Case Report

Penile prosthesis in severe corporal fibrosis: a history of a difficult case using the double corporotomy incision technique

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Abstract

Penile prosthesis implantation in corporal fibrosis is a significant surgical challenge even for experienced surgeons. As it is a rare occurrence, a small number of series with limited follow-up have been reported. Multiple surgical approaches to eliminate fibrous tissue and to place an implant have been described. In this report, a 48-year-old man had a history of delayed treatment priapism with no response to any erectile dysfunction treatment. Penile prosthesis was recommended but the surgical approach was difficult and complex. It is widely accepted that implanters have to deal with both a high complication rate and patient expectation. This article introduces a new surgical approach in this challenging case.

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Introduction

Priapism is defined as a persistent penile erection (typically 4 hours or longer) that is unrelated to sexual stimulation. Ischemic priapism, the most common subtype, is typically accompanied by pain and is associated with a substantial risk of subsequent erectile dysfunction. Prompt medical attention is essential in cases of ischemic priapism. The main cause of priapism is idiopathic or intracavernosal injection with papaverine,[1] and early intervention is essential for the functional recovery of erectile ability. If left untreated the condition can result in penile corporal tissue necrosis and ultimately fibrosis in conjunction with permanent erectile dysfunction.

If in the case of corporal fibrosis there is a lack of response to all non-invasive treatments e.g. phosphodiesterase 5 inhibitors (PDE5 inh.), intracorporal injection (ICI), or shock wave, penile prosthesis is the final solution. Implantation in the case in this scenario is a real surgical challenge even for a skillful, experienced surgeon. Over the years, multiple surgical approaches have been suggested to facilitate implantation in this difficult situation. Traditional approaches include the resection of scar tissue, the performance of extensive corporotomies and the eventual use of grafts to cover the corporal gap.

In 2006 Montague and Angermeier[2] proposed the "Corporeal excavation technique".

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The operative approach is through an inverted T penoscrotal incision that affords exposure of nearly the entire corpus cavernosum on each side. Extended corporotomies are made on the ventral aspect of each corpus cavernosum, and a plane of dissection between the fibrotic corporeal tissue and the inner surface of the tunica albuginea is established, resulting in core removal of nearly all fibrotic intracorporeal tissue. Cylinders are laid into the empty corporeal bed, and the tunica albuginea is closed primarily. Shaeer's technique,[3] first described in 2007, is to insert a Penoscope (standard TUR scope) into the corporotomy and resect the fibrotic tissue.

In 2017, a new protocol was introduced, involving preoperative daily vacuum therapy (VT) using a vacuum erection device for at least 3 months before implantation.[4] The aim was to soften the corporal fibrosis and facilitate placement of an implant. All 13 men in the study underwent successful three-piece implant placement with standard-size cylinders without the need for additional surgical procedures.

Alternative techniques include the use of specialized dilators, counter incision, reconstruction with graft placement, or minimal scar tissue excision, however no specific algorithm for the management of corporal fibrosis has been described. Prosthesis implantation in patients with corporal fibrosis is one of the most difficult procedures in prosthetic urology and is associated with a high risk of implant failure and infection in comparison to primary implantation.[5,6]

Case Report

A 48- year-old Thai man suffered for ischemic painful priapism 12 years ago. Etiology was described as having had a painful erection after using counterfeit sildenafil. The erection lasted for 3 months without any treatment. Eventually the penis spontaneously became flaccid but then he was incapable of having an erection. He tried PDE-5 inh., a vacuum device and herbal treatment but none were successful.

On physical examination the penis presented with normal contouring and length. Firm corporal fibrosis could be palpated on the penile shaft. Blood tests showed no abnormalities as regards blood disease or diabetes.

After discussion about the possibility of penile prosthesis and the associated high risk of failure or infection as well as the high degree of surgical challenge the patient decided to proceed with surgery.

Prior to surgery he was given 1gm of vancomycin and 2 gm of ceftriazone intravenously. Following spinal anesthesia, the patient was placed in the supine position with both legs spread to expose the scrotum and perineum. The skin of the suprapubic region, scrotum, and perineum was clipped and prepped with chlorhexidine scrub followed by treatment with chlorhexidine and alcohol (ChloraPrepTM) paint.

