

Management of Post-prostatectomy Erectile Dysfunction and Climacturia with an Inflatable Penile Prosthesis and Urethral Sling

CASE PRESENTATION

A 63-year-old man presented with post-prostatectomy erectile dysfunction (ED). He had a robot-assisted prostatectomy with bilateral pelvic lymph node dissection 18 months prior. His pathology was pT3aNOMx Gleason 4+3=7 with negative margins. His most recent PSA was <0.01.

- He reported mild lower urinary tract symptoms (IPSS 8), frequent urination, mild stress urinary incontinence, and bothersome climacturia. He uses 1 safety pad daily.
- The patient reported no significant ED pre-prostatectomy. Post-surgery, he tried PDE5 inhibitors but they did not help. He has used Trimix with limited success and is unhappy with injections.
- The patient is married and sexually active once or twice per month. He is interested in a penile prosthesis.

MEDICAL HISTORY AND PHYSICAL EXAMINATION OF THE GENITOURINARY SYSTEM

- **Past medical history:** Prostate cancer, glaucoma, GERD
- **Past surgical history:** robot-assisted prostatectomy (2021), glaucoma surgery (2020), cataract surgery, left (2019), sleeve gastropasty (2015), knee arthroplasty, right (2007)
- **Social history:** former smoker (quarter pack/day for 20 years), quit 25 years ago, occasional alcohol use, married, operations manager at a furniture warehouse
- **Medications:** Trimix, Cialis (20 mg prn), vitamin D3
- **Genitourinary system**
 - Testicles: non-tender, descended bilaterally
 - Phallus: no lesions, uncircumcised, no evidence of phimosis
 - No evidence of hernia bilaterally

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MANAGEMENT

We discussed the penile prosthesis with the patient, including the types of prostheses (malleable, 2-piece and 3-piece), the benefits of both AMS and Coloplast prostheses, and the implantation techniques (including infrapubic, penoscrotal, and subcoronal). We informed the patient of the risks and possible complications and also counseled the patient on the possibility of placing a mini male urethral sling (MMUS) for climacturia.

The patient underwent a uroflow test to ensure that his bladder was emptying and that there was no obstruction (bladder neck contracture).

Results of Uroflow

- Void volume: 350 mL
- Void time: 31.7 sec
- Max flow: 27.8 mL/sec
- Average flow: 15.47 mL/sec
- Post-void residual: 0 mL

The patient elected to have a 3-piece Coloplast inflatable penile prosthesis (IPP) inserted with an MMUS. He was then instructed to return with his spouse for a penile Doppler and further discussion.

Penile Doppler

- Trimix: 15 IU
- Quality: 9/10
- Stretched penile length: 12 cm
- Curvature: 15° ventral
 - Fibrosis: minimal
 - Plaque: none
 - Intracavernosal pillars: not prominent

Results of Penile Doppler

	Right (cm/sec)	Left (cm/sec)
Pre-injection		
Vessel size	0.06	0.07
Peak systolic velocity	7.5	9
End diastolic velocity	0	0
Resistivity index	1	1
Post-injection		
Vessel size	0.12	0.12
Peak systolic velocity	22	24
End diastolic velocity	8.2	9
Resistivity index	0.62	0.63

Impression: vasculogenic ED, corporal-venous occlusive dysfunction

Treatment: placement of an IPP and an MMUS

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COMMENT

Preoperative Evaluation

When evaluating a patient for an IPP, it is important to get to know the patient. Steven K. Wilson, MD, one of the godfathers of prosthetic urology, is often quoted as saying “never implant a stranger.”¹ Getting to know your patients will undoubtedly make the postoperative period smoother. The first step is to identify potentially difficult IPP patients. The mnemonic coined to assist in this identification is CURSED patient.² A CURSED patient's characteristics are:

- **Compulsive:** a patient who is obsessed with minor imperfections of his penis; a patient who is obsessed with size, girth, and cosmesis.
- **Unrealistic:** a patient who believes the implant will restore his size, cure his premature ejaculation, and in some cases save his relationship.
- **Revision:** a patient who presents for revision of a small cosmetic deformity soon after his previous procedure.
- **Surgeon shopping:** a patient who is seeing you for a second, third, or fourth opinion. Such patients have long surgical histories and blame previous surgeons for perceived poor outcomes. They are searching for a surgeon who will promise them the world and they will quickly turn on you for any undesirable outcome.
- **Entitled:** a patient who feels he deserves extra attention and who often makes unreasonable demands. He tends to treat staff poorly and demand frequent calls and visits.
- **Denial:** a patient who thinks the implant will turn back the clock. He remembers the sexual prowess of his youth and is slow to recognize his loss of length and decreased stamina with age.
- **Psychiatric disorders:** a patient who has unmanaged psychiatric problems. Do not be afraid to ask for psychiatric clearance prior to surgical consideration. Recent events in Oklahoma emphasize the risk of a violent response to a perceived bad outcome.

