Erectile Dysfunction Treatment Recommendations After Radical Prostatectomy

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Abstract

Erectile dysfunction is a common side effect men suffer from after radical prostatectomy surgery. Prostatectomy surgical intervention is the treatment of choice for prostate cancer. Erectile dysfunction requires special attention by the healthcare team because of the physical and psychological impacts it has on a patient’s life. This article will examine the various forms of penile rehabilitation available to patients. There is little research available currently that suggests one form of treatment is better over another; therefore all treatment options should be presented to the patient. Studies suggest that patients get frustrated about their erectile dysfunction soon after surgery. A few combination therapies will also be discussed as they have shown to increase effectiveness. Erectile dysfunction after prostatectomy surgery has a major impact on patients’ lives and requires a multimodal approach. This article aims to present a clinical overview of treatment options available.

KEYWORDS: Erectile dysfunction, prostatectomy, combined therapy, ED, surgery, radical prostatectomy, penile rehabilitation
Introduction

One in six men run the risk of developing prostate cancer in their life; making it the most common non-skin type of cancer diagnosed in men (American Cancer Society, 2010). Radical prostatectomy is the treatment of choice for prostate cancer. (American Cancer Society, 2010). Post operatively incontinence and erectile dysfunction are the two most common post-operative concerns reported (Hedestig, Sandman, Tomic and Widmark, 2005). Most surgical patients will regain their continence in time leaving erectile dysfunction (ED) to be the leading long-term quality of life issue patients face (Raina et. al., 2008). Erectile dysfunction has been defined by the National Institute of Health (2010) as the difficulty or inability of a man to get or sustain an erection firm enough for sexual intercourse. This condition often leaves the patient feeling like a changed man with a lost sex life, commonly causing him to have changes in his intimate relationship(s) and causing lowered self-esteem (Hedestig et. al., 2005). Erectile dysfunction is reported in as many as 85% of patients following radical prostatectomy (Nandipati, 2006).

Penile Rehabilitation and Erectile Dysfunction Treatment

After radical prostatectomy the goal for patients is for them to have an erection firm enough for sexual intercourse with their partner. Currently on the market there are 5 different forms of treatment available for men who suffer from erectile dysfunction. The first option is oral phosphodiesterase type 5 (PDE-5) inhibitors. Secondly there are non-invasive methods and involve the use of penile vacuum and occlusive devises. The third option is the use of urethral suppositories, like Muse. Fourth are penile injections. The final option to patient would be a penile prosthesis. Recently, research is also suggesting the use of supplemental testosterone use 1 year after surgery. A few of these various treatments
can also be used for penile rehabilitation in patients. The goal of penile rehabilitation is to maximize the erection function through the use of medications and devices (Muhall, 2009). Penile rehabilitation is highly important after prostatectomy surgery because of the progressive fibrosis that can occur from denervation and ischemic condition subsequent to the loss in elasticity of the penis (Tsao & Nehra, 2006).

**Phosphodisterase type 5 (PDE-5) Inhibitors**

Phosphodisterase type 5 (PDE-5) inhibitors are the primary treatment for erectile dysfunction in men (Keating and Scott, 2003). Success rate with PDE-5 inhibitors after prostatectomy is less than 30% (Ellsworth & Kirshenbaum, 2008). Studies have found though that a patient who fails one PDE-5 inhibitor may respond differently to another (Ellsworth & Kirshenbaum, 2008). PDE-5 inhibitors were first introduced to the market in 1998 with sildenafil (Viagra). Since then two more PDE-5 inhibitors, vardenafil (Levitra) and tadalafil (Cialis) have become FDA approved. All of the PDE-5 inhibitors work in a similar fashion, but there are subtle differences in chemical make-up.

The biggest advantage of PDE-5 inhibitors is their ease of use in the form of an oral tablet. PDE-5 inhibitors also allow a patient to have sex whenever they please; compared to other medications where they need to be given with a certain time frame of sexual intercourse for maximum effectiveness. PDE-5 inhibitors are also rather cost effective averaging about $10-$30 a tablet.

The major disadvantage of PDE-5 inhibitors is their lack of effectiveness in patients after prostatectomy surgery. There are no major side effects from PDE-5 inhibitors except for facial flushing, headache and nausea. Keating & Scott (2003) do make note that PDE-5
inhibitors are contraindicated in patients with cardiac conditions; especially those who use nitrate medications.

PDE-5 inhibitors have been found to be clinically useful for the use of penile rehabilitation. In a study by Padma-Nathan, McCullough and Guiliano (2003) 76 men were given sildenafil 50mg, 100mg or placebo each night for 36 weeks starting 1 month after surgery. The study found that 27% of the men taking sildenafil had spontaneous return of their erection. The study was then repeated by McCullough, Levine and Padma-Nathan (2008) and found through the use of nightly sildenafil patients have improved nocturnal erections. The study also found that the use of sildenafil decreased penile plaque build-up. Educating the patient on the facts and importance of penile rehabilitation is key to ensuring he will continue with the care.

