Inflatable penile prosthesis and penile plication in patients with Peyronie's disease: case report

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Abstract: The surgical gold standard treatment for severe erectile dysfunction (ED) is inflatable penile prosthesis (IPP). During IPP placement, penile curvature can also be addressed, and may be corrected in up to 90% of cases with inflation alone. However, for severe deformities, adjunctive maneuvers are needed. Our preference is to place plicating sutures for deformities greater than 30 degrees. We find this technique to be quick and reliable, without additional risks. Here we describe penile plication with simultaneous IPP.

Keywords: Penile plication; penile prosthesis; erectile dysfunction (ED); Peyronie's disease (PD); case report

Received: 31 July 2019; Accepted: 30 October 2019; Published: 06 January 2020.

doi: 10.21037/jovs.2019.11.02

View this article at: http://dx.doi.org/10.21037/jovs.2019.11.02

Introduction

The surgical gold standard treatment for severe erectile dysfunction (ED) is placement of an inflatable penile prosthesis (IPP) (1). A significant proportion of men with ED will also suffer from Peyronie's disease (PD) (2). During IPP placement, penile curvature can also be addressed. In men undergoing IPP implantation with penile curvature, up to 90% are sufficiently straightened with cylinder inflation alone (3,4). Over time mild deformities may autocorrect with tissue expansion. However, for more severe deformities adjunctive maneuvers are needed. Penile modeling is often cited in the literature as an adjunctive maneuver that can be used at the time of IPP placement (4-6). However, we find this maneuver to be unreliable, with a risk of urethral perforation (7). Our preference is therefore to place plicating sutures for deformities greater than 30 degrees (8). We find this technique to be quick, reliable, and with little additional risks (7,9). Herein we present our method of IPP with simultaneous penile plication.

The aim of our video is to show that penile plication with simultaneous IPP placement is a useful, safe, reproducible and efficacious surgical technique with minimal increase in surgical time.

Case presentation

A 63-year-old male with severe ED refractory to oral phosphodiesterase 5 inhibitors (PDE5-I) underwent a penile Doppler revealing 60-degree ventral curvature. Patient opted for IPP with correction of penile angulation at the time of implant.

Patient selection and workup

In our practice all patients with ED who are not responding to oral PDE5-I's undergo a penile Doppler. The penile Doppler helps asses the severity of ED and may help patients opt for penile injections *vs.* IPP. Additionally, the Doppler may identify penile deformities and provides the opportunity to discuss with the patient the potential of addressing his PD while concomitantly treating his ED.

Penile plication at time of IPP placement is offered to patients with severe ED and penile curvature between 30–90 degrees.

Pre-operative preparation

Patients who are candidates for IPP require medical

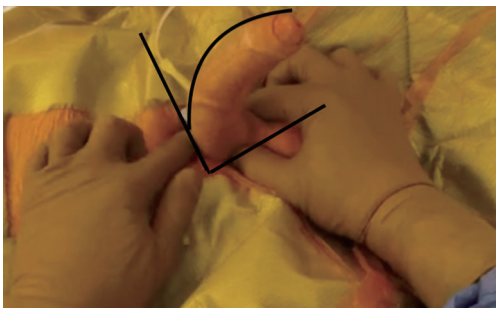


Figure 1 Artificial erection demonstrating 60 degree ventral curvature. The surgical field has been covered with ioban dressing.

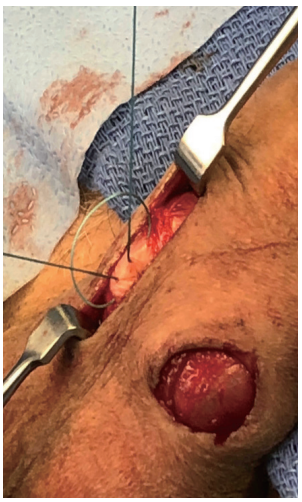


Figure 2 Inverted mattress "near to far, far to near" plication suture.

clearance for general anesthesia. Diabetic patients need to have an HbA1c less than 10%. Patients on anticoagulants should stop them based on their cardiologist recommendations. A negative urine culture within 30 days of surgery is required. We recommend that patients shower using Hibiclens® for the 3 days prior to surgery.

Equipment preference card

- Gallant® disposable razor;
- Lonestar retractor;
- Elastic stay lone start blunt 12 mm (yellow);
- 16 FR Foley catheter tray kit;
- PDS 3-0 RB-1 needle;
- Vicryl 2-0 SH needle;
- Chromic 2-0 PS 2 needle;
- Ethibond 2-0 SH needle;
- JP drain round 10 fr and 100 mL reservoir.