Penile implantation is an elective surgery. Surgeons have a right to refuse to place an implant. Just wanting an implant does not make a patient a suitable candidate for one.

Although all IPP implanters have operated on so-called CURSED patients, knowledge about and screening for these patients will assist in getting the best outcome. Inquire about the patient's occupation and about prior therapies, such as PDE5 inhibitors, intracavernosal injections, and vacuum erection devices. Inform the patient about alternative therapies preoperatively and document that alternative therapies were offered. Ask the patient about his relationship status and if he has a spouse/partner that is supportive. Studies have shown that patients who have spousal support are more satisfied with their implants.³ Preoperatively, assess any new curvature or issues with anorgasmia, premature ejaculation, or climacturia. Unrecognized preoperative urinary retention, elevated post-void residual volumes, bladder neck contracture, and/or untreated severe BPH can lead to unwanted intraoperative or postoperative surprises. Urethra trauma and prolonged postoperative catheterization unnecessarily increase the risk of infection. At a minimum, all patients must fill out an AUA Symptom Score Questionnaire and undergo a uroflow test and a post-void residual test. Always have a low threshold for performing a cystoscopy. Be sure to obtain a full past surgical history, focusing on any inguinal or pelvic surgery or any previous use of mesh.

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When discussing the risks and possible complications of the procedure, be sure to document your discussion in detail. Review the risks of infections, mechanical failure (30%) in 15 years, and visceral injury. During this discussion, it is important to counsel the patient on preoperative changes that can improve his surgical outcome. Smoking cessation improves postoperative pain and infection rate.⁴ Lifestyle changes, weight loss, and exercise will give the patient “skin in the game.” Assessment of preoperative glycemic status is critical for men with diabetes. According to the orthopedic literature, a hemoglobin A1c <8.5 decreases risk of infection. In the urological literature, recent studies have not shown a difference in infection rates, but it is my practice to limit implants to patients with an A1c <8.5.⁵⁻⁷ In some patients, I do a nasal swab for MRSA colonization, and if found, I prescribe mupirocin ointment. I tend to use more Coloplast IPPs than AMS IPPs. However, I have both devices in the office and I counsel patients on the risks and benefits of both in detail. As indicated above under “Management,” I also review the different surgical techniques: infrapubic, penoscrotal, and subcoronal. I then give patients literature and presurgical videos and have them come back for a penile Doppler.

Surgical Procedure

At the time of the penile Doppler, I focus on the amount of fibrosis, if any, both proximally and distally. If there is a significant amount of fibrosis, the patient is instructed to use a vacuum erection device 25 to 30 minutes a day 4 to 6 weeks prior the surgery to facilitate dilation and length restoration. Distally, I look for calcified intracavernosal pillars that can make distal dilation difficult and lead to undersizing of the prosthesis.⁸ A stretched penile length is measured and the patient is informed that that would be a close to accurate presentation of his postoperative length. It is crucial to outline expectations for postoperative length since patients may not realize that their penis has become shortened with time and they may have an unrealistic expectation of postoperative length. Underpromising and overdelivering leads to a much happier postoperative patient. Finally, the Doppler is used to check for curvature and plaques; patients may not have had a rigid erection in years and may not know they have a curvature.

Our patient elected to have an MMUS placed at the time of the IPP placement. An MMUS is a modification of the Andrienne mini-jupette (AMJ) procedure first reported by Yafi et al.⁹ With the AMJ, the graft is sewn to the medial aspect of the corporotomies. In contrast, with our MMUS approach, the sling is placed over the mid/proximal bulbar urethra, proximal to the corporotomies. Here, we secure the sling to the far lateral aspects of the corpora, increasing the area over which supportive pressure is exerted on the urethra with the cylinders inflated (Figure 1). Both procedures have well documented success rates of 89% to 93% resolution of climacturia with minimal complications.⁹⁻¹¹ We use a Coloplast Virtue mesh, since the intrinsic elastic properties of the nonabsorbable large-pore knitted polypropylene monofilament mesh allow for adequate stretch to prevent excessive tension on the underlying urethra while still providing excellent urethral support. Unlike other mesh choices such as Tutoplast, the Virtue mesh forms a pseudo capsule and has minimal risk of reabsorption. Patients are always counseled on the risk of transient urinary retention. The underlying cause is likely periurethral edema and inadvertent excess tension on the sling. Intraoperatively, we test the tension, ensuring the end of a DeBakey forceps or similar instrument can slide easily between the sling and urethra and the MMUS. Then the sling is reassessed similarly after cylinder inflation to ensure the absence of excessive pressure on underlying tissues (Figure 2).

