EVOLUTION AND NOVEL ASPECTS OF OUR SURGICAL PROCEDURE FOR PEYRONIE DISEASE

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Our technique for Peyronie’s disease is a procedure the physiological cornerstone of which has been laid in the past. In 1986 in Prague and Budapest, the Milan School had pointed out two of the main features characterizing corporoplasties: the presence of complementary erection after prosthesis implantation and the role of the albuginea in penile morphology.

- If calibration of corpora cavernosa is performed by minimally invasive technique and in one step only, integrity of erectile tissue can be ensured since it is displaced only around the prosthesis, thus making complementary erection possible.
- Modifying the albuginea is the cornerstone of all corporoplasty techniques, including that suggested by Devine Horton for Peyronie’s Disease (P.D), which became the standard procedure known as “radical surgery”, described in an Atlas published in 1990 on P.D. surgery and autored by Austoni-Pisani.

The results of our 10-year experience with this procedure on 619 patients were presented at the “Sentara U.S.A. International Peyronie’s Disease” Congress in 1994, and showed high complication rates including erectile dysfunction and penile retraction. (51%):

- Erectile dysfunction (24%) it was secondary to the areolar fibrosis underneath the graft and therefore to the width of the removed plaque.
- Bending recurrence (27%) was caused by dermal graft retraction since graft take occurred while the penis was mostly at rest.

The solutions generated by this long-standing experience represent the foundation for our new technique:

- reduce the loss of albuginea with a single relaxing incision
- maintain the penis extended during the post-surgery phase by intensive stretching or by implantation of axial tutors in case of erectile dysfunction
- use of saphenous grafts to avoid areolar fibrosis.

So surgery goes from being radical to being functional, and aims simply at straightening and lengthening the retracted penis, ensuring an adequate rigidity.

PROCEDURE:

a) Patients older than 65, or younger patients suffering also from erectile dysfunction: the procedure foresees two subsequent steps:

- 1st Step: minimally invasive implantation of small axial tutors longer than the penis by 1.5 cm every 30 degrees of bendings (angle measurement).
- 2nd Step: a single relaxing incision placed to the concave surface of the albuginea until the penis is straight and lengthening is achieved in proportion to the degree of bending.
- 3rd step: placement of a saphena graft of width corresponding to the lengthening obtained.

Egydio thereafter proposed a change in graft measurement, based on a geometrical calculation of the difference between the convex and the concave surfaces of the bending.

He then added also two small inverted Y shaped incisions paraurethrally to obtain a uniform cavernosal diameter after grafting.

1) Technical issues - prostesis implant and relaxing albuginea incision:

- The minimally invasive prosthesis implantation calls for one single insertion of the hegar. Corporotomies are performed using a triangular scalpel and one single minimally invasive dilation is performed using a 9 mm diameter Hegar, rotating the beveled tip at the apexes to complete the calibration avoiding undue apical trauma.

This way erectile tissue is displaced around the prosthesis, as demonstrated by penile dynamic NMR imagings, and by subsequent complementary erection.

- Once implanted, the prosthesis emphasize the bending and the retraction.

The single relaxing albuginea incision is than performed after neurovascular dorsal bundle isolation sparing the underlying erectile tissue. Once completed, the lengthening obtained will be in direct proportion to the degree of the bending.

2) Technical issues - grafting
The saphena is harvested in the subinguinal region where the vessel’s caliber is greatest. The endothelium of the venous graft placed in direct contact with erectile tissue will prevent the areolar fibrotic reaction typical of all other graft types. Once split opened, the saphena offers a graft that measures 2-3 cm in height. The length of the graft is to be calculated based on the diameter of the corpora.

In case of curvatures greater than 50-60° a patchwork graft can be fashioned with 2 saphena segments.

Several authors perform the relaxing incision prior to implanting the tutors, for greater precision in measuring the length of the prosthesis subsequently. It must be pointed out that if lengthening corporoplasty is performed prior to prosthesis implantation, the latter will likely not be covered by erectile tissue thus jeopardizing graft take of the saphena as it will be in direct contact with the synthetic material.

In these cases a biological acellular dermal graft is preferable, since graft take may occur even if in direct contact with the prosthesis. The same procedure is used also for lateral curvatures or ventral curvature.

b) Patients with good erection:

In case of young patients with excellent erection and valid systolic peak, the relaxing incision and venous graft does not require implantation of axial tutors. In such cases, daily sessions of post-surgery vacuum pump rehabilitation are especially important in stretching the graft; rehab must last for three months.

RESULTS

The preliminary results of the procedure was published on European Urology in 2005: 95% of patients were satisfied with their performance; 92% of patients were satisfied with length; average lengthening was 1.5 cm; the same results were confirmed later on by an Italian multicenter study.

NOVEL ASPECT AND MODIFICATION OF THE PROCEDURE:

In the past 2 years, this method was further perfected as regards degloving technique and the use of acellular biologic grafts.

1) To avoid any complications associated with the subcoronal approach, such as post-surgery edema and the need for circumcision we have recently proposed a change to our subcoronal-transcrotal degloving technique and now we perform a new simple transcrotal degloving that affords an excellent dissection of the neurovascular dorsal bundle. It calls for angle measurement (Austoni) or geometric measurement (Egydio) of the graft surface area using an induced erection before the cutaneous incision.

The new transcrotal degloving allows for an optimal isolation of the neurovascular dorsal bundle by a procedure identical to the subcoronal technique, and than all type of albuginea surgery can be performed as normally done. Buck’s fascia will than be sutured by at the same of the subcoronal approach, and provide fascial hemostasis.

In our series of patients postoperative outcomes the same straightening rates of the subcoronal approach, and complete absence of balano-preputial edema.

The transcrotal degloving may be also advantageously used for iterative surgery after corporoplasty complications were distal penile skin could be fibrotic and ischaemic.

ACELLULAR BIOLOGICAL MATRIX GRAFTS:

2) The acellular biological dermal graft (Intexen), can be used for albuginea augmentation corporoplasty combined with prosthesis implant in case of severe cavernous fibrosis.

This biological acellular graft should be used based on the size of the cavernosal diameter after extensive corporotomy for hydraulic prosthesis implant. In this cases when cavernous bodies are insufficient to contain the prosthesis, the albuginea will be reconstructed with widening grafts: intraoperative and postoperative controls with prosthesis activated at maximum volume shows excellent extension of the cavernous bodies.

CONCLUSION

We believe that to date the combination of transcrotal degloving with different modern albuginea reconstructive procedures, represents a real progress in the treatment of impotence associated with severe penile retraction. Furthermore albuginea relaxation incision and grafting for P.D., albuginea remodeling procedure combined with inflatable prosthesis implantation, vein grafting and acellular biological dermal grafting, should be considered the novel aspect of penile reconstructive surgery.