattern (GP:1/3 or GP:2/3 or GP:3/3 of the tumor diameter for exophytic, partially exophytic and endophytic masses, respectively) and the maximum thickness of healthy parenchyma resected (THP) with the tumor at final pathology. The following formula: \[2\pi*radius*(GP*diameter)*THP\], was used in order to calculate the postoperative peritumoral loss of volume (PLV). All demographics, perioperative and functional data before and 3 months after surgery (evaluated as Effective Renal Plasma Flow – ERPF at RS) were included. The PLVs, together with the other variables, were tested using a univariate and multivariate regression model, in order to identify the variables which were related to the postoperative functional impairment, expressed as ERPF drop (as continuous variable - statistical significance set at p<0.05).

Results
207 patients were included in the study. All the demographic, perioperative and functional data are showed in Table 1-2. At univariate analysis the PLV, the lesion size, the PADUA score, the preoperative eGFR, the blood loss and the postoperative complications demonstrated a significant correlation with the ERPF drop. At multivariate regression analysis only the PLV (p= 0.04), the lesion size (p= 0.02) and the postoperative complications (p=0.009), were confirmed to be significant predictors of ERPF drop.

Discussion
As shown in this study, resulting the PLV correlated to the functional ERPF drop, it can be considered an easy and good approximation tool to estimate the functional impairment after PN. The possible overestimation given by the inclusion in the formula of the maximum thickness of healthy parenchyma resected, can offset the amount of the parenchyma functionally lost because it is involved in the suture.
OPEN, LAPAROSCOPIC AND ROBOT-ASSISTED PARTIAL NEPHRECTOMY: COMPARISON OF PERIOPERATIVE OUTCOMES AND TRIFECTA RATE ACHIEVEMENT IN A LARGE, SINGLE-INSTITUTION SERIES

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Aim of the study
To assess Trifecta Rate achievement and perioperative outcomes in patients treated with open, laparoscopic and robotic partial nephrectomy for localized renal masses (stage ≤ cT2).

Materials and methods
We retrospectively evaluated 497 consecutive patients who underwent open (OPN: 252), laparoscopic (LPN: 161) and robotic (RAPN: 84) partial nephrectomy (PN) for clinically localized renal cell carcinoma (RCC) at single tertiary center between March 2000 and October 2017. Each operation was performed by surgeons with extensive experience at the end of the learning curve for the specific surgical technique. Tumor complexity was described according to the PADUA and RENAL scoring systems, Postoperative complications were graded according to the Clavien-Dindo classification. Positive surgical margins (PSM) were defined as the presence of tumor cells at the level of the inked parenchymal surface. Trifecta was defined as the achievement of warm ischemia time (WIT) ≤20 min, no PSM and absence of any kind of postoperative complication. First, we compared clinical, pathologic and perioperative outcomes within the three surgical approach. Second, multivariate logistic regression was performed to identify independent predictors of Trifecta achievement; for this purpose we created three different models considering the association between ASA score and surgical technique with PADUA risk (Model 1) with RENAL risk (Model 2) and Clinical stage of lesions, Renal sinus involvement and urinary collecting system (UCS) invasion (Model 3).

Results
The three cohorts were comparable in terms of demographics and clinical characteristics (Table 1). WIT ≤ 20 min (Table 2) was achieved in 233 (92.5%), 133 (82.6%) and 78 (92.9%) patients undergoing OPN, LPN and RAPN, respectively (p=0.003). Positive surgical margins rate was 11.5 %, 16.1% and 3.6% after OPN, LPN and RAPN, respectively (p=0.01). Postoperative complications rate was significantly higher in patients treated with OPN (36.5%) compared to LPN (23%) and RAPN (22.6%; p=0.004; Table2). Trifecta has been achieved in 58.8%, 52.8% and 75% of patients undergoing OPN, LPN and RAPN, respectively (p<0.001). The most frequent cause of Trifecta failure was the occurrence of postoperative complications, representing the 64%, 40% and 91% of events in OPN, LPN and RAPN groups, respectively (Figure 2-3-4). At multivariate analyses (Table 3), ASA score ≤2, RAPN approach and UCS involvement were independent predictors of Trifecta achievement (all ps≤0.02).

Discussion
As compared to OPN and LPN, RAPN allowed to obtain lower ischemia time, lower PSMs rate, and lower postoperative complications in patients treated with nephron-sparing surgery for localized RCC. While PADUA and RENAL score were not significantly related to the Trifecta status, we found that ASA score, UCS invasion and the surgical technique were independent predictors of Trifecta achievement.
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HOW TO PREDICT THE LIKELIHOOD OF POSTOPERATIVE SURGICAL NEPHRON SPARING-RELATED COMPLICATIONS IN A LARGE SINGLE-INSTITUTION SERIES OF PARTIAL NEPHRECTOMIES

M. Borghesi, R. Schiavina, L. Bianchi, C. Casablanca, S. Di Fresco, F. Mineo Bianchi, F. Chessa, C. Pultrone, A. Angiolini, S. Rizzi, H. Dababneh, E. Brunocilla (Bologna)

Aim of the study
To assess postoperative surgical Nephron spring (NSS)-related complications rate and predictors in patients treated with open, laparoscopic and robotic partial nephrectomy for localized renal masses (clinical stage ≤T2).

Materials and methods
We retrospectively evaluated 497 consecutive patients who underwent open (OPN: 252), laparoscopic (LPN: 161) and robotic (RAPN: 84) partial nephrectomy (PN) for clinically localized renal cell carcinoma (RCC) at single tertiary center between March 2000 and October 2017. Each operation was performed by surgeons with extensive experience at the end of the learning curve for the specific surgical technique. Tumor complexity was described according to the PADUA and RENAL scoring systems. Postoperative complications were recorded and graded according to the Clavien-Dindo classification. Moreover, we stratified postoperative complication according to type of complication (namely, medical vs. surgical). Within surgical complications, NSS-related complications included: acute kidney injury [AKI], wound infections, ileus, hemorrhage, pneumothorax [PNX], pleural effusion and urinary fistula. First, we compared perioperative outcomes, including different types of postoperative complications within the three surgical approach. Second, a multivariate logistic regression was performed to identify predictors of postoperative NSS-related complications, considering separately PADUA score (model 1) and RENAL score (model 2).

Results
The three cohorts were comparable in terms of demographics and clinical characteristics (Table 1a). Intraoperative and postoperative results are summarized in Table 1b. Intraoperative complications were recorded in 44 (8.9%) patients overall, 31 (12.3%) in OPN, 5 (3.1%) in LPN and 8 (9.5%) in RAPN (p=0.006, Table 2). Postoperative complications were identified in 148 (29.8%) of the entire population; of them, 92 (36.5%) were found in OPN, 37 (23%) in LPN and 19 (22.6%) in RAPN (p=0.004). No statistically significant difference was observed between the three cohorts in terms of grade of complications. Table 3 depicts the different type of medical and surgical complications within the three techniques. Considering medical and NSS-related complications, patients treated with open approach had significantly higher rate of wound infection, deep vein thrombosis and fever/sepsis compared with laparoscopic and robotic technique (all p ≤ 0.05, Table 3). At multivariate analysis (Table 4) ASA score >2 (Odds Ratio [OR] = 1.63 in model 1 and OR 1.66 model 2) and minimally invasive approach (LPN with OR=0.52 and RARP with OR=0.35 in both models) were the only independent predictors of postoperative NSS-related complications (all p≤0.04); while PADUA and RENAL score were not found to be related to NSS-related complications.

Discussion
Compared to OPN, LPN and RAPN are related to significantly lower rate of postoperative medical and NSS-related complications. PADUA and RENAL score were not able to predict the occurrence of postoperative complications.
Aim of the study
The relatively low risk of cancer-specific mortality [CSM] compared to the relatively high risk of other-cause mortality [OCM] and perioperative complication question surgical treatment of elderly patients with renal mass. Given the lack of information available, the aim of the study is to perform a comprehensive investigation of clinical outcomes of elderly patients treated with robot-assisted [RAPN] or laparoscopic partial nephrectomy [LPN].

Materials and methods
261 patients aged 75 or older diagnosed with cT1-2 renal mass treated with RAPN or LPN at 23 institutions were collected into the RESURGE collaborative database. Study outcomes were: 1) overall [OC] and Clavien-Dindo≥3 complications [CD≥3]; 2) warm ischemia time [WIT] and 6-month estimated glomerular filtration rate [eGFR]; 3) positive surgical margins [PSM], disease recurrence [REC], CSM and OCM. Descriptive statistics, Kaplan-Meier and smoothed Poisson plots were used to report clinical outcomes. Logistic and linear regression models [MVA] including age, gender, preoperative eGFR, single kidney status, clinical tumour size, RENAL risk category and year of surgery investigated predictors of perioperative outcomes.

Results
The proportion of patients treated with RAPN and LPN were 46 and 54%. OC and CD≥3 rates were 38 and 6%. Median WIT was 18 minutes and median 6-month eGFR was 55. PSM rate was 5%. After a median follow-up of 25 months, the 5-year rates of REC, CSM and OCM resulted 2.9, 2.4 and 3.6%. At MVA predicting perioperative morbidity, RAPN relative to LPN (Odd ratio[OR] 0.28; p<0.0001) and year of surgery (OR 0.87; p=0.02) were associated with lower OC rate. Conversely, RENAL score was associated with higher OC rate (OR 1.8; p=0.04). No independent predictors of CD≥3 were identified. At MVA predicting functional outcomes, RAPN relative to LPN (Estimate[EST] -4.8; p<0.0001) and year of surgery (EST -0.7; p=0.0001) were associated with shorter WIT. Conversely, age (EST +0.4; p=0.01) and RENAL score were associated with longer WIT (EST +8; p<0.001). RAPN relative to LPN (EST 5.6; p=0.01), female gender (EST 3.9; p=0.04) and preoperative eGFR (EST 0.7, p<0.0001) were associated with higher 6-month eGFR. Conversely, single kidney status (EST -17; p=0.01) and year of surgery (EST -1.5; p<0.001) were associated with lower 6-month eGFR. At MVA predicting PSM, year of surgery was associated with lower PSM rate (OR 0.78; p=0.3).

