NYU Langone Health

Department of Urology
Case of the Month

Management of Erectile Dysfunction in the Prostate Cancer Patient

CASE PRESENTATION

A 69-year-old man with a past medical history of hypertension and hyperlipidemia presented with an elevated PSA and a prostate MRI showing a PI-RADs 5 lesion in the right posterolateral base with gross extraprostatic extension and no pelvic lymphadenopathy. MRI-guided fusion biopsy showed Gleason 7 (4+3) in 7 of 12 systematic cores and all targeted cores with perineural invasion present.

On receiving his diagnosis of prostate cancer, the patient met with both a urologic surgeon and a radiation oncologist to discuss the options of radical prostatectomy, focal ablation, and prostate radiation therapy. He ultimately elected to undergo radical prostatectomy. Given his extraprostatic disease on the right, he was counseled about non-nerve sparing techniques.

The patient met with our men's health team preoperatively, at which time he was educated on what to expect after prostate cancer treatment. His erectile function was deemed to be marginal at baseline, and he was started on preoperative tadalafil 5 mg daily to maximize penile blood flow and erectile health. He then underwent an uncomplicated robot-assisted laparoscopic prostatectomy (RALP) with nerve sparing performed on the left side, no nerve sparing performed on the right given his disease burden.

Postoperatively, the patient continued taking daily tadalafil (Cialis) 5 mg but ultimately had 0/10 erections for the first 2 months. He was then given an additional 100 mg of sildenafil (Viagra) to take on an empty stomach as needed before sexual activity. This helped him achieve 4/10 erections, still not suitable for penetration. He elected to continue this treatment for the first 7 months after surgery and his erections ultimately improved to a 5/10, with 7/10 being good enough for penetration.

At 7 months postoperatively, the patient elected to try intracavernosal injections. He was able to achieve a 7/10 erection with 40 u of Tri-Mix #5 (10 mcg alprostadil/30 mg papaverine/1 mg phentolamine). Despite the decent response at a fairly low dose with potential to strengthen, he experienced great difficulty in executing the injection. In addition, he was spending at least 1 week a month at his house in South America, precluding his ability to use the injection regularly given the need for refrigeration. After extensive counseling, he elected to undergo placement of an inflatable penile prosthesis (IPP).

The patient underwent placement of a 3-piece IPP 14 months after his RALP. His cylinders were placed via a penoscrotal incision, and his reservoir was placed via a counter-incision to ensure proper placement given his surgical history. His postoperative course was uncomplicated. He was discharged on the day of surgery with a Foley catheter and a penile mummy dressing in place. At his visit to the clinic on postoperative day 1, his mummy dressing and Foley catheter were removed. After a successful voiding trial, he was again educated on optimal pain control and postoperative wound care. At his follow-up visit 2 weeks after the surgery, he had manageable swelling and significant improvement in his pain. He was seen again 5 weeks after surgery, at which time his swelling and pain had resolved and his pump was easily palpable. He was taught again how to use the device in clinic, and he was able to inflate and deflate it himself without issue. When he was seen again 3-month postoperatively, he was delighted with his device.

COMMENT

Managing sexual expectations after prostate cancer treatment is imperative but can be time consuming for the urologic oncologist. Several intricacies must be discussed, and a perceived lack of education and support about all aspects of sexuality post prostate cancer therapy has been shown. This deficit seems to be particularly large when addressing gay, bisexual, and single men's needs.[1] In our practice, we discuss the expected timeline for recovery of erectile function and urinary continence after prostate cancer treatment and how it can take more than a year to regain full remaining function. Specifically, we discuss the role of nerve sparing and situations in which nerve sparing is not clinically indicated. We discuss the possibility of penile shrinkage after the surgery due to changes in anatomy from presumed re-anastomosis of the urinary system. We also discuss how the patient will retain the ability to have orgasms (even if not fully erect), but he will not ejaculate semen; some patients may experience climacturia. In addition, for patients who engage in receptive anal sex, sexual sensation may be altered after the prostate is removed.

The rate of erectile dysfunction after prostate cancer treatment is highly variable and dependent on many factors, but the literature has shown prevalence to range between 14% and 90%.[2-5] Penile rehabilitation after prostate cancer treatment focuses primarily on maximizing the delivery of oxygenated blood to the penis.[5-8] This is thought to prevent fibrosis and is an attempt to avoid any irreversible structural changes in the postoperative period. There are many different approaches to penile rehabilitation, and it has been demonstrated that attempting any penile rehabilitation at all is better than nothing.[2] Our algorithm for management of erectile dysfunction after prostate cancer surgery begins with phosphodiesterase-5 (PDE-5) inhibitors, namely, sildenafil and tadalafil. We discuss the pharmacologic differences of each medication and how these medicines can occasionally be combined in order to maximize the pharmaceutical effect of PDE-5 inhibitors after prostate/bladder surgery. We typically initiate daily tadalafil 5 mg before the procedure to maximize blood flow preoperatively and then follow up 3 months after prostate cancer treatment.[9] If at that time the patient is having no erectile function, we add 100 mg of sildenafil taken before sex and we follow up 1 to 2 months later. If the oral medications prove to be inadequate, we move to intracavernosal injections, typically starting with low-dose Tri-Mix and adjusting on the basis of response. Before the prostate procedure, we discuss the general risks and benefits of intracavernosal injections and the logistics of administration so that the patient is prepared for the idea of penile injections if needed. We also discuss the role of penile prosthesis placement.[10]

