Impotence, Penile Prostheses and Alternatives

Roni Olsen

As if urinary diversion is not a sufficiently traumatic and challenging physical alteration, the majority of male patients who undergo radical cystectomy for invasive bladder cancer will have the additional burden of dealing with impotence. Impotence, the inability to have an erection adequate for sexual intercourse, is an understandably frightening and psychologically intimidating prospect for even the most stoic individual to contemplate. Impotence may be caused by several medical conditions, including diabetes, prolonged high blood pressure, neurogenic disease, spinal cord injuries, and in many cases, radical pelvic cancer surgery.

Conservative figures estimate close to ten million American men suffer from chronic impotence. Until less than twenty years ago, there was not a safe or reasonably acceptable alternative to physically caused impotence. Over the past two decades, however, medicine and engineering have combined to develop a variety of penile prostheses which provide acceptable alternatives to physical impotence. As a result, sexual rehabilitation has become an integral part of the treatment for invasive bladder cancer, an important step that plays a major role in restoring both self-image and an acceptable quality of life to the male urostomate. Although none of the prostheses provide an exact duplication of a natural erection, the penile implants are sufficiently similar to allow the patient to resume sexual activity close to what he enjoyed prior to the surgery. Furthermore, both patients and their partners have reported a very good rate of sexual satisfaction. In spite of this data, however, many patients with invasive bladder cancer are unaware of either the availability or satisfactory performance of these prosthetic alternatives. Rather than risk facing the sexual dysfunction that usually accompanies radical cystectomy, they delay seeking definitive therapy or even refuse surgery altogether.

Even in this liberated age, in which information on sex seems to be virtually inescapable as well as unabridged, there are still many misconceptions about what is involved in male sexuality. Sex is not just a matter of having erections; men can continue to have close to normal sensations and orgasms without either erection or ejaculation. Erections are created by microscopic nerves that run along the wall of the bladder and prostate gland and control and entrap the flow of blood into the corpora cavernosa, two long cylindrical chambers that run the full length of the upper side of the penis where the erectile tissue is located. Once the nerves have been damaged or surgically removed, there is nothing to trigger an increased flow of blood into the corpora cavernosa, and natural erections are no longer possible.

Most cases of physical impotence can be remedied by implanting a penile prosthesis into the corpora cavernosa. Inserted through a small incision in one of several acceptable locations, the prostheses extend from the end of the penis into the area under the pubic bone. The urethra, the channel for urine and semen, runs along the lower side of the penis and is not affected.

Penile implants do not restore normal erections, rather they substitute

substances other than blood to fill the two cylindrical chambers, thereby

providing a controlled erection.

Several companies offer a variety of penile prostheses, each with its own special features. All of the implants have one thing in common, however, they feature some type of cylinder which is inserted into each corpus cavernosum. None of the prostheses answers the needs of all patients, nor are all patients suitable candidates for all types of prostheses. An accurate assessment of the patient's physical condition and anatomy, manual dexterity, and sexual interest are important factors to be considered in the selection of a penile prosthesis. Penile implants fall into two primary types: paired semirigid rods and hydraulic inflatables. They are available in a variety of sizes, therefore, each selected device must be individually fitted to the patient's anatomy. Even though technological improvements and refined surgical techniques have substantially reduced the incidence of prosthesis failure over the past twenty years, none of the devices are 100% trouble free. Mechanical failure may occur, and reparative surgery may be required with any of the penile implants. To avoid the disappointment of unrealistic expectations, the patient and his partner must understand the
function of the prosthesis. They must also be aware of the advantages and disadvantages of the different types of prostheses as well as the range and frequency of mechanical failures and complications which may occur with any implant surgery before selecting a penile prosthesis. Penile implants will only provide an erection, they will not solve any other problems such as waning libido or psychologically caused impotence, nor will they repair a damaged relationship or improve the ability to communicate. If no physical cause is evident, which a urologist who specializes in impotence can determine through several tests, individuals with those problems are advised to seek counseling with a reputable sex therapist.

Overall performance and acceptance of the semirigid rods has been typically described as "satisfactory" to "good." Semirigid and malleable rod prostheses are popular because they are technically easy to implant, associated with a relatively low mechanical failure rate, functional and simple to operate, and are substantially less expensive than the inflatable prostheses. The main disadvantages are the rods produce permanent rigidity of the penis and erectile capacity is limited to the size of the implanted cylinders. For the most part, the penis can be placed in a "tucked-away" position until erectile function is desired. However, the need for frequent adjustment is not uncommon even with the malleable devices, and in some cases, a restraining undergarment must be worn. Most individuals who have a semirigid prostheses are not only constantly aware of the moderately uncomfortable device, but are also concerned that it might not be completely concealed.