It is not uncommon for urology physicians to recommend that patients take one of the three PDE-5 inhibitors daily after surgery for penile rehabilitation. The use of these medications daily can place a financial hardship on patients though because many insurance companies put a lower limit on the number of tablets a patient can have each month (average is 12). This then leaves the patient with the decision to spread those tablets out over the month, or pay out of pocket for the remaining tablets. In patients who are limited to the number of tablets they can afford a month, it may be more beneficial to use tadalafil (Cialis) as your therapy of choice because of its longer half-life lasting up to approximately 36 hours (Ellsworth & Kirshenbaum, 2008).

PDE-5 inhibitors are not likely to provide a patient after a prostatectomy to have an erection firm enough for penetration. PDE-5 inhibitors though may serve as an excellent
medication for the use of penile rehabilitation. Being sure you stress this fact to patients though may help them from being discouraged or upset with outcomes.

**Penile Vacuum and Occlusive Devises**

There are many non-invasive and non-medicine products available on the market for the treatment of erectile dysfunction. One of the simplest options available is the constriction ring or loop. The devise is a ring or loop that is placed at the base of the penis and it used to prevent blood from exiting the penis during intercourse. The advantages of the loop or ring are their low lost at $5-$30 and they are very small and compact compared to the penile vacuum. The disadvantage is they are only a reliable source for men who can get a firm erection; but cannot maintain it for intercourse. Another noted disadvantage is they do have to be worn during intercourse, and some patient may complain about the device being cumbersome during sexual contact with their partner.

The penile vacuum devise contains two parts: a pump attached to an air tight cylinder and a constrictive ring. To use the devise the penis is inserted into the cylinder with the constriction ring on it. When the open end of the cylinder touches the body, the vacuum on the opposite end starts to create a negative pressure inside the cylinder pulling blood into the penis. Nandipati et. al. (2006) reports that the use of the penile vacuum can have up to 80% efficacy rate for generating an erection firm enough for penetration in patients after a prostatectomy. Advantages of the pump are its ease of use and it is easy to travel with it. Köhler and Pedro, et. al. (2007) note that the penile vacuum does typically produce an erection firm enough for intercourse without the use of medications; which is also seen as an advantage to many. Disadvantages are it can be messy with the use of water
soluble lubricant and the devise can be bulky. Another disadvantage noted it the vacuum can be costly; upward of $500, and is commonly not covered by insurance.

The penile vacuum can also play a crucial role in penile rehabilitation. Mulhall (2009) states through the use of the penile vacuum studies have shown it is effective in maintaining penis length and increasing cavernosal oxygenation levels. Taso and Nehra (2006) comment though that dependant use of the penile vacuum could be detrimental to the natural return of spontaneous erection; though very few studies support this yet.

**Intraurethral Alprostadil (aka Muse)**

Muse is an intraurethral suppository that was introduced to the market in 1997. It was developed to make prostaglandin intracorporal injection medication available without needing a syringe. To use Muse the patient either inserts the applicator into the urethra after urinating, so its wet, or they can use a small amount of lubricant. The applicator should be placed about one inch into the urethra. The top of the applicator is then depressed, releasing a small pellet/suppository of Muse into the urethra. The penis is then massaged by the patient between his hands for 10-20 seconds to aide in the absorption of the Muse. Muse has a titrated dose starting at 125 mcg up to 1000 mcg. Muse is contraindicated in patients who have an abnormal shape to their penis, patients with sickle cell anemia, or leukemia (PDR Staff, 2010). Special attention should also be paid to patients who do have a history of low blood pressure, lightheadedness or dizziness (PDR Staff, 2011).

Advantages of Muse are it is easy to use and no injection into the penis is required. Muse can be kept at room temperature for 2 weeks as well. Disadvantages include the medication cannot always produce an erection firm enough for sexual intercourse. Muse is
also significantly expensive at about $40 per dose. In a study by Raina et. al. (2005) Muse was effective in 55% of men post prostatectomy for obtaining an erection firm enough for penetration. 63% of those men continued Muse for treating their erectile dysfunction. Ellsworth and Kirshenbaum (2008) note that improved satisfaction results were found in men who used Muse with a constriction band. Raina, et. al. (2005) also noted that 80% of men reported an erection firm enough for penetration with the addition of a PDE-5 inhibitor, along with the use of Muse.

Muse has also been found to be useful in the role of penile rehabilitation as well. Tsao and Nehra (2006) reported when patients used Muse 2 times per week, for 6 months, 74% of patients were able to sustain an erection firm enough for vaginal intercourse. Of the patients who were able to have intercourse, 75% stated they had returned to spontaneous erections. However 71% of the men able to have intercourse stated they were unhappy with the quality/firmness of their erection.

**Intracavernosal Penile Injections**

Intracavernosal penile injection is best suited for a patient who desires a medication with a higher rate of positive outcome. The injections work by using vasoactive medications that are injected into the penis. The medications dilate blood vessels, thus causing the penis to become erect engorged with blood. A majority of injectable medications are prostaglandin derivatives (Caverject Impulse and Edex).