Discussion
Despite a non-negligible perioperative morbidity, survival outcomes after minimally invasive partial nephrectomy support the indication for active treatment even in the setting of elderly patients. RAPN is associated with a superior perioperative morbidity profile and superior postoperative renal function relative to LPN.
PATTERNS AND PREDICTORS OF RESECTION TECHNIQUES DURING PARTIAL NEPHRECTOMY: RESULTS OF A MULTICENTER PROSPECTIVE STUDY FROM THE SURFACE-INTERMEDIATE-BASE (SIB) MARGIN SCORE INTERNATIONAL CONSORTIUM (IDEAL PHASE 2B)


Aim of the study
Resection techniques (RT) potentially affect key partial nephrectomy (PN) outcomes. Of note, while PN surgeons recognize that RTs may vary on a case-by-case basis as a result of a complex surgical decision-making, there is no evidence base supporting this concept. Moreover, the key factors driving performance of specific resection techniques are unknown. To fill this gap, we recently introduced a standardized scoring system, the Surface-Intermediate-Base (SIB) Margin score, to objectify the variability of RTs through a visual characterization of the salient aspects of PN specimen. The aim of this study (IDEAL Phase 2b) was to evaluate prospectively patterns and predictors of RTs during PN for localized renal masses at the tertiary referral Centers of the SIB International Consortium.

Materials and methods
Data were prospectively collected from a cohort of consecutive patients undergoing PN for cT1-2 renal masses between September 2014 and March 2015 at 16 high-volume Centers. RS was classified as anatomic or non-anatomic, while RT as enucleation, enucleoresection or resection. Multivariable models evaluated the key predictors of RS and RT.

Results
Overall, 507 patients were included. Preoperative intent (RS) was anatomic in 277 (55%) cases while non-anatomic in 230 (45%). Enucleation was performed in 266 (52%) patients, enucleoresection in 150 (30%) and resection in 91 (18%). At multivariable analysis, nearness of the tumor to renal hilum and off-clamp PN were significant predictors of anatomic resection strategy. The only significant predictor of enucleation vs enucleoresection was off-clamp PN. Off-clamp approach and nearness of the tumor to the renal hilum were associated with enucleation vs resection. Finally, higher tumor complexity and anatomic resection strategy were significant predictors of enucleoresection vs resection (Table).

Discussion
RTs for PN significantly varied across surgeons and institutions and were associated with distinct tumor- and surgery-related factors.
ASSOCIATION BETWEEN ADHERENT PERINEPHRIC FAT ASSESSED USING MAP SCORE AND PNFSFD AND PERIOPERATIVE OUTCOMES AFTER OPEN OR ROBOTIC PARTIAL NEPHRECTOMY AT A HIGH-VOLUME REFERRAL CENTER


Aim of the study
The surgical feasibility of PN is encompassed by a number of factors including the quality and quantity of perinefric fat. The presence of adherent perinephric fat, often termed ‘sticky fat’, can add a great deal of time and challenge at the time of partial nephrectomy (RAPN). Recently new scores and imaging tools have been proposed in order to standardize and measure the thickness and density of perirenal fat tissue such as the Mayo Adhesive Probability (MAP) score and Perinephric Fat Surface Density (PNFSD). The aim of our study was to assess the association of MAP score and PnSFD with perioperative outcomes after PN.

Materials and methods
The clinical data of patients treated with open or robotic PN for renal tumors were prospectively recorded in a tertiary referral centre from 2011 to 2017. Patients who had performed CT scans at our institute were considered eligible for this study. The quantity and density of perinephric fat were retrospectively measured on one axial CT-slice centered on the renal hilum. MAP score and PnFSD were therefore assigned by a single expert uroradiologist. Patients were divided into two different goups (MAP 0-3 vs MAP 4-5) based on the original classification of MAP score study, and again into two other groups (low vs high PnFSD), assigned after performing a ROC curve in order to define the best threshold value of PnFSD able to predict MAP 4-5 perinefric fat tissue. The associations between the APF imaging predictors and the surgical and pathological results were assessed.

Results
Overall 175 patients were enrolled. The median age was 64 (IQR 57-73); 115 (65.7%) were males. Median (IQR) value of MAP score and PnFSD were 3 (1-4) and 8424 (6785-10426.6) respectively. Median PADUA score was 7 (IQR: 7-8). Hilar clamping was performed in 127 (72.6%) with a median warm ischemia time (WIT) of 15 minutes (IQR: 9-18) and a median operative time of 140 minutes (IQR: 110-175). No significant association resulted between MAP score (0-3 vs 4-5) and WIT, operative time, estimated blood loss (EBL), intraoperative complications and histopathology of the renal mass. At ROC curve (Figure 1), PnFSD value of 9325 resulted the value corresponding to a 76% sensitivity and 73% specificity to predict MAP SCORE 4-5. Similar to the MAP score, there was no association between PnFSD over the threshold of 9325 and longer WIT or operative, higher EBL and intraoperative complications rate or histopathology of the renal mass.

Discussion
The predictors of adherent perinephric fat might provide surgeons further information regarding the surgical difficulty of perinephric fat dissection. However, in our study, MAP score and PnFSD were not associated with longer operative time and bleeding during PN. MAP score and PnFSD still remain useful tools to delineate the best surgical approach and forecast perioperative outcomes and possible complications; however, the experience and skills of the surgeon are likely to overcome difficulty during the perinephric fat dissection.
PROSTATE CANCER: STAGING

P268 Assessing the risk of lymph node invasion with the new 2014 International Society of Urological Pathology classification in patients with prostate cancer treated with robotic radical prostatectomy and lymph node dissection: a novel nomogram

P269 Multi-institutional external validation of the EAU guidelines recommendations for the use of staging MPMRI prior to radical prostatectomy in men with intermediate and high-risk prostate cancer

P270 Central prostate biopsy revision at referral center is key for correct patient management: results from a prospective, single center series

P271 Where do we miss extracapsular extension at multiparametric magnetic resonance imaging of the prostate? A site-per-site analysis in a single center, radical prostatectomy series

P272 Role of PSMA-PET/CT in staging prostate cancer

P273 MPMRI for the prediction of unfavorable pathological features at radical prostatectomy in men initially managed with active surveillance for low risk PCA.

P274 A preoperative nomogram to predict prostate cancer downgrading after robotic radical prostatectomy

P275 Local staging in prostate cancer: the role of capsular bulging and the length of capsular contact to predict the risk of extracapsular extension (ECE) at final pathology

P276 A preoperative nomogram to predict prostate cancer upgrading after robotic radical prostatectomy

P277 Inclusion of prostate cancer foci outside imaging detected index lesion improves the ability to predict final pathological stage: implications for a correct patient staging
ASSESSING THE RISK OF LYMPH NODE INVASION WITH THE NEW 2014 INTERNATIONAL SOCIETY OF UROLOGICAL PATHOLOGY CLASSIFICATION IN PATIENTS WITH PROSTATE CANCER TREATED WITH ROBOTIC RADICAL PROSTATECTOMY AND LYMPH NODE DISSECTION: A NOVEL NOMOGRAM

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Aim of the study
The Briganti nomogram, since its publication, has been widely adopted worldwide to predict the risk lymph node invasion in patients undergoing radical prostatectomy. However, the Briganti nomogram does not include the new 2014 International Society of Urological Pathology (ISUP) grading and it is not related to a robotic RRP series. Aim of our study was to develop a novel clinical nomogram using the new ISUP 2014 grades to predict lymph node invasion, in patients undergoing robotic radical prostatectomy for prostate cancer.

Materials and methods
Between 2012 and 2017, a consecutive series of patients with prostate cancer were treated with robotic radical prostatectomy (RRP) and lymph node dissection in a single center. Demographic, clinical and histological characteristics of the patients were recorded. Histological specimens were graded according to the new 2014 ISUP classification. A Nomogram was generated based on the logistic regression model used to predict lymph-node invasion.

Results
Overall 7769 patients were enrolled with a median of 12 (8/16) lymph nodes removed. Median age was 65 (60/70) years, median BMI was 27 (25/29) kg/m^2, median prostate volume was 38 (29/50) ml and median PSA was 7.4 (5.5/11) ng/ml. Advanced clinical stage (≥cT3a) was present in 126/7769 (1.6%) of the patients. On RRP 3068/7769 (40%) presented high grade disease (ISUP 2014≥3), 3145/7769 (19%) presented high stage disease (≥pT3a) and 680/7769 (9%) presented positive lymph nodes. On multivariate analysis clinical stage (OR=2.85; 95%CI:1.87-4.35, p=0.001), PSA density (OR=1.65, 95%CI: 1.38-1.97, p=0.001), percentage of positive cores (OR=1.02; 95%CI:1.02-1.03; p=0.001) and ISUP 2014 grade (OR=1.93; 95%CI:1.80-4.35, p=0.001) were independent predictors of positive lymph nodes. Figure 1 graphically shows the multivariable effect of each variable on the probability of positive lymph nodes in the form of a nomogram. The c-index for the model was 0.89.

Discussion
The implementation of the new 2014 ISUP classification warrants new tools to better classify the risk of lymph node invasion. Our novel contemporary predicting tool including ISUP grades and PSA density to predict lymph node invasion presented an excellent predictive accuracy. External validation is warranted before its clinical implementation.
MULTI-INSTITUTIONAL EXTERNAL VALIDATION OF THE EAU GUIDELINES RECOMMENDATIONS FOR THE USE OF STAGING MPMRI PRIOR TO RADICAL PROSTATECTOMY IN MEN WITH INTERMEDIATE AND HIGH-RISK PROSTATE CANCER


Aim of the study
The EAU guidelines recommend to perform mpMRI for local staging of intermediate-risk prostate cancer (PCa) patients with predominantly Gleason pattern 4 (ISUP grade 3) and high-risk PCa patients according to the EAU classification. Such recommendations derive mainly from retrospective, single center series and lack of external validation. We therefore aimed at validating the EAU indications for preoperative local staging with mpMRI in these patient groups.