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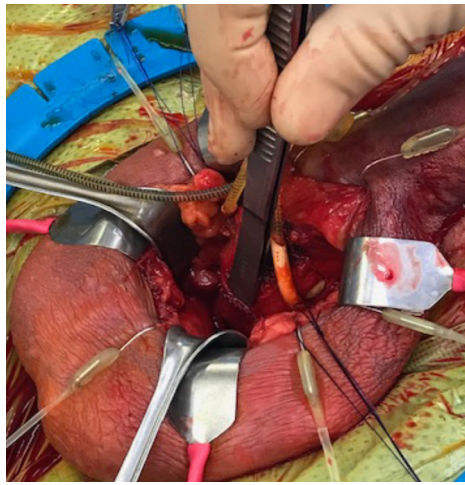


Figure 1. A DeBakey forceps should slide easily between the MMUS mesh and the urethra with the cylinders in place and deflated.

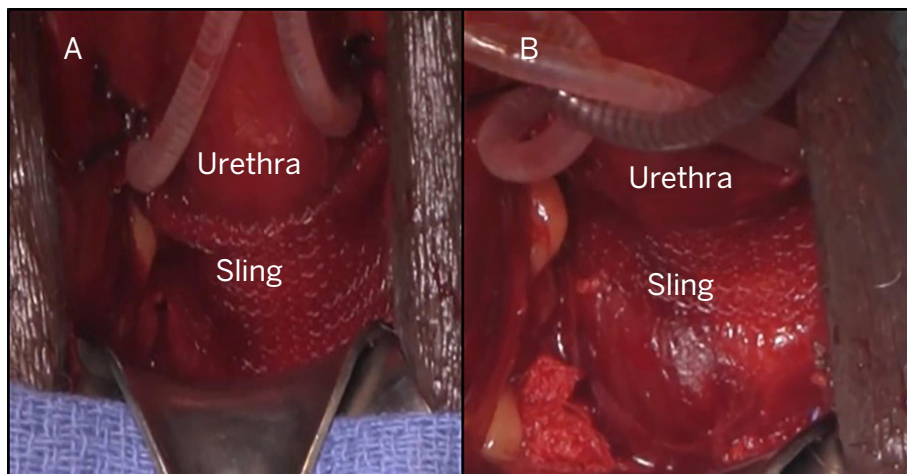


Figure 2. The MMUS with the penile prosthesis cylinders deflated (A) and inflated (B). Note the gentle pressure exerted on the underlying bulbar urethra by the sling when the cylinders are filled.

Per AUA guidelines, I give patients vancomycin (1 g if <80 kg, 1.5 g if 80-120 kg, 2 g if >120 kg) 1 hour before surgery and gentamicin 5 mg/kg (2 mg/kg for patients with chronic kidney disease). In light of recent literature,¹² I also give 200 mg IV fluconazole to patients with diabetes. For irrigation, I have moved away from using a pure antibiotic mix such as vancomycin/gentamicin or rifampin/gentamicin. I now use Irrisept, since it has been shown in the orthopedic literature to have broad coverage against aerobic, anaerobic, and fungal organisms. In the operating room, I use minimal shaving and do a chlorhexidine scrub. I follow that with a pudendal block, a circumferential block, and a ring block. I use a mix of lidocaine, bupivacaine, and dexamethasone for the blocks. Dexamethasone has been shown in the anesthesia literature to prolong the effect of the local anesthetic for up to 48 hours.^{13,14} To further prevent infection, I am strict about minimizing operating room traffic and getting the implant, once prepped, in the patient as soon as possible. In a typical patient, I apply a mummy wrap and leave a JP drain. Since the patient has received a pudendal block, I am able for hemostatic purposes to keep the cylinders inflated in the recovery

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room for 1 hour and to painlessly deflate them at time of discharge. All patients go home the same day. Although it is not fully supported by the literature, I send all my patients home with a short course of antibiotics, usually ciprofloxacin. Patients who have had an MMUS placed are left fully deflated to avoid postoperative retention. For pain control, I use an opioid-free regimen of naproxen and acetaminophen. For most patients, the pudendal block lasts for 48 hours, giving them minimal discomfort postoperatively.

Postoperative Follow-Up

Patients are seen in the office 2 days postoperatively for drain removal. Two weeks postoperatively, they are taught how to inflate and deflate the device. Patients are placed on a strict protocol of maximal inflation for 1 hour twice a day. Most patients are cleared to use the device for sexual activity between 4 and 6 weeks postoperatively. In the case of the MMUS, inflation is deferred for 4 weeks to prevent urinary retention.