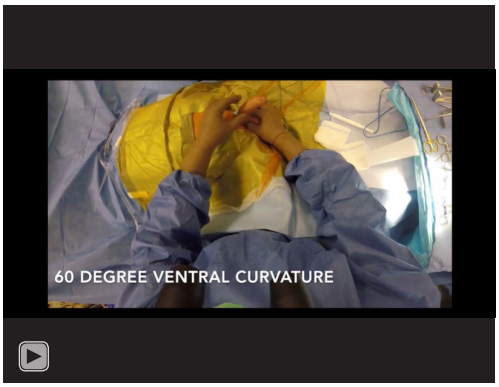
Surgical procedure

The patient is positioned in a supine position with a modified frog leg position. The patient is shaved using a Gallant® razor and then cleansed with alcohol and gauze. A Pudendal nerve block is optional and can be performed at this time. The patient then undergoes a Chlorhexidine prep and is draped in sterile technique. A stretched penile length (SPL) measurement is obtained, in this case 15 cm. An artificial erection is induced using a butterfly needle and injectable saline. In this case a 60-degree ventral curvature is observed as depicted in *Figure 1*. The incision is made at the level of the median raphe at the penoscrotal junction, about 2–3 cm longer than that used for standard IPP placement, as described by Dugi *et al.* (10). The penis is then rotated, and the incision is slid to expose the dorsolateral penis for suture placement. Non-absorbable 2-0 Ethibond braided sutures are placed in an inverted mattress "near to far, far to near," fashion (*Figure 2*) (8). It is our preference to tie down each suture as it is placed before placing a subsequent suture. In this case the tied down sutures are then clamped and used as traction sutures to rotate and facilitate placement of additional sutures. After putting five sutures, an artificial erection was repeated. On re-evaluation, the penile deformity has been corrected (*Video 1*).

IPP placement then proceeds as usual to correct the ED through the same penoscrotal incision. The corporotomies are performed in the proximal corpora. The corpora are then measured, the cylinders are placed into each corpora and then inflated to evaluate correct sizing and correction of the deformity. Repeat SPL is taken at this time, in this case it measured 15 cm. The reservoir is placed in the high submuscular space (12). Finally, the pump is placed in a subdartos pouch. The wound is meticulously closed in three layers to provide robust coverage of the tubing (*Figure 3*). Foley and JP drain are left overnight and removed the following morning.

Post-operative management

Patients are usually kept overnight for observation. Intravenous antibiotics are continued while patients remain in the hospital. The following morning the drain and Foley are removed. Patients undergo a bladder scan prior



Video 1 Penile plication with inflatable penile prosthesis (11).

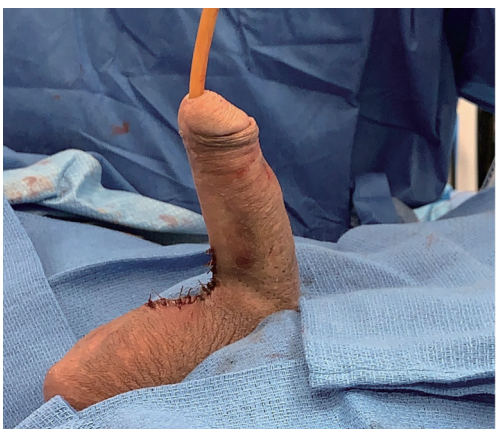


Figure 3 Penile deformity has been corrected.

to discharge to ensure they are not in urinary retention. Patients are discharged home with pain medication and oral antibiotics for 7 days, usually Trimethoprim-Sulfamethoxazole.

Patients are typically seen in 2 weeks for IPP inflation and teaching. Patients are advised to bring pain medication to this visit given they are typically still tender and are advised to begin cycling the device at home. If there is too much swelling or tenderness at 2 weeks, patients are re-examined at 3 weeks and then begin cycling the IPP at this time. Patients can begin using the device once they feel comfortable usually between 4–6 weeks postoperatively.

Tips, tricks and pitfalls

- Frog leg position, drops the scrotum and allows better exposure during the surgery.
- We have found Gallant® razors to be the best tool to shave the genitals minimizing abrasions to the skin.
- An artificial erection prior to performing corporotomies aids in operative planning.
- A penoscrotal incision can be used to correct most deformities.
- We prefer to tie down sutures as they are placed. The artificial erection may be repeated many times at any point as sutures are being placed to reassess the deformity and asses the need for more and location of additional sutures
- Proximal corporal exposure permits less usage of rear tips, aids in concealing tubing, and prevents high riding pumps.
- When the penile deformity is dorsal or lateral less penile rotation is needed and plicating sutures can be more easily placed on the ventral penis.
- Plicating sutures usually provide a correction of approximately 5 - 8 degrees.
- We advocate shorter "bites" and more sutures, over larger bites with less sutures.
- We recommend a maximum "bite" length of 5mm to distribute tension over more sutures and reduce penile shortening to a minimum (8).

Conclusions

This video shows that penile plication with simultaneous IPP is a reliable and effective technique that adds minimal surgical time (13), with little increase in cost. The use of a single incision decreases the morbidity of the procedure (8,14,15). Penile plication is an effective tool that prosthetic surgeons should keep in their armamentarium for treating select cases of simultaneous ED and PD.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the Guest Editors (Martin Gross, Jay Simhan and Faysal A. Yafi) for the series "Penile Prosthesis Surgery" published in *Journal of Visualized Surgery*. The article has undergone external peer review.

Conflicts of Interest: The series "Penile Prosthesis Surgery" was commissioned by the editorial office without any

funding or sponsorship. BHC serves as a consultant for Coloplast® and Boston Scientific®. The authors have no other conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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doi: 10.21037/jovs.2019.11.02
Cite this article as: Cedeno JD, Cordon BH. Inflatable penile prosthesis and penile plication in patients with Peyronie's disease: case report. J Vis Surg 2020;6:1.