Materials and methods
We identified 723 patients treated with radical prostatectomy (RP) who underwent preoperative mpMRI of the prostate for local staging at four tertiary referral centres between 2005 and 2017. All patients underwent 1.5 T mpMRI study using an endorectal coil. The study outcomes were extracapsular extension (ECE) and seminal vesicle invasion (SVI). Two multivariable logistic regression models were developed and compared per each outcome and per each risk group (ISUP grade 3 and high-risk PCa patients): 1) a base model using age at surgery, PSA (ng/ml), clinical stage (DRE negative vs. positive), primary Gleason grade (3 vs. ≥4), secondary Gleason grade (3 vs. ≥4) and percentage of positive cores as covariates; 2) an advanced model including MRI T-stage to first multivariable model instead of clinical stage assessed by DRE. The predictive accuracy (PA) of the two models was assessed and compared using the area under the curve. Decision curve analyses were performed to compare the net benefit associated with the use of the two models.

Results
Overall, 258 (35.7%) and 465 (64.3%) patients were ISUP grade 3 and high-risk, respectively. Within ISUP grade 3 group, 125 (48.4%) and 46 (17.8%) patients had ECE and SVI, respectively. The PA of the basic and of the advanced models predicting ECE were 0.62 vs. 0.68, respectively. The PA of the basic and of the advanced models predicting SVI were 0.69 vs. 0.71, respectively. At decision curve analyses, the advanced model with the inclusion of MRI T-stage resulted into higher net-benefit relative to the base model in the both outcomes of interest. Within high-risk patients, 313 (67%) and 148 (31.8%) patients had ECE and SVI, respectively. The PA of the basic and of the advanced models predicting ECE were 0.68 vs. 0.68, respectively. The PA of the basic and of the advanced models predicting SVI were 0.68 vs. 0.74, respectively. At decision curve analyses, the advanced model with the inclusion of MRI T-stage resulted into higher net-benefit relative to the basic model only when the outcome of interest was SVI.

Discussion
Local staging with mpMRI combined with clinical information can be useful in preoperative assessment of patients candidate to RP especially in patients who harbour ISUP grade 3. Whether this translates into better oncological outcomes still needs to be demonstrated.
CENTRAL PROSTATE BIOPSY REVISION AT REFERRAL CENTER IS KEY FOR CORRECT PATIENT MANAGEMENT: RESULTS FROM A PROSPECTIVE, SINGLE CENTER SERIES


Aim of the study
An accurate histological classification is key for correct patient management in prostate cancer (PCa). Specifically, when strict diagnostic criteria are to be followed in a certain care pathway, it is crucial to rely on accurate disease classification at diagnosis. This is crucial in the clinical decision making process of PCa which mainly rely on accurate biopsy features. We thus evaluated the impact of centralized histopathological biopsy revision on PCa patient management.

Materials and methods
We evaluated 863 patients treated with radical prostatectomy (RP) at our Institution between 2015 and 2017 for localized PCa. Patients receiving biopsy outside our Institution had subsequent centralized histopathological revision by a single expert pathologist and were prospectively collected (n=251). Descriptive analyses assessed the impact of discordance between original and revised biopsy features [i.e. Prostate cancer Gleason score (GS) grade groups (PCg) and number of positive cores] on two main clinical settings: 1. The rate of patients eligible for AS (according to PRIAS) 2. The rate of candidates to LND (according to a Briganti nomogram 5% probability cut-off) at RP. The rate of patients eligible for AS based on original biopsy who experienced adverse pathology (≥pT3a, N1 or PCg ≥2) at RP and the rate of patients originally not suitable for eLND but who then were found with pN1 disease after biopsy review were calculated. The nomogram accuracy in LNI prediction according to original and revised biopsy features was calculated using the area under the curve (AUC) method.

Results
The discordance rate between original and revised biopsy GS was 40.3%. Similarly, the discordance rate in the number of positive cores was 32.6%. The rate of patients potentially eligible for AS was significantly higher based on original biopsy (13.1% vs. 1.9% after revision, respectively; p≤0.001). The rate of patients candidate for eLND at RP was doubled after biopsy revision (40.2% vs. 20.3% respectively; p≤0.001). Of men potentially eligible for AS at original biopsy, the majority (78.8%) experienced adverse pathological features at RP. Within patients who did not require eLND according to original biopsy features but who subsequently received eLND for a LNI risk ≥5 after revision (n=52; 36.1%), 8 had LNI at RP (15.4%). The accuracy of LNI nomogram at RP was higher after biopsy revision (83.8% vs. 89.1%, respectively; p=0.03)

Discussion
Central biopsy revision performed by expert uro-pathologist significantly reduces the rate of possible mismanagement of PCa patients. Approximately 10% of men with localized PCa initially candidate for AS harbored instead adverse pathological features. Similarly, 15% of men initially considered at low risk for LNI did harbor LNI at RP. Therefore, central biopsy revision should be recommended for a correct patient management.
WHERE DO WE MISS EXTRACAPSULAR EXTENSION AT MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING OF THE PROSTATE? A SITE-PER-SITE ANALYSIS IN A SINGLE CENTER, RADICAL PROSTATECTOMY SERIES


Aim of the study
The role of preoperative staging of multiparametric MRI (mpMRI) in prostate cancer (PCa) patients undergoing radical prostatectomy (RP) is still controversial, where mpMRI may miss microscopic extracapsular extension (ECE). We aimed at assessing the predictive accuracy of mpMRI in detecting ECE not only at the level of the index lesion (IL) but also according to the exact tumor location outside IL.

Materials and methods
Overall, 137 PCa patients treated with RP at a single center were identified. All patients had a clinical stage T1 at digital rectal examination and underwent a preoperative mpMRI. All images were reviewed by two high-volume dedicated uro-radiologists. All prostatectomy specimens were reviewed by a single dedicated uro-pathologist and whole mount section was performed. Detailed data on the site (apical vs. mid-prostate vs. base) and extent (focal vs. non-focal, where focal ECE was defined as a few neoplastic glands outside the prostate) of pathological ECE was collected for all patients. The sensitivity and specificity of mpMRI were evaluated in both per-patient and per-lesion analyses.

Results
Overall, 54 (39.4%), 60 (43.6%) and 23 (16.8%) patients had pathological grade group 1, 2-3 and 4-5 PCa and 35 (25.5%) men had high-risk disease. Overall, 31 (22.6%) and 59 (43.1%) patients had suspicious of ECE at mpMRI and ECE at final pathology, respectively. mpMRI correctly identified ECE in 25 (42.4%) patients. The sensitivity and specificity of mpMRI for ECE were 42.4 and 92.3%. In high-risk patients, the sensitivity and specificity were 69.2 and 77.8%. The sensitivity and specificity of mpMRI for nonfocal ECE were 51.3 and 88.8% in the overall population and 77.8 and 73.3% in high-risk patients. Of all 106 ECE lesions, 22 (20.7%), 37 (34.9%) and 47 (20.7%) were located at the apex, midprostate and base, respectively. At a per-site analysis, mpMRI correctly identified ECE in 44 (41.5%) sites. Moreover, mpMRI correctly identified ECE in 5 (22.7%), 15 (40.5%) and 12 (25.5%) patients at the apex, midprostate and base. The sensitivity and specificity were 22.7 and 93.6% vs. 40.5 and 93.6% vs. 25.5 and 94.7% for apical, midprostate and base lesions. In high-risk patients, the sensitivity and specificity were 57.1 and 80% vs. 64.7 and 72.2% vs. 60 and 81% for apical, midprostate and base lesions.

Discussion
The sensitivity and specificity of mpMRI for pathological ECE vary according to disease characteristics, extent and site of ECE. MpMRI has a high specificity but low sensitivity in the overall population. However, the sensitivity is higher when predicting non-focal ECE in high-risk patients and midprostate ECE as compared to apical or base involvement. Although mpMRI might guide surgeons when planning lateral approach, it cannot be reliably used in preoperative staging to rule out apical and basal ECE.
ROLE OF PSMA-PET/CT IN STAGING PROSTATE CANCER


Aim of the study
To assess the diagnostic value of [68Ga]-PSMA PET-CT (PSMA-PET) in primary staging of patients with prostate cancer (PCa) and to assess PSMA-PET impact on patient management in the context of a Pca Unit.

Materials and methods
We retrospectively analysed 90 PET/CT exams with 68Ga-PSMA performed in our institution between April 2016 and March 2018, for staging biopsy-proven prostate adenocarcinoma. PET results were verified with postoperative histopathology (6 pts with PSMA uptake in lymph nodes), multiparametric MR (25 pts), biopsy (5 pts) or other diagnostics like Bone Scan (10 pts), ceCT and follow-up. Results were available for 78 patients. Synthesis of [68Ga]-PSMA-HBED-CC was performed using an automated module (Scintomics GRP®). 68Ga was obtained from a IGG100 68Ge/68Ga generator (Eckert & Ziegler). Mean yield of labelling was 65.53% and radiochemical purity 99.90% . PET dynamic images were acquired immediately after i.v. injection of [68Ga]PSMA-HBED-CC (150 MBq) on a hybrid scanner Discovery IQ (GE Healthcare). Whole body PET/CT was acquired (skull to femur medium thigh) 60 min after tracer injection.