Advantages of penile injections are their high efficacy rate of producing an erection firm enough for intercourse without the need of constrictive devises, penile vacuums or other medication therapies. Patients often report that the injections are quick to work and easy to use.
Disadvantages of the injections mainly focus around the idea of being physically invasive and patients report pain with injections (Albaugh and Ferrans, 2010). Another disadvantage can be cost at around $50 per injection (Albaugh, 2006). The medications may also not be readily available. Currently Caverject is in very limited supply in the United States and Edex is commonly on backorder with pharmacies.

Ellsworth and Kirshenbaum (2008) report that penile injections do come with a 87% - 90.3% satisfactory rating with patients. Albaugh (2006) does note that the dosage must be titrated up, so reaching an effective dose can take some time. They further reported that 90% of their partners were satisfied with the sexual intercourse. Nandipati, Raina, Agarwal and Zippe (2006) point out dropout rates for the injections do exceed 40%; mostly because of the idea of the medication being delivered by an injection. Side effects of the injections commonly include pain at the injection site, bruising, and rarely penile fibrosis. Priapism (an erection lasting longer than three to four hours) is also a risk that can occur.

**Penile Prosthesis**

The penile prosthesis is the oldest form of treatment for erectile dysfunction. The implant is placed in the surgical suite inside of the penis along each side of the corpora cavernosa. There are two forms of the penile implant: malleable and inflatable implant. The malleable is used by the patient bending their penis upwards when he wants to have sexual intercourse; subsequently he would then bend the penis down when not having a sexual encounter. The inflatable implant uses a saline filled pump that is placed in the scrotum. The pump has a inflation and release mechanism to control the saline going into the rods of the devise.
The advantages of a penile prosthesis are they are very reliable. Patients typically are very satisfied with their outcomes post-operatively. Though it does have high satisfactory ratings with patients; because it is a very invasive surgery and can cause damage to the corpora cavernosa it is considered a final line treatment for erectile dysfunction. Some research has been done on implanting a penile prosthesis at the time of a prostatectomy. In a study by Schwartz, Covino, Morgentaler, & DeWolf (2000) researchers found when penile prosthesis were placed at the time of surgery, patients reported more frequent sexual contact with their partner and fewer marital/relationship issues.

**Supplemental Testosterone Therapy**

Testosterone replacement therapy has often been considered a risk for a patient to develop prostate cancer. Recently research has started to surface recommending the use of testosterone replacement therapy for patients post-prostatectomy with hypogonadism (Krader, 2011). Krader (2011) states currently some practitioners will allow patients to be treated with testosterone replacement therapy after radical prostatectomy as soon as three months after surgery. Krader (2011) does note that patients with a Gleason score higher than 3+4 are excluded from treatment.

**Conclusion**

Erectile dysfunction after prostatectomy is one of the most common side effects of the operation that has a major impact on the patient’s quality of life. Many men have feelings of ‘loosing their manhood’ and face depression because they cannot satisfy their partner anymore. Early intervention and treatment of erectile dysfunction is key for the healthcare provider to implement.
Treatment of erectile dysfunction after prostatectomy can be very frustrating not just for the patient but by the provider as well. It is frustrating for providers because there is no 'standard of care' when treating erectile dysfunction. Commonly providers will use the less invasive approach with patients. Normally starting with oral medications is standard, but commonly a second line therapy is added because of their low efficacy rate. It should be noted though the role that daily PDE-5 inhibitors can play in penile rehabilitation. PDE-5 inhibitors have been shown to increase blood flow to the penis; thus decreasing penile fibrosis. PDE-5 inhibitors may be most useful when used in conjunction with Muse or the penile vacuum/constriction device. Muse can become a problem because of cost, and its not always effective. The vacuum device can also be cumbersome because of its size. When patients fail all other therapies or want a medication with proven efficacy, then penile injections may be the best option.

The primary goal is that healthcare providers need to understand options available and how to best utilize them for the treatment of erectile dysfunction in post operative prostatectomy patients. It is also critical for the healthcare team to talk openly to the patient (and possibly their partner) about their expected outcomes of treatment. Chartier-Kastler et. al. (2008) found that only 18% of patients were satisfied with their post operative sexual performance. The study further found that patients were not satisfied with the amount of time it took for their urologists to start treating the erectile dysfunction. Chartier and Kastley et. al. (2008) found that patients reported being frustrated with erectile dysfunction at the one to month mark after surgery. This shows that early intervention for treatment is essential to help patients with their overall sense of well-being.
The goal of treating erectile dysfunction following prostatectomy is for the health care provider and the patient to find an optimal treatment for erectile dysfunction and penile rehabilitation. It may be a long process to return to spontaneous erection, but with constant communication and openly expressing expected outcomes, it can be less frustrating for both the patient and health care team.
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References