Our patient returned on postoperative day 2 for drain removal and he began inflating his device at 4 weeks. At his most recent follow-up, 6 months postoperatively, he reported that he had been keeping his device partially inflated, which he said had made him almost completely dry during the day. He is now using a pad only when he goes on long car rides.

REFERENCES

1. Kohler T, Gupta NK, Wilson SK. Wilsons's Pearls, Perils and Pitfalls of Penile Prosthesis Surgery. 2nd ed. Fort Smith, AR: Calvert McBride; 2018.
2. Trost LW, Baum N, Hellstrom WJ. Managing the difficult penile prosthesis patient. *J Sex Med.* 2013;10(4):893-907. <https://doi.org/10.1111/jsm.12115>.
3. Shah T, Wang R. A review of factors affecting patient satisfaction with inflatable penile prosthesis. *Sex Med Rev.* 2021;9(2):350-357. <https://doi.org/10.1016/J.SXMR.2020.04.001>.
4. Sørensen LT. Wound healing and infection in surgery. The clinical impact of smoking and smoking cessation: a systematic review and meta-analysis. *Arch Surg.* 2012 Apr;147(4):373-83. doi: 10.1001/archsurg.2012.5. PMID: 22508785.
5. [Chen T, Li S, Eisenberg ML. The association between hemoglobin A1c levels and inflatable penile prosthesis infection: analysis of US insurance claims data. *J Sex Med.* 2021;18:1104-1109. <https://doi.org/10.1016/j.jsxm.2021.03.077>.
6. Huynh LM, Huang E, El-Khatib FM, Gross MS, Yafi FA. A systematic review of literature regarding whether immediate preoperative hemoglobin A1c or serum glucose are risk factors for infection following penile prosthesis implantation. *Urology.* 2021;152:15-24. <https://doi.org/10.1016/j.urology.2021.01.066>.
7. Dick BP, Yousif A, Raheem O, Hellstrom WJG. does lowering hemoglobin A1c reduce penile prosthesis infection: a systematic review. *Sex Med Rev.* 2021;9(4):628-635. <https://doi.org/10.1016/J.SXMR.2020.06.004>.
8. Pagano MJ, Weinberg AC, Deibert CM, Hernandez K, Alukal J, Zhao L, Wilson SK, Egydio PH, Valenzuela RJ. Penile intracavernosal pillars: lessons from anatomy and potential implications for penile prosthesis placement. *Int J Impot Res.* 2016;28(3):114-119. <https://doi.org/10.1038/ijir.2016.12>.
9. Yafi FA, Andrianne R, Alzweri L, Brady J, Butcher M, Chevalier D, DeLay KJ, Faix A, Hatzichristodoulou G, Hellstrom WJG, Jenkins L, Kohler TS, Osmonov D, Park SH, Schwabb MD, Valenzuela R, van Renterghem K, Wilson SK. Andrianne mini-jupette graft at the time of inflatable penile prosthesis placement for the management of post-prostatectomy climacturia and minimal urinary incontinence. *J Sex Med.* 2018;15(5):789-796. <https://doi.org/10.1016/J.JSXM.2018.01.015>.
10. Yafi FA, Brady J, Wilson SK. A new male sling for minimal to moderate incontinence and climacturia. *Int J Impot Res.* 2021;33(5):525-532. <https://doi.org/10.1038/S41443-020-0308-7>.
11. Valenzuela RJ, Ziegelmann MJ, Hillelsohn JH, Farrell MR, Kent MA, Levine LA. Preliminary outcomes of the male urethral "mini-sling": a modified approach to the Andrianne mini-jupette procedure with penile prosthesis placement for climacturia and mild stress urinary incontinence. *J Sex Med.* 2019;16(8):1310-1317. <https://doi.org/10.1016/j.jsxm.2019.04.009>.
12. Dawn LE, Henry GD, Tan GK, Wilson SK. Biofilm and infectious agents present at the time of penile prosthesis revision surgery: times are a changing. *Sex Med Rev.* 2017;5(2):236-243. <https://doi.org/10.1016/j.sxmr.2017.01.002>.
13. Huynh TM, Marret E, Bonnet F. Combination of dexamethasone and local anaesthetic solution in peripheral nerve blocks: a meta-analysis of randomised controlled trials. *Eur J Anaesthesiol.* 32(11):751-758. <https://doi.org/10.1097/EJA.000000000000248>.
14. Cummings KC 3rd, Napierkowski DE, Parra-Sanchez I, Kurz A, Dalton JE, Brems JJ, Sessler DI. Effect of dexamethasone on the duration of interscalene nerve blocks with ropivacaine or bupivacaine. *Br J Anaesth.* 2011;107(3):446-453. <https://doi.org/10.1093/bja/aer159>.

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Our renowned [urologic specialists](#) have pioneered numerous advances in the surgical and pharmacological treatment of urologic disease.

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