Results
At the moment of the PET scan mean PSA value was 14.6 ng/mL (range 2.3-124 ng/mL), Gleason Score (GS) 7 in 35 pts and 8-10 in 23 pts. Moreover, PSMA PET was performed in 20 pts with GS 6 disease evaluated for active surveillance or wait&see. In 7/78 patients PET was performed during androgen deprivation therapy (ADT). PSMA-PET revealed at least one distant finding (bone, lung or lymph node metastases) in 17/78 patients (22%) with PSA range 3.5-124 ng/ml, 3 pts with GS 6. In 41/78 patients PET showed PSMA uptake corresponding to the primary (mean PSA 13.5 ng/mL, range 2.7-61.8). Oligometastatic disease (<3 lesions) was assessed in 6/17 pts with distant lesions driving to localized treatment. In 4/7 patients during ADT PSMA-PET revealed distant metastases (bone, lung and abdominal and thoracic lymph nodes) and intraprostatic lesion in 3/7. Fifty-eight PET scans were performed in pts with intermediate/high-risk Pca with positive rate of 81% and distant disease detection rate of 28% (16 pts). Number of distant lesions at PSMA-PET increased with Gleason Score and current ADT. In GS disease 3+4 PSMA-PET didn’t reveal any nodal or bony lesions.

Discussion
In our cohort, 68Ga-PSMA PET/CT showed to identify patients with intermediate- to high-risk PCa and metastatic disease allowing lesion driving treatment. Moreover, PSMA-PET allows to positively influence treatment management of pts candidate to surveillance (GS 6) identifying underestimated metastatic lesions and to change the planned treatment with more enlarged surgery (lymph node dissection) and/or lesion targeting therapies.
MPMRI FOR THE PREDICTION OF UNFAVORABLE PATHOLOGICAL FEATURES AT RADICAL PROSTATECTOMY IN MEN INITIALLY MANAGED WITH ACTIVE SURVEILLANCE FOR LOW RISK PCA

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Aim of the study
Active surveillance (AS) is recommended for clinically insignificant prostate cancer (PCa) with a Gleason Score 3+3 on random biopsy. Confirmatory assessment can include MRI with targeted biopsy when indicated. Reclassification to a clinically significant PCa may occur in 14% to 27% of men undergoing a confirmatory biopsy with saturation and targeted biopsy of lesion/s detected at mpMRI. The aim of our study is to assess the value of mpMRI and its derived variables to predict pathological features (upgrading and upstaging) at radical prostatectomy in men initially managed with AS.

Materials and methods
Fifty-three men diagnosed with PCa GS 6 3+3 were considered. All patients met inclusion criteria for the enrollment in AS. Four to 6 months after the standard biopsy, all patients underwent mpMRI. A confirmatory biopsy with MRI targeted biopsy (if a PIRADS > 3 lesion was found) and/or standard saturation biopsy was performed in 49 out of 53 patients. Afterwards, radical prostatectomy was performed in 29/49 patients. Four further patients underwent surgery without a confirmatory biopsy, based upon a PIRADS 4 finding at mpMRI. The primary end point of the study is to assess the rate of upgrading and upstaging at radical prostatectomy, compared to the initial systematic 12 cores biopsy. The analysis of variables potentially affecting this primary event was considered a secondary endpoint. Data were inserted in a statistical database and analyzed with SPSS for Windows. Non parametric test and t test for unpaired samples were used to analyze variables potentially related to the primary end point (PSA, PSA density, percent of core involvement, lesion volume, prostate volume, PIRADSV2 score).

Results
Upgrading and upstaging at radical prostatectomy compared to clinical outcomes on the initial systematic biopsy were evident in 66% of patients (22/33). 76% of men with a PIRADS 4 lesion (19/25) were reclassified to a more aggressive disease category, compared to 37,5% (3/8) of patients with a PIRADS = 3 lesion (p=0,04). Mean PIRADS score was 4,05 +/- 0,57 in case of upgrading plus upstaging, compared to a mean PIRADS score set at 3,55 +/- 0,522 in case of absence of unfavorable pathological features (p=0,02). PSA, PSA density, percent of positive core at the first biopsy, number of positive cores at the confirmatory biopsy, MRI assessed lesion volume, MRI derived prostate volume did not affect the primary end point.

Discussion
mpMRI may be used as a confirmatory tool for patients eligible to active surveillance. The presence of a lesion PIRADS 4, with or without targeted biopsy, is associated to unfavorable pathological outcomes at radical prostatectomy, compared to clinical characteristics derived from systematic biopsy. Further studies on larger sample size are required to confirm the role of mpMRI itself in AS of low risk PCAs.
A PREOPERATIVE NOMOGRAM TO PREDICT PROSTATE CANCER DOWNGRADING AFTER ROBOTIC RADICAL PROSTATECTOMY


Aim of the study
In the past years, some tools have been developed to predict the risk of downgrading in radical prostatectomy patients, however none of these tools has been developed in a robotic radical prostatectomy cohort. Aim of our study was to develop a clinical nomogram to predict downgrading in patients undergoing robotic radical prostatectomy for prostate cancer.

Materials and methods
Between 2012 and 2017, a consecutive series of patients with prostate cancer were treated with robotic radical prostatectomy (RRP) in a single center. Demographic, clinical and histological characteristics of the patients were recorded. A Nomogram was generated based on the logistic regression model used to predict clinically significant downgrading (fig.1). Clinically significant downgrading was defined as: from Gleason≥4+3 to Gleason≤3+4 to and from Gleason≥8 to Gleason ≤4+3.

Results
Overall 8357 patients were enrolled. Median age was 64 (60/70) years, median BMI was 27 (25/29) kg/m^2, median prostate volume was 38 (29/50) ml and median PSA was 7.4 (5.5/11) ng/ml. On RRP 1052/8357 (13%) patients presented a clinically significant downgrading. On multivariate analysis Age (OR=1.02; 95%CI:1.01-1,04 p=0.024), PSA density (OR=0.42, 95%CI: 0.27-0.67, p=0.001), percentage of positive cores (OR=0.99; 95%CI:0.98-0.99; p=0.001), primary Gleason score (OR=14.2; 95%CI:11.9-17.1, p=0.001) and secondary Gleason score (OR=1.17, 95%CI: 1.03-1.35; p=0.001) were independent predictors of downgrading. Figure 1 graphically shows the multivariable effect of each variable on the probability of downgrading in the form of a nomogram. The predictive accuracy for the model was 0.89.

Discussion
Our novel predicting tool developed in a robotic radical prostatectomy cohort presented an excellent accuracy. The nomogram might help selecting those patients at increased risk of downgrading, with possible consequences in their diagnostic and treatment pathways. Before its clinical implementation external validation is warranted.
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LOCAL STAGING IN PROSTATE CANCER: THE ROLE OF CAPSULAR BULGING AND THE LENGTH OF CAPSULAR CONTACT TO PREDICT THE RISK OF EXTRACAPSULAR EXTENTION (ECE) AT FINAL PATHOLOGY


Aim of the study
In recent years, multiparametric Magnetic Resonance (mp-MRI) had a widespread diffusion in the preoperative management of prostate cancer (PCa) in order to guide target biopsy and for local staging. The presence of capsular bulging and maximum length of capsular contact (LCCmax) at mp-MRI has shown to be related to ECE at final pathological findings. Aim of this study is to evaluate the role of capsular bulging and LCCmax as predictors of ECE.

Materials and methods
We extracted retrospectively from our prospective maintained radical prostatectomy database patients who underwent to mp-MRI preoperatively from January 2016 to December 2017. Firstly, according to the Literature, a cut-off of LCCmax >20mm was chosen as predictor of ECE. Then we evaluated if 15 mm of contact length could be sufficient for our purpose. Secondary, the role of capsular bulging was analysed. The presence of ECE at histopathological findings was assessed by an expert dedicated uro-pathologist. Positive and negative predictive values (PPV and NPV) of these different variables were calculated.

Results
We included in this study 162 patients. At final pathological analysis, ECE was observed in 97 pts. Among them 71 (73.2%) pts had LCCmax ≥ 20 mm (PPV: 0.82; NPV: 0.77). Considering 15 mm as cut-off 87/97 (89.7%) patients had LCCmax ≥ 15 mm (PPV: 0.77; NPV: 0.79). Finally, 84/97 (86.59%) patients showed capsular bulging at mp-MRI (PPV: 0.79; NPV: 0.77).

Discussion
According to our preliminary evaluation both LCCmax and capsular bulging at preoperative mp-MRI seems to play a role in predicting the risk of ECE at final pathological findings.
A PREOPERATIVE NOMOGRAM TO PREDICT PROSTATE CANCER UPGRADING AFTER ROBOTIC RADICAL PROSTATECTOMY

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Aim of the study
In the past years, some tools have been developed to predict the risk of upgrading in radical prostatectomy patients, however none of these tools has been developed in a robotic radical prostatectomy cohort. Aim of our study was to develop a clinical nomogram to predict upgrading in patients undergoing robotic radical prostatectomy for prostate cancer.

Materials and methods
Between 2012 and 2017, a consecutive series of patients with prostate cancer were treated with robotic radical prostatectomy (RRP) in a single center. Demographic, clinical and histological characteristics of the patients were recorded. A Nomogram was generated based on the logistic regression model used to predict clinically significant upgrading. Clinically significant upgrading was defined as: Gleason≤ 3+4 to Gleason≥ 4+3 and from Gleason ≤4+3 to Gleason≥8. Discrimination and calibration were assessed with the receiver operator characteristics and calibration plot respectively.

Results
Overall 8357 patients were enrolled. Median age was 64 (60/70) years, median BMI was 27 (25/29) kg/m^2, mean prostate volume was 38 (29/50) ml and median PSA was 7.4 (5.5/11) ng/ml. On RRP 1629/8357 (19%) presented a clinically significant upgrading. On multivariate analysis Age (OR=1.04; 95%CI:1.03-1.05, p=0.001), BMI (OR=1.02; 95%CI:1.01-1.04, p=0.005), PSA density (OR=2.9, 95%CI: 2.29-3.7, p=0.001), number of cores (OR=0.96; 95%CI:0.95-0.98; p=0.001), number of positive cores (OR=0.96; 95%CI:0.95-0.98; p=0.001), primary Gleason (OR=0.40; 95%CI:0.35-0.46, p=0.001) and secondary Gleason (OR=1.15, 95%CI: 1.05-1.27; p=0.001) were independent predictors of upgrading. Figure 1 graphically shows the multivariable effect of each variable on the probability of upgrading in the form of a nomogram and the calibration plot. The accuracy for the model was 0.70.