A Foley catheter was inserted. A three-centimeter skin incision was made at the penoscrotal junction and the dartos tissue was opened. Corpora tissue and urethra were identified and dissected. Buck's fascia was incised and released, giving direct access to the urethra and corpus spongiosum until the corpus cavernosum was clearly bilaterally exposed. After corporotomy had been performed, no spongy tissue was found and it had been replaced with dense fibrous tissue without any blood circulation. Further 2 cm longitudinal incisions were made at both sides of the subcoronal region, the corporal body exposed and an add on corporotomy was made. The advantage of the add-on incision was to avoid urethral injury or corporal perforation during dilatation.

Rossello Cavernotomes (Coloplast Corporation, Humlebeck, Denmark), small sharp-raised dilators which are used to thin out scar tissue as the rods are pulled from corporal body were used. The sizes of the cavernotome vary from 6-13 mm in diameter. The teeth allow the cavernotome to "walk" forward through the fibrosis and help protect against a sudden uncontrolled movement that can cause an inadvertent urethral laceration (Figure 1).

3-0 vicryl® was passed through the Tunica albuginea at the site of the corporotomies as a stay suture. Metzenbaum scissors were carefully passed through dense fibrous tissue from both the penoscrotal and subcoronal incision until connection was made from both sides. Then the Rosello dilators were applied sequentially until reach to 12 mm. With this technique, injury to the urethra and corporal perforation could be avoided. The proximal dilation was also performed with great care. A shallower proximal corporal body than normal was observed due to the dense scarring (Figure 2).

Figure 1. Left : Rosello dilators. Right: Standard Brook dilators

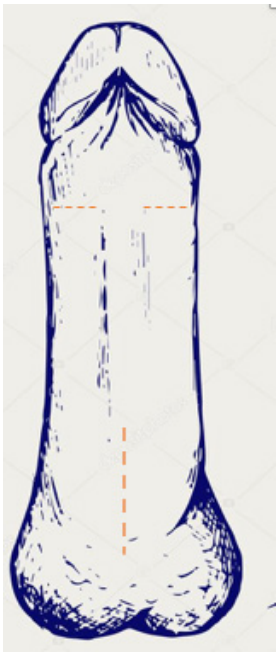

Figure 2. Lines of incision on the penis

The entire length along both sides was 16 cm. A Coloplast Genesis, a malleable implant 11 mm in diameter and 16 cm in length was selected. Both corpora were irrigated with NSS plus Gentamicin to confirm no urethral injury. A field goal test also performed to check for cross over. The implant was placed with great difficulty due to the poor tissue elasticity and pseudo capsule of the corpus cavernosum. Corporotomies were closed with double layers of Vicryl 3-0®. Skin was approximated with Vicryl® 4-0. Total operative time was 4 hours, more than double the time in comparison to the less than 2 hours in standard cases. Blood loss was 200 ml, compared to minimal in normal cases (Figure 3).

The patient spent 1 night in hospital post operatively. He could pass urine after catheter was removed. Amoxiklav® 1 gm was given twice daily and continued for 2 weeks. Pain was manageable and controlled with NSAIDs, tissue swelling gradually decreasing (Figure 3). Six weeks after surgery the patient could walk and sit properly, there were no signs of infection, and swelling was much reduced. The penis could be stretched to good length, and girth and had good sensation.

At the 6-month follow up, the prosthesis was still functioning well, with no evidence of perforation or infection. The patient reported a high level of satisfaction. He had been divorced before the operation and now he was in a new relationship.

Discussion

In a multicenter surgical outcome review of penile prosthesis placement in corporal fibrosis only 42 patients with corporal fibrosis who underwent penile prosthesis placement in over a 10-year period were reviewed.[7] Due to this rarity, there is no standard method for surgical approach. Techniques used for PP placement included: sequential dilation (8-12 mm) with standard dilators in 15 (35.7%) patients, dilation with cavernotomes in 25 (59.5%) patients