Placement of an IPP is an excellent option for post prostate cancer treatment patients for whom other treatments are ineffective. IPP placement has been shown to have a 90% to 95% patient satisfaction and offers the ability to have sex without planning or medications.[11-15] Special care must be taken to fully explain the risks and benefits of penile prosthesis placement, including infection, bleeding, swelling, postoperative pain, corporal and urethral erosion, proximal and urethral perforation, device malfunction with need for revision/replacement, changes in sensation, and glans softness including floppy glans syndrome. We discuss the fact that the glans will always be softer than the patient's natural erection, and in men who engage in penetrative anal sex, this can be particularly limiting and should be addressed specifically. We particularly outline the limitations in prosthetic sizing and clearly indicate that the device will only be as long as the stretched penile length. We pay particular attention to the discussion of the inherent irreversible nature of the procedure so that the patient understands upfront that if he is displeased, he will not have the option to have it removed and return to his preoperative level of erectile function.

Erectile dysfunction is extremely common after treatment for prostate cancer. However, patients can achieve good outcomes and high satisfaction with appropriate counseling, expectation management, and medical/surgical treatment.

REFERENCES

1. Rogers F, Rashidi A, Ewens B. Education and support for erectile dysfunction and penile rehabilitation post prostatectomy: a qualitative systematic review. *Int J Nurs Stud.* 2022;130:104212.
2. Saleh A, Abboudi H, Ghazal-Aswad MB, Mayer EK, Vale JA. Management of erectile dysfunction post-radical prostatectomy. *Res Rep Urol.* 2015;7:19-33.
3. Salonia A, Burnett AL, Graefen M, Hatzimouratidis K, Montorsi F, Mulhall JP, Stief C. Prevention and management of postprostatectomy sexual dysfunctions. Part 1: choosing the right patient at the right time for the right surgery. *Eur Urol.* 2012;62(2):261-272.
4. Moskovic DJ, Miles BJ, Lipshultz LI, Khera M. Emerging concepts in erectile preservation following radical prostatectomy: a guide for clinicians. *Int J Impot Res.* 2011;23(5):181-192.
5. Bratu O, Oprea I, Marcu D, Spinu D, Niculae A, Geavlete B, Mischianu D. Erectile dysfunction post-radical prostatectomy – a challenge for both patient and physician. *J Med Life.* 2017;10(1):13-18.
6. Gandaglia G, Suardi N, Cucchiara V, Bianchi M, Shariat SF, Roupret M, Salonia A, Montorsi Briganti A. Penile rehabilitation after radical prostatectomy: does it work? *Transl Androl Urol.* 2015;4(2):110-123.
7. Mulhall JP. Penile rehabilitation following radical prostatectomy. *Curr Opin Urol.* 2008;18(6):613-620.
8. Mulhall JP, Bivalacqua TJ, Becher EF. Standard operating procedure for the preservation of erectile function outcomes after radical prostatectomy. *J Sex Med.* 2013;10(1):195-203.
9. Limoncin E, Gravina GL, Corona G, Maggi M, Ciocca G, Lenzi A, Jannini EA. Erectile function recovery in men treated with phosphodiesterase type 5 inhibitor administration after bilateral nerve-sparing radical prostatectomy: a systematic review of placebo-controlled randomized trials with trial sequential analysis. *Andrology.* 2017;5(5):863-872.
10. Lima TFN, Bitran J, Frech FS, Ramasamy R. Prevalence of post-prostatectomy erectile dysfunction and a review of the recommended therapeutic modalities. *Int J Impot Res.* 2021;33(4):401-409.
11. Levine LA, Becher EF, Bella AJ, Brant WO, Kohler TS, Martinez-Salamanca JI, Trost L, Morey AF. Penile prosthesis surgery: current recommendations from the International Consultation on Sexual Medicine. *J Sex Med.* 2016;13(4):489-518.
12. Hellstrom WJ, Montague DK, Moncada I, Carson C, Minhas S, Faria G, Krishnamurti S. Implants, mechanical devices, and vascular surgery for erectile dysfunction. *J Sex Med.* 2010;7(1 Pt 2):501-523.
13. Menard J, Tremeaux JC, Faix A, Pierrevelcin J, Staerman F. Erectile function and sexual satisfaction before and after penile prosthesis implantation in radical prostatectomy patients: a comparison with patients with vasculogenic erectile dysfunction. *J Sex Med.* 2011;8(12):3479-3486.
14. Bettocchi C, Palumbo F, Spilotros M, Lucarelli G, Palazzo S, Battaglia M, Selvaggi FP, Ditonno P. Patient and partner satisfaction after AMS inflatable penile prosthesis implant. *J Sex Med.* 2010;7(1 Pt 1):304-309.
15. Castiglione F, Ralph DJ, Muneer A. Surgical techniques for managing post-prostatectomy erectile dysfunction. *Curr Urol Rep.* 2017;18(11):90.

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