Discussion
In our cohort of patients, upgrading is present in one out of five patients. Our novel predicting tool, might help selecting those patients at increased risk of upgrading, with possible consequences in their diagnostic and treatment pathways. Before its clinical implementation external validation is warranted.
INCLUSION OF PROSTATE CANCER FOCI OUTSIDE IMAGING DETECTED INDEX LesION IMPROVES THE ABILITY TO PREDICT FINAL PATHOLOGICAL STAGE: IMPLICATIONS FOR A CORRECT PATIENT STAGING


Aim of the study
Studies assessing the relationship between the non-index lesion characteristics and the relationship within the adverse outcomes at radical prostatectomy (RP) are mandatory to understand whether random samples of the prostate should always be considered in association with targeted biopsies. We hypothesized that the inclusion of non-index lesion information may improve the ability to predict adverse pathological outcomes.

Materials and methods
The study included 373 patients who underwent mpMRI of the prostate with subsequent targeted and concomitant systematic biopsy at two tertiary referral centres between 2014 and 2017. All patients underwent 1.5 T mpMRI study using an endorectal coil and all patients had a negative digital rectal examination at the time of mpMRI-targeted biopsy. All these patients were treated with RP during the same time frame. Multivariable logistic regression models (MVA) were used to assess the impact of the presence of csPCa (defined as Gleason score at biopsy ≥7) outside the index lesion on the risk of extracapsular extension (ECE) and positive surgical margins (PSMs) at final pathology. Index lesion was defined as the lesion identified at mpMRI. For each outcome, two models were compared: 1) a basic model using age at biopsy, PSA (ng/ml), prostate volume (ml) and csPCa within the index lesion; 2) an advanced model including also csPCa outside the index lesion to the basic model. The predictive accuracy (PA) of the four models was assessed and compared using the receiver operating characteristic-derived area under the curve (AUC).

Results
Overall, 108 (29%) and 76 (20.4%) patients had ECE and PSMs, respectively. At MVA of the basic models, csPCa within the index lesion was the only independent predictors of ECE (p<0.001), while PSA and prostate volume were independent predictors of PSMs (all p≤0.02). At MVA of the advanced models, PSA and csPCa within and outside the index lesions were independent predictors of ECE (all p≤0.04), while PSA and prostate volume were independent predictors of PSMs (all p≤0.02). By adding the information of pathological findings outside the index lesion to the basic model, AUC for predicting ECE significantly increased from 0.67 to 0.72. Conversely, no difference in AUC was observed in predicting PSMs between the basic and advanced models (0.65 vs. 0.65).

Discussion
We provided evidence that the inclusion of information derived from non-index lesions detected by systematic biopsies improves our ability to identify patients at higher risk of ECE. These findings confirm that random samples of the prostate during targeted biopsies are needed to reliable predict final stage at RP.
NON-MUSCLE-INVASIVE BLADDER CANCER: DIAGNOSIS, TREATMENT AND PROGNOSTIC FACTORS

P278 DIAGNOSTIC PREDICTIVE VALUE OF XPERT BLADDER CANCER MONITOR IN THE FOLLOW UP OF PATIENTS AFFECTED BY NON MUSCLE INVASIVE BLADDER CANCER (NMIBC)

P279 OPTICAL BIOPSY WITH CONFOCAL LASER ENDOMICROSCOPY (CLE) FOR THE DIAGNOSIS OF DYSPLASIA AND CARCINOMA IN SITU (CIS) OF THE BLADDER: INTERIM RESULTS OF A PHASE II PROSPECTIVE STUDY

P280 SYSTEMIC INFLAMMATORY MARKERS AND ONCOLOGICAL OUTCOMES IN PATIENTS WITH HIGH RISK NON-MUSCLE INVASIVE UROTHELIAL BLADDER CANCER

P281 URINARY CYTOLOGY MODIFICATIONS IN PATIENTS TREATED WITH DEVICE ASSISTED THERAPIES FOR NON-MUSCLE INVASIVE BLADDER CANCER

P282 QUANTITATIVE FLUORESCENCE IN SITU HYBRIDIZATION (FISH) IN URINE SPECIMENS CAN IMPROVE EORTC SCORE FOR PREDICTING RECURRENCE AND PROGRESSION OF NON-MUSCLE-INVASIVE BLADDER CANCER (NMIBC)

P283 CIRCULATING TUMOR CELLS ARE A STRONG PREDICTOR OF CANCER SPECIFIC SURVIVAL IN HIGH RISK NONMUSCLE INVASIVE BLADDER CANCER: FINAL ANALYSIS OF A PROSPECTIVE OBSERVATIONAL STUDY

P284 SIMULTANEOUS TRANSURETHRAL RESECTION OF BLADDER TUMOR AND PROSTATE: RESULTS FROM A RANDOMIZED CONTROLLED TRIAL

P285 INTRAVESICAL SEQUENTIAL BCG / ELECTROMOTIVE DRUG ADMINISTRATION MITOMYCIN C (EMDA-MMC) IN HIGH RISK NON MUSCLE INVASIVE BLADDER CANCER - RESULTS FROM A RETROSPECTIVE ANALYSIS

P286 ELDERLY (>75 YEAR-OLD) PATIENTS WITH HIGH-GRADE T1 BLADDER CANCER ARE NOT POORER CANDIDATES TO INTRAVESICAL INSTILLATION OF BACILLUS CALMETTE GUERIN TREATMENT

P287 MULTIMODAL FIBER OPTIC SPECTROSCOPY: A NOVEL TOOL IN UROTHELIAL CANCER DIAGNOSIS?
DIAGNOSTIC PREDICTIVE VALUE OF XPERT BLADDER CANCER MONITOR IN THE FOLLOW UP OF PATIENTS AFFECTED BY NON MUSCLE INVASIVE BLADDER CANCER (NMIBC)

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Aim of the study
According to the in-use guidelines, cystoscopy and urine cytology represent the gold standard for monitoring superficial bladder cancer [5]. Cystoscopy is the most efficient method currently available for the detection of primary or recurrent tumours, but it is invasive and causes discomfort to the patients. Nevertheless, the sensitivity of cystoscopy is limited to the tumours that can be visualised. The Xpert Bladder Cancer Monitor is a new urinary marker test based on the evaluation of the presence of 5 targets mRNAs overexpressed in patient with bladder cancer. The aim of our study was to evaluate diagnostic accuracy of the Xpert test in the follow up of patients with NMIBC.

Materials and methods
231 patients under follow up for NMIBC were included in this prospective study. Urine samples were analyzed with the Xpert BC Monitor kit and urinary cytology. Subsequently, patients underwent cystoscopy and if positive a transurethral resection of the bladder. Cytologies were evaluated according to the Paris System; Xpert BC Monitor test was reported as negative or positive (cut-off total LDA=0.5). Sensitivity, specificity, positive (PPV) and negative predictive value (NPV) of Xpert and cytology were calculated using cystoscopy or histology as gold standard.

Results
Of the 231 patients enrolled in the study one patient had to be excluded due to a not diagnostic cytology because of artefacts and error sign in the Xpert BC Monitor. Mean age of the remaining 230 patients (176 males and 54 females) was 71.32 years. 75 patients (32.6%) were previously treated with an intravesical therapy with Bacillus Calmette Guerin (BCG) and 7 (3%) with Mytomycin (Tab.1) 52 out of the 230 patients (22.6%) showed a NMIBC recurrence, 45 (86.5%) low grade NMIBC, 7 (13.5%) had a high grade NMIBC. Overall sensitivity was 11.5 % for cytology, 46.2% for Xpert Monitor and 48.1% for the two tests combined. The sensitivity of cytology increased from 4.4% in low grade (LG) to 57.1% in high grade (HG) tumours whereas, for the Xpert Monitor test, the sensitivity was 40% in LG and 85.7% in HG tumours. Combined cytology and Xpert Monitor tests yielded an overall sensitivity of 42.% for LG and 85.7% for HG tumours. Overall specificity was 97.2% for cytology, 76.9% for Xpert Monitor and 75.8% for the two tests combined. PPV for cytology was 54.5% and for Xpert Monitor 36.9%. For the 2 tests combined it was 36.8%. NPV was very similar for the 2 tests: 79% for cytology, and 83.3% for Xpert Monitor and the 2 tests combined. The diagnostic efficacy of Xpert BC Monitor was good, with an Area under the Curve (AUC) of 0.65

Discussion
Sensitivity of Xpert BC Monitor Test was significantly higher than for cytology as expected in a LG predominated BC group. The test performed very good in terms of specificity but could not reach the extremely high value of cytology, while PPV and NPV performed approximately the same for both tests.
OPTICAL BIOPSY WITH CONFOCAL LASER ENDOMICROSCOPY (CLE) FOR THE DIAGNOSIS OF DYSPLASIA AND CARCINOMA IN SITU (CIS) OF THE BLADDER: INTERIM RESULTS OF A PHASE II PROSPECTIVE STUDY

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Aim of the study
CLE is a new endoscopic imaging technology that can complement white light cystoscopy by providing in vivo bladder histopathology. The diagnosis of dysplasia and carcinoma in situ of the bladder during TUR is of paramount importance for planning the future therapeutic strategy in Non muscle invasive bladder cancer. The objective of the study was to evaluate if CLE can diagnose dysplasia and Cis without biopsy during TUR or bladder mapping.

Materials and methods
Patients with positive cytology scheduled to undergo TUR of bladder tumors or mapping were recruited. Steps: 1. standard cystoscopy, identification by surgeon (MB) of the suspicious areas of dysplasia and cis, reportes in bladder diagram. 2. administration of fluorescin intravesically as a contrast dye kept for 8-10 min.3. A 2.6 mm probe based confocal laser endomicroscope passed through a rigid or flexible scope to touch the areas of normal and abnormal bladder mucosa with visualization of tissue in the screen before and after TUR. 4. The surgeon makes a presumtive diagnosis watching only the screen 5. Images were collected with 488 nm excitation at 8 to 12 frames per second. 6. Tur or mapping was performed 7. Ex vivo evaluation with CLE also done and compared with the in vivo procedure. 8. biopsies of the suspicious area of bladder mucosa were sent to pathologists for the final diagnosis.