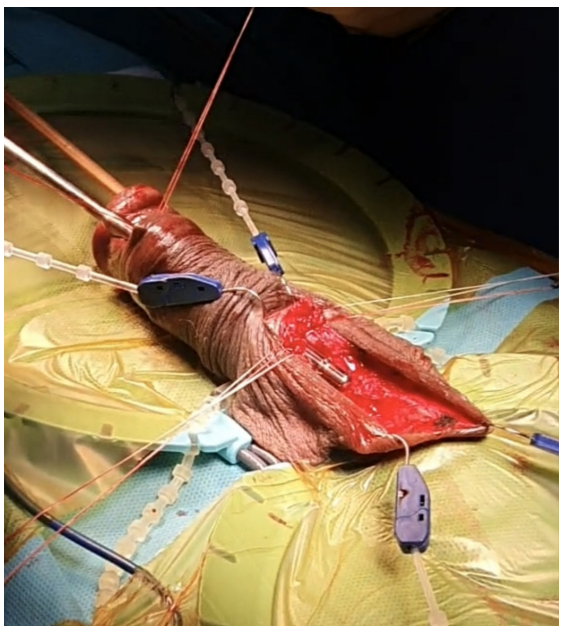

Figure 3. Rosello dilator passed through both incisions

Figure 4. Post op 4 weeks Post op 4 weeks

and limited sharp corporal excision and dilation with cavernotomes in 1 (2.4%) patient. Narrow cylinders were employed in ten patients (23.8%).[7]

Due to the extensive field of surgery, vast amount of tissue trauma and long operative time, implantation in this group of patients is associated with a high risk of complication. The complication rate ranged from 2.4-28.6%, the most common problems being infection, erosion and malfunction respectively.

In this case, two incisions were introduced to avoid urethral injury and accidental corporal perforation. Using Rosello cavernotome dilators, dense fibrous tissue was cut and a tunnel created. In 1995 Wilson et al.[8] reported that the outcomes of surgery following the implanting of 32 salvage inflatable penile prostheses using Rosello cavernotomes, were that the 1-year prosthesis survival increased to 87% and complications were significantly reduced. There was no incidence of urethral perforation and they did not use any grafting.

There is no consensus about how to combat corporal scarring but in comparison with other techniques such as total corporal reconstruction,[9] corporal excavation technique,[2] and Shaeer's technique the outcome in all aspects in this case study following this technique was comparative.[3] In summary, all these methods need high levels of experience and special instruments but these notwithstanding, the procedure involving double corporotomy incisions is feasible and a good outcome is achievable.

Conclusion

Implantation in corporal fibrosis is a challenging scenario requiring a high level of surgical experience and special techniques. The surgical approach is dependent on the implanter's preference. It is essential that patients are fully informed with regard to the risk of complication or surgical failure prior to surgery.

Conflict of Interest

The author declares no conflict of interest.

References

1. El-Bahnasawvy MS, Dawood A, Farouk A. Low-flow priapism: risk factors for erectile dysfunction. BJU Int 2002;89:285-90.
2. Montague DK, Angermeier KW. Corporeal excavation: new technique for penile prosthesis implantation in men with severe corporeal fibrosis. Urology 2006;67:1072-5.
3. Shaeer O. Penoscopy: optical corporotomy and resection for prosthesis implantation in cases of penile fibrosis, Shaeer's technique. J Sex Med 2007;4:1214-7.
4. Tsambarlis PN, Chaus F, Levine LA. Successful Placement of Penile Prostheses in Men With Severe Corporal Fibrosis Following Vacuum Therapy Protocol. J Sex Med 2017;14:44-6.
5. Henry GD, Donatucci CF, Conners W, Greenfield JM, Carson CC, Wilson SK, et al. An outcomes analysis of over 200 revision surgeries for penile prosthesis implantation: a multicenter study. J Sex Med 2012;9:309-15.
6. Gross MS, Phillips EA, Balen A, Eid JF, Yang C, Simon R, et al. The Malleable Implant Salvage Technique: Infection Outcomes after Mulcahy Salvage Procedure and Replacement of Infected Inflatable Penile Prosthesis with Malleable Prosthesis. J Urol 2016;195:694-7.
7. Krughoff K, Bearelly P, Apoj M, Munarriz NA, Thirumavalavan N, Pan S, et al. Multicenter surgical outcomes of penile prosthesis placement in patients with corporal fibrosis and review of the literature. Int J Impot Res 2022;34:86-92.
8. Wilson SK, Terry T, Delk JR. Improved implant survival in patients with severe corporal fibrosis: A new technique without necessity of grafing. J Urol 1995;153:359A.
9. Sansalone S, Garaffa G, Djinovic R, Antonini G, Vespasiani G, leria FP, et al. Simultaneous total corporal reconstruction and implantation of a penile prosthesis in patients with erectile dysfunction and severe fibrosis of the corpora cavernosa. J Sex Med 2012;9:1937-44.