Results
32 patients have to be recruited in this phase II prospective study. We report the interim analysys on 16 patients. All the patients had positive cytology and/or Ta-T1 High garde TCC of the bladder. 7 were primary and 5 recurrent tumors trated with BCG or MMC + EMDA. We previously reported the results and images of a phase I study with CLE which is able to detect tissue abnormalities. High grade tumors show markedly irregular architecture and cellular pleomorphism. Some artifact were often present which were delete during slide preparation. The concordance between the surgeon diagnosis of displasia or cis on the screen during CLE was confirmed by the final pathological evaluation in 8/16 patients (50%). 4 patients presented also inflammation wich was detected by the surgeon in only 2 patients. Ex vivo evaluation was more difficult due to the small fragment of the bladder mucosa and to artifact. Concordance between in vivo and ex vivo CLE was only 30%.

Discussion
This is the first report on the in vivo evaluation of dysplasia and Cis of the bladder with CLE. Differences among normal urothelium, high grade tumors, dysplasia and Cis were observed. All the images will be part of an atlas which will help in the correct diagnosis. The study will continue due to the interesting results.
SYSTEMIC INFLAMMATORY MARKERS AND ONCOLOGICAL OUTCOMES IN PATIENTS WITH HIGH RISK NON-MUSCLE INVASIVE UROTHELIAL BLADDER CANCER


Aim of the study
Serum values of neutrophils, platelets and lymphocytes has been recognized as a poor prognostic factor for many solid tumors, including bladder cancer (BC). We aimed to evaluate the prognostic role of the combination of neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR) and lymphocyte-to-monocyte ratio (LMR) in patients with high risk non-muscle invasive urothelial BC (NMIBC).

Materials and methods
A total of 1151 high-risk NMIBC patients from 13 academic institutions underwent first trans-urethral resection of the bladder tumor (TURBT) between January 1st, 2002 to December 31st, 2012. Median follow-up was 48 months. Multivariable Cox regression analysis was performed to identify predictive factors of recurrence, progression, cancer specific mortality and overall mortality. A systemic inflammatory markers (SIM) has been calculated on the basis of the cut-off on NLR, PLR and LMR.

Results
In total 583 (50.48%) had a SIM ≥2. Interestingly, we found that a trend of decrease of rate of tumor size ≥3 cm in patients with high SIM (p=0.016) while an increase of the rate of CIS (<0.01). The 48-months recurrence free survival was 80.8%, 47.35%, 20.67% and 17.06% in patients with SIM of 0,1,2 and 3 respectively (p<0.01 at log-rank test) while the 48-months progression free-survival was 92.0%, 75.67%, 72.85% and 63.1% (p<0.01 at log-rank test). We found that the increase of SIM score was associated with a significantly increase of hazard ratio (HR) of recurrence (hazard ratios: 3.73, 7.06, and 7.88) and progression (HR: 3.15, 4.41 and 5.83). Center and BCG regimens were not independently associated with tumor recurrence or progression at the multivariable Cox regression analysis.

Discussion
Patients with high-grade T1 stage NMIBC with high SIM showed worse oncological outcomes in terms of recurrence and progression. Patients with SIM of 3 showed a risk of 37% to progress compared to 8% of patients with SIM of 0. The availability of these biomarkers in the routine clinical practice give further relevance in identifying the prognostic role of immune cells in patients with BC. Furthermore, these results may be translated into clinical practice to stratify patients who may benefit from early cystectomy.
URINARY CYTOLOGY MODIFICATIONS IN PATIENTS TREATED WITH DEVICE ASSISTED THERAPIES FOR NON-MUSCLE INVASIVE BLADDER CANCER


Aim of the study
Electromotive drug administration (EMDA®) and chemo-hyperthermia (C-HT; Synergo®) are two devices utilized in the treatment of non muscle-invasive bladder cancer (NMIBC) to increase the efficacy of the well-known chemotherapeutic agent Mitomycin C (MMC). These therapies could have a negative effect on the diagnostic sensibility and specificity of an essential tool in the NMIBC management as urinary cytology.

Materials and methods
During the period from 2012 to 2014, we evaluated urinary cytology of 110 Patients with a BCG refractory NMIBC treated with EMDA® MMC or with Synergo® with a complete response to endovesical treatment defined as no recurrence at the first endoscopic evaluation after 3 months. Both urine and bladder washing cytology were collected from all patients and were examined by two expert pathologists with at least 10 years of experience in urinary pathology. The morphological changes were evaluated in urine samples processed by Thin Prep method. All cases examined were classified according to The Paris System Classification as negative per high urothelial carcinoma (NHGUC) or atypical urothelial cells (AUC) and for the same patients it was done also a histologic evaluation with random bladder biopsies.

Results
In the 50 patients treated with EMDA®/MMC, 35 samples were classified as Negative for HGUC and 15 cases were classified as AUC, while in the 60 patients treated with C-HT/MMC, 43 samples were Negative for HGUC and 17 cases were classified AUC. The main morphological changes in urine samples were increase of cellularity and nuclear size with a change of nuclear/ cytoplasmic ratio (N/C). The hyperchromasia and irregular nuclear chromatin were rarely observed. The irregular nuclear membrane rarely identified in urine cytology after EMDA®/MMC treatment, is a feature present in patients C-HT/MMC treated. All the patients did not have a NMIBC recurrence at the histology.

Discussion
The increase of cellularity and nuclear size and the alteration of nuclear/cytoplasmic ratio (N/C) were common in patients treated with EMDA®/MMC and C-HT/MMC without clinical and histological evidence of recurrence of neoplasia. The hyperchromasia and irregular nuclear chromatin were rarely observed. The irregular nuclear membrane rarely identified in urine cytology after EMDA®/MMC treatment, is a feature present in patients C-HT/MMC treated. These alterations need to be known by uropathologist in order to better differentiate in this specific population of patients the modifications related to these therapies and the possibility of a recurrent disease.
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QUANTITATIVE FLUORESCENCE IN SITU HYBRIDIZATION (FISH) IN URINE SPECIMENS CAN IMPROVE EORTC SCORE FOR PREDICTING RECURRENCE AND PROGRESSION OF NON-MUSCLE-INVASIVE BLADDER CANCER (NMIBC)

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Aim of the study
The European Organization for Research and Treatment of Cancer (EORTC) developed a scoring system based on clinical variables to predict risk of recurrence and progression of NMIBC. However, this score does not include the cytological abnormalities in urine specimen. The aim of this study was to determine whether the addition of the percentage of chromosomally abnormal cells by FISH to EORTC score improved its capability to predict recurrence and progression of NMIBC.

Materials and methods
A cohort of patients, who underwent urine FISH test during follow-up for NMIMC between 2000 and 2004, was identified through medical records. Clinical variables including age, sex, clinical T stage, number of tumors, tumor diameter, grade, concomitant CIS, prior recurrence rate and prior treatment were collected and used to calculate EORTC score. The percentage of abnormal cells at FISH (cell_rate) in urine specimens was assessed as a continuous variable (from 1 to 100%). We used multivariate Cox logistic regression models to determine the association between EORTC score, before and after the addition of cell_rate, and recurrence and progression. Harrell’s concordance index, and receiver operating characteristic (ROC) curve was also performed.

Results
Overall, 130 patients were included in the analyses. Median follow-up time was 92 months (IQR 47, 146). The median age was 74.9 years (IQR: 67.1-78.5). Of all, 102 (78.5%), 33 (25.4%), and 25 (19.7%) patients experienced recurrence, progression, and bladder cancer-specific death, respectively. For recurrence, the concordance index of cell_rate, EORTC score and EORTC score including cell_rate was 0.568 (p=0.032), 0.638 (p<0.001), and 0.651 (p=0.003), respectively. For progression, the index for the same predictors was 0.607 (p=0.119), 0.664 (p=0.001) and 0.680 (p=0.008), respectively. Comparing EORTC score and EORTC score including cell_rate predictive models, the AUC were 0.69 vs 0.77 (p=.0265) for risk of recurrence and 0.63 vs 0.68 (p=0.0077) for risk of progression to MIBC, respectively.

Discussion
The inclusion of quantitative FISH information to EORTC score improved prediction of recurrence and progression in our cohort. This association was more robust for recurrence than for progression. Future research in larger cohorts with a standardized follow-up schedule is necessary to confirm these findings. These findings may help in individualizing treatment and follow-up schedules.
CIRCULATING TUMOR CELLS ARE A STRONG PREDICTOR OF CANCER SPECIFIC SURVIVAL IN HIGH RISK NONMUSCLE INVASIVE BLADDER CANCER: FINAL ANALYSIS OF A PROSPECTIVE OBSERVATIONAL STUDY

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Aim of the study
Clinical behavior of non-muscle invasive bladder cancer (NMIBC) is largely unpredictable, and even patients treated according to EAU recommendations have a heterogeneous prognosis. Evidence is emerging that current scoring models cannot precisely predict the individual disease course of NMIBC and do not reflect the optimal. Furthermore, in the era of precision medicine, it is unconceivable that risk stratification might disregard molecular features of cancer, and the imprecision of these risk tools based on combined pathological and clinical features highlight the requirement of molecular biomarkers able to personalize treatments. Circulating tumor cells, (CTCs) are regarded as surrogates for early metastatic spread of disease and significant interest has focused on their role as prognostic in different cancer types, including bladder cancer.

Materials and methods
We conducted a prospective observational study in 102 patients with a pathologically confirmed high-risk T1G3 transitional cell tumor, treated at our Institution between September 2010 and January 2013 according to standard international guidelines (TURB followed by re-TURB and BCG induction plus maintenance 1-3 years). CTCs were isolated before the first TURB from 7.5 mL of blood collected into evacuated blood draw tubes through CellSearch system. We had previously demonstrated that the presence of even a single CTC is significantly associated with shorter TFR and TTP in a median follow up of 24 months. Updated outcome analysis and mature CSS and OS results are reported here in a median follow up of 63 months.

Results
In the study population CTCs were found in 20/102 (20%) patients. The final analysis substantiated results obtained at 24 months of median follow-up showing a statistically significant p value for time to first recurrence (TFR, p <0.0001), time to second recurrence (TSR, p <0.0001) and time to progression (TTP, p <0.0001). The presence of at least 1 CTC was here found to be clearly associated also with shorter metastasis free survival (MFS, p<0.0001), cancer-specific survival (CSS, p<0.0001) and overall survival (OS, p=0.0001). Multivariable analysis confirmed that CTCs, as compared to the standard predictive variables (multifocality, CIS, lymph vascular invasion) have the strongest negative prognostic impact for all the outcomes analyzed. Points of attention in this multivariable analysis are the long-term follow up and the adequate number of outcome events.

Discussion
These results suggest that some patients with T1G3 NMIBC might have a clinically undetected systemic disease connoting CTCs as an useful tool to improve the currently used risk stratification algorithms. The accurate risk stratification provided by CTCs analysis might also be essential for determining the best surveillance strategy for patients after diagnosis. A closer follow-up, an early radical surgery or even a systemic treatment might be recommended in CTC positive NMIBC patients.
Aim of the study
To evaluate oncological safety and quality of life of men undergoing concomitant transurethral resection of bladder tumor (TURBT) and transurethral resection of the prostate (TURP) for symptomatic benign prostatic BPH.

Materials and methods
Ninety-five men with new diagnosis of bladder neoplasm and symptomatic benign prostatic hyperplasia that required surgery were randomized to receive TURBT+tamsulosin (Group 1) or TURBT+TURP (Group 2). Inclusion criteria were age ≤75 years, first diagnosis of bladder tumor up to 4 cm, and prostate volume ≤80 ml. All men patients were evaluated preoperatively with medical history, digital rectal examination, PSA, maximal urine flow rate (Qmax), and International Prostate Symptom Score (IPSS). IPSS and Qmax were repeated at 1-year follow up. QL was evaluated at 1-year using a modified version of the self-report bladder cancer subscale of the Functional Assessment of Cancer Therapy.

Results
Forty-nine men were allocate in Group 1, and 46 in Group 2. Eighty-five men were analyzed (43 in Group 1 and 42 in Group 2). Most of complications were mild (Clavien grade I and II). Only one patient in each group needed endoscopic bleeding control under general anesthesia (Clavien grade IIIb). Adjuvant instillation therapy was given according to EAU risk of recurrence in 26 patients in Group 1, and in 27 in Group 2. Average time to first recurrence was similar in both groups (16.64 months in Group 1; and 17.7 in Group 2, p 0.29). Total and bladder neck/prostatic urethra recurrences were not statically different among groups (27 in Group 1 vs. 22 in Group 2, p 0.083; 9 in group 1 vs. 8 in Group 2, p 0.759 respectively). Multivariate analysis showed minor total recurrences in Group 2 (no statistical significance, p = 0.083), with no difference in bladder neck/prostatic urethra relapses (p = 0.759). The only variable, which affect relapse, was multifocality in both groups (odds ratio 7.42 in Group 1 and 6.0793 in Group 2). Quality of life, IPSS, and Qmax 12-month after surgery were better in Group 2 (p 0.004).

Discussion
Concomitant TURBT and TURP appear oncologically safe in terms of total and prostatic urethra recurrence, and improve QL in men with bladder cancer who require surgery for symptomatic BPH.
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INTRAVESICAL SEQUENTIAL BCG / ELECTROMOTIVE DRUG ADMINISTRATION MITOMYCIN C (EMDA-MMC) IN HIGH RISK NON MUSCLE INVASIVE BLADDER CANCER - RESULTS FROM A RETROSPECTIVE ANALYSIS

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Aim of the study
Intravesical sequential BCG/ Electromotive drug administration Mitomycin C (EMDA-MMC) is reported to be superior to BCG alone but is not widely adopted. The goals of the present study were to establish our experience with sequential administration of intravesical BCG and EMDA-MMC in terms of patient’s compliance, clinical response and complications rate.

Materials and methods
From January 2011 to December 2017, all patients with high risk non muscle invasive bladder cancer undergoing sequential administration of intravesical BCG and EMDA-MMC at our department of Urology and represented the cohort of interest for the present retrospective study. The patients were followed for 43 months. In all cases, administration of EMDA was delivered at a dose of 40mg, for 20 minutes at a current of 25mA. The protocol for treatment induction was: BCG in weeks one and two, EMDA-MMC in week three, repeated thrice for nine weeks in total. Maintenance: EMDA-MMC in months three and four, BCG in month five, repeated thrice for nine months in total. Correlations were established using the statistical methodology: to compare continuous variables has been used Student’s t Test for independent samples. To evaluate association between analysis parameters has been used simple linear regression. In addition we have been calculated odds ratio and has been used test z score. For every test has been considered significant a p-value <0.05.

Results
In the selected period of time we found 87 patients that were adherent to our inclusion criteria and that underwent sequential administration of intravesical BCG and EMDA-MMC. The characteristics of our cohort are described in table 1. Among the entire cohort, the treatment was interrupted before completion in 8/87 (9,2%) for the following reasons: 1/8 (12,5%) voluntarily, 1/8 (12,5%) for urethrorrhage, 1/8 (12,5%) for lower urinary tract symptoms and 5/8 (62,5%) for unknown reasons. Disease recurrence was found in 17/87 (19,5%) patients (CI 95% = 11,8% - 29,4%) and, on average, disease recurrence appeared 16,4±11,3 (range = 2,0 – 36,0) months after the induction of the therapy. Only 2/87 (2,3%) patients had a disease progression (CI 95% = 0,3% - 8,1%; n=2/87) and, on average, disease progression appeared 5,0±2,8 (range = 3,0 – 7,0) months after the induction of the therapy. Finally, 9/87 (10,3%) patients showed the following side effects: 4/9 (44,4%) recurrent urinary tract infections, 2/9 (22,3%) severe lower urinary tract symptoms, 1/9 (11,1%) urethrorrhage and 1/9 (11,1%) haematuria.

Discussion
Intravesical sequential BCG/ Electromotive drug administration Mitomycin C (EMDA-MMC) is well-tolerated. Drop-out is low and, in particular, clinical response is excellent in terms of recurrence and progression during the period of study.
ELDERLY (>75 YEAR-OLD) PATIENTS WITH HIGH-GRADE T1 BLADDER CANCER ARE NOT POORER CANDIDATES TO INTRAVESICAL INSTILLATION OF BACILLUS CALMETTE GUERIN TREATMENT


Aim of the study
Intravesical instillation of Bacillus Calmette-Guérin (BCG) is the standard of care for high-grade non muscle-invasive bladder cancer (NMIBC) after complete transurethral resections of the bladder tumour (TURBT). The mechanism of action of BCG is due to activation of the immune response. In elderly patients the innate and adaptive immune response progressively weakens, a process known as immunosenescence. Therefore, the use of BCG in elderly patients is debated. This study aimed to determine the impact of patient age on BCG efficacy, in terms of disease free survival (DFS), progression free survival (PFS) and cancer specific survival (CSS), and BCG safety, in terms of adverse reactions.

Materials and methods
From January 2005 to January 2018, 123 patients (Tab.1) with high-grade (G3) BC invading the lamina propria (T1) received the intravesical BCG after TURBT. Among them, 88 had undergone a second TUR within 12 weeks after the primary TURBT, while 35 refused it. All patients underwent bladder biopsies/TUR 5-8 weeks after having completed the BCG induction cycle. Patients were divided into two groups: Group A (<75 year-old) and Group B (≥75 year-old). The follow-up consisted of cystoscopy and urinary cytology every 3 months for 3 years, then every 6 months for 2 years, as well as annually chest, abdomen and pelvis Computed Tomography.

Results
The bladder biopsies post-BCG induction demonstrated BC in 19 (23.2%) patients of Group A and in 7 (17.1%) patients of Group B. Of these 26 patients, 3 underwent early cystectomy, 9 a second BCG induction cycle and 14 BCG maintenance. Adverse reactions (consisting of self-limiting (<24h) mild fever (<38°C) after instillation, or moderate LUTS of storage phase occurred in 4 patients (2 in Group A and 2 in Group B). The Kaplan-Meier curves showed that, at mean follow up of 65.7 months (range 7-147), there was not difference between the two groups in terms of DFS (Fig.1a), PFS (Fig.1b) and CSS (Fig.1c). The results were the same after having adjusted for the EORTC risk scores (by univariate and multivariate Cox proportional hazard ratio analysis), and no factors affected the outcomes (Tab 2). The second TUR did not impact on DFS, PFS and CSS.

Discussion
Elderly (>75y) patients with high-grade T1 BC are not poorer candidates to BCG treatment, as they had similar benefit and adverse reactions than those patients aging ≤75y.
MULTIMODAL FIBER OPTIC SPECTROSCOPY: A NOVEL TOOL IN UROTHELIAL CANCER DIAGNOSIS?

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Aim of the study
Bladder cancer is currently detected with white-light cystoscopy, followed by tissue biopsy and pathological examination. However, such process is invasive, time-consuming and prone to sampling errors. In this framework, optical spectroscopy techniques may provide fast, label-free and non-invasive alternatives to standard histopathology. The aim of this study is to evaluate the application of combined autofluorescence, diffuse reflectance and Raman spectroscopy for discriminating normal bladder tissues from urothelial tumours at different stages.

Materials and methods
We collected fresh biopsies of urothelial tumour and healthy bladder from 65 patients undergoing Transurethral Resection of Bladder Tumours (TURBT). Fluorescence, reflectance, and Raman spectra were recorded within 30 minutes from surgical resection. For these measurements, we used four light sources – three laser diodes (378 and 445 nm for fluorescence, 785 nm for Raman) and a tungsten halogen lamp (for diffuse reflectance) – coupled into a fibre probe. The process required less than 2 minutes for each sample. Then, the recorded data were analysed using both ratiometric approach and Principal Component Analysis (PCA) for obtaining a classification algorithm based on the spectral information provided by the three techniques.

Results
Normal and tumour bladder tissues were successfully discriminated based on the observed spectral differences. Fluorescence and reflectance spectra allowed discrimination between healthy and diseased tissues through ratiometric scoring. For 378-nm-excited spectra, the average ratio between fluorescence emitted at 510 nm and 600 nm (F510/600) was 57% higher for normal tissues than for tumour ones. A 19% difference was found when calculating the average F520/580 for 445-nm-excited spectra. PCA analysis provided 83% specificity and 80% sensitivity when applied to 378-nm excited spectra, 83% and 76% for 445-nm excited spectra, 75% and 75% for diffuse reflectance spectra. Moreover, Raman spectroscopy appear to be a promising tool for classifying tumour stages via PCA. Results are summarized in Figure 1.

Discussion
In this study, we presented a spectroscopic system based on a fibre probe for multimodal spectroscopy combining fluorescence, Raman, and diffuse reflectance spectroscopy. Our findings indicate that the presented strategy provides a rapid discriminating capability comparable to gold standard histology. This approach could be implemented for in vivo detection of bladder tumour as well as for clinical differentiation of tumour stages.
THE ADVENTURES OF A FUTURE UROLOGIST IN THE FIRST WORLD WAR: MEDICAL LIEUTENANT MICHELE PAVONE AND THE LIBERATION OF UDINE

BARTOLOMEO COLLEONI, THE FALSE WITNESS AND THE PENALTY OF THE SACK

BERTO GUARDUCCI, ULRICO BRACCI AND HIS FACTORY IN FIRENZE DURING LAST CENTURY

SAN LIBORIO: THE FRENCH SAINT PATRON AGAINST URINARI LITHIASYS

MICHELE TROYA AND FLEXIBLE URETHRAL CATHETERS IN XVIII CENTURY

HISTORY AND STORIES OF THE PEDIATRIC UROLOGY: FROM THE “BASTARD” TO “LEGITIMATE” SPECIALTY
THE ADVENTURES OF A FUTURE UROLOGIST IN THE FIRST WORLD WAR: MEDICAL LIEUTENANT MICHELE PAVONE AND THE LIBERATION OF UDINE

D. Baldo, C. Pavone, R. Jungano (San Giorgio Di Nogaro)

Discussion
This year is the centenary of the end of the first world war. Michele Pavone junior, who later became the first full professor of Urology in Italy, partecipated as a medical student and then as a medical officer to this historical event and received three medals for his heroic behavior in his duties.

He was enrolled in the Infantry and sent in the operative area of the Third Army (Terza Armata). In this Carso front line he attended as a Fifth year medical student the school of medicine of Castrense University of San Giorgio di Nogaro (in the province of Udine-Fiuli Venezia Giulia). More than 1000 medical students (many from southern Italy) attended the courses, and more than 150 successively died in the battlefields as medical lieutenants (aspirante ufficiale medico).

Michele Pavone sustained all his medical exams and was sent to the first line. In 1917 he received two medals of valor (one silver, one bronze) for heroic acts in rescuing and treating his fellow soldiers (S. Valentino Fiumicello di Cervignano e sulla Vertoibizza) nonetheless he was himself wounded. During the retreat of Caporetto he was taken prisoner in the battle of Pozzuolo del Friuli and sent to Udine. During his captive period he worked as a surgeon in the division of General Surgery of Udine’s Ospedale Civile, treating and taking care of the italian military prisoners and the local civilians. The day before the liberation of the city by the italian troops, in november of the 1918, he organized with his fellow prisoners many actions and attacks against the enemy, causing great panic and disorder and capturing many enemy officers. For this reason he was awarded with a third medal of valor.

He subsequently became a urologist and remembered for ever his war experience, which was of great importance in his medical and urological career.
BARTOLOMEO COLLEONI, THE FALSE WITNESS AND THE PENALTY OF THE SACK

R. Scarpa (Torino)

Aim of the study
This work aims to clarify the etymology of the word testis believed, wrongly, deriving from the Latin testis, witness, while instead it originates from the Latin testa. Bartolomeo Colleoni, the famous condottiero (leader), had a surname that meant just testicle through another name that has to do with the poena cullei of the Romans.

Materials and methods
Historical and linguistic research has been carried out to demonstrate how the concept of testis is a semantic metaphor to which we have arrived, moving from the container to the content.

Results
The careful research of historical linguistics has allowed to delineate how the word testis derives from the Latin testa that indicated a container, that is the scrotum, and then indicated the content ie the testicle. The Roman district of Testaccio owes its name to the fact that the potters of Rome were there concentrated and the current hill grew over the centuries due to the accumulation of debris from the processing of terracotta pots. The last name Colleoni derives from the Latin culleus-i which originally indicated a bag (poena cullei) and then in later Latin indicated the testis (Colleone and then Coglione).

Discussion
Ultimately the testicle is not a small witness of sexuality but a semantic metaphor containing / content. The Colleoni surname indicated the testicle, just look at its noble coat of arms. So the testicle is a false witness, the Colleoni was called just like the testis and the poena cullei, that the Romans inherited from the Etruscans, demonstrates how even in this case the container, culleus, then gave the name to the content.
BERTO GUARDUCCI, ULRICO BRACCI AND HIS FACTORY IN FIRENZE DURING LAST CENTURY

T. Lotti, R. Jungano (Roma)

Aim of the study
The history of Berto Guarducci and his factory and the relations between Guarducci and Ulrico Bracci famous urologist in Firenze during last century.

Materials and methods
pictures & original drawings

Discussion
Berto Guarducci was a very skilled florentin artisan in metals working. In Firenze he met, during the years fifty of last century, professor Ulrico Bracci, chairman of urology department in Firenze. Both were passionate of "surgical mechanics", so they drew many urological instruments that are still in use today in almost all italian urologic departments.
SAN LIBORIO: THE FRENCH SAINT PATRON AGAINST URINARI LITHIASYS

I. Romics, R. Jungano (Budapest, Ungheria)

**Aim of the study**
Only few urologists know San Liborio, the French saint patron against urinari lithiasys

**Discussion**
Saint Liborius lived in the 4th century in France, where it was the 4th bishop of le mans. After his death his mortal remains were translated in the cathedral of paderborn in westfalia; some relics of Saint Liborius were brought in Umbria. He is renowned as the protector of patients suffering from urinary lithiasys, famous his "Oratio contra calculus ". For some european urologist he should be recognised also as protector of urologists and as patron of urology.
Discussion
Michele Troya, Italian from Andria in Puglia, was surgeon of urinary bladder and eyes in the University of Naples in XVIII in the age of Ferdinado I° King "delle due Sicilie". He was encharged of the chair of urinary bladder and eyes diseases in 1779: the first chair of urology in Europe. During his life he made many studies, also experimental ones, about urinary apparatus, eyes and bones. Part of his main work about urinary diseases, concerns the flexible urethral catheters and their construction in a very detailed way.
Aim of the study
At last appear on the scene M. Campbell (USA), first President of the American Society of Pediatric Urology, and D. I. Williams (UK), which considered pediatric urology “a bit of a surgical wildness”. Between pediatric surgeons, who have left significant mark in urology need to remember H. Hendren (Boston Children’s H.) and A. Pena (Schneider Children’s H., NY), masters in cloaca repair. In French the birth of pediatric urology is attributed to Jean Cendron (Hopital S. Vincent de Paul, Paris).

Materials and methods
In 1984 was founded the Società Italiana di Urologia Pediatrica (first President G. Belloli, Vicenza). The first meeting of the European Society of Pediatric Urology (ESPU) was organized in Amsterdam in 1990. The Society for Fetal Urology is a recent organization to improve the care of fetal and perinatal anomalies. In 1997 was born the Unità Operativa di Chirurgia Andrologica e Ginecologica dell’Eta Evolutiva at Bambino Gesù Hospital. The International Society of Hypospadias and Disorders of Sex Development start biennial meetings in 1999, with the aim of promoting a better understanding the anomalies of male genitalia. In 1972 was founded the International Federation of Pediatric and Adolescent Gynecology, in 1978 the Società Italiana di Ginecologia dell’Infanzia e dell’Adolescenza and in 2008 the European Association of Paediatric and Adolescent Gynecology. The Ginecologia Pediatrica e dell’Aldolescenza became an Independent Unit at Bambino Gesù Hospital in 2011.

Results
In 1986 the Bambino Gesù Children’s Hospital of Rome dedicated an outpatient to cryptorchidism. In 1997, due to the increase of activity in the field of genital surgery, the Andrological and Gynecological Surgery Unit was founded, with the aim of infertility prevention, diagnosis of congenital and acquired genital anomalies, and improvement of the surgical results. Pediatric and Adolescent Gynecology is a relatively new, nonboarded subspecialty incorporating the expertise of gynecologists, pediatricians, urologists, pediatric surgeons, endocrinologists, geneticists, adolescent medicine physicians and psychiatrists as a way to meet the needs of this population. Pediatric and Adolescent Gynecology started in 1940 in Praga, with the first gynecologic unit dedicated to pediatric age and directed by Prof. Peter.

Discussion
Is better the urologists with an interest in children or pediatric surgeons with an interest in urology? Are pediatric surgeons and urologists suitable to face gynecologic malformations? Robert Whitaker (Cambridge) stated: “some pediatric surgeons lacked a deep understanding of urological principles”. The history and experience show that special persons with the gift of “persistence” can reach results joining them to the history of medicine. The medico-legal aspect is not to be under-evaluated and the post-degree title of specialist in urology or gynecology seems to be a necessary qualification.