Even though the three piece inflatable implants provide the widest range of flaccidity and rigidity as well as full patient control and are the most

cosmetic and comfortable of the penile implants, acceptance of the prostheses got off to a very slow start. The inflatable prostheses are approximately twice as expensive as the semirigid rods, and they are also technically more difficult to implant. Additionally, early models of the inflatable devices were plagued with mechanical problems that required surgical repair. Early mechanical problems reportedly occurred in approximately 40% of

the implants. Unfortunately, prostheses repairs require additional surgery, more risk, more expense, and more pain for the patient. It is no wonder many urologists refused to implant inflatable prostheses during the early years of frequent mechanical failure. Since the early 1980s, however, combined technological refinements and improved implantation techniques have resulted in a steady decrease in the incidence of mechanical complications. Failure rates have dropped to an acceptable 7%, and there has been an increase in acceptance and popularity of the Mentor and AMS three component inflatable penile

prostheses.

Along with an increase in cancer-related radical urological surgery during the last decade, there has been a growing awareness that planning for sexual rehabilitation should be an integral part of the initial treatment. In the case of the patient undergoing surgery for bladder cancer (or other pelvic surgeries), the inflatable prostheses may be implanted in two stages, the first taking place during radical cystectomy and the second at any time after recovery. Both the reservoir and pump can easily be implanted during radical pelvic surgery without adding significantly to the operating time or risk of the initial procedure. Another advantage is the patient is psychologically relieved to know his erectile dysfunction is being treated immediately. Implantation of the inflatable cylinders, however, is a more difficult and time consuming procedure that involves a separate area of the body and also increases the risk of infection. Therefore, the cylinders are implanted in a second procedure at a later date. There is no set time limit for the second stage to take place, and in fact, the prosthesis may even remain permanently unconnected with no ill effects. Tubing to connect to the inflatable cylinders is simply coiled up and placed inside of the pelvis. Whenever the patient is ready to have the cylinders implanted, the tiny tubes can easily be located, uncoiled and connected. The two-stage procedure is preferred over a single surgery because the first stage is easily performed during the radical pelvic surgery, and the initial scrotal pain and swelling which occur have a chance to subside before the inflatable cylinders are implanted. However, the two-stage procedure may not be a practical option, because impotence is not always cancer related. In most cases, impotence stems from a source that does not require radical pelvic surgery, and a single stage procedure is preferred. In either procedure, directions for using the inflatable penile prostheses are simple and easy to follow, and the urologist will outline a program for breaking in the implant. Early patient enthusiasm is likely to be tentative at best, due to normal post-op swelling and soreness that last a few weeks after the surgery.

Hospital stays for implant procedures typically range from one to three days. The actual surgery (including a second stage procedure) may take from thirty minutes up to two hours, depending upon the type of prostheses used, the condition of the tissue involved and the skill and experience of the surgeon. Even the three piece inflatable prostheses can be implanted through a single small incision near the base of the penis. User-friendly stitches, the kind that later dissolve in the shower are used to close the incision. Since the degree of discomfort is comparable to a double hernia surgery, general anesthesia and post-op pain medication are standard. A number of surgeons also perform outpatient penile implants with the use of a spinal block or local anesthetic for carefully selected patients. To help prevent infection, broad-spectrum antibiotic therapy is started prior to surgery and continued after the patient leaves the hospital. Post-op soreness and swelling of the penis and scrotum are to be expected. Until the condition moderates, most patients are content to be waited on and treated with ice packs and pain pills. Infection and/or body rejection occur in less than one percent of penile implant surgeries. In most cases of infection or body rejection, the prosthesis has to be removed and the area treated and allowed to heal.

Usually, another prosthesis can be implanted, but in some cases the implant must be abandoned altogether.

Implant surgery for physical impotence is covered by most insurance programs. However, Medicare and several other insurance companies may cover only the less expensive prostheses and only a portion of the total charges for the hospital and surgeon. With current soaring medical costs and fluctuating insurance benefits, the individual considering implant surgery should discuss fees and allowances with his urologist, hospital and insurance company before the surgery takes place.

Along with the development of the penile implants, there has also been a breakthrough in the understanding of both the neurophysiology and the neurovascular anatomy of penile erections. Nerve-sparing surgical techniques and penile injections now offer further advances in the treatment of impotence. Dr. Patrick Walsh of Johns Hopkins

University identified the microscopic nerves that control erection, and also developed a nerve-sparing surgical technique which enables some patients undergoing urological surgery to maintain potency. The innovative Walsh procedure requires a high level of surgical skill. Nerve-sparing surgery is only suitable for carefully selected patients, primarily patients with non-malignant problems or patients with small cancers confined to the center of the prostate gland. Unfortunately, cancer patients requiring radical cystectomy frequently have tumors that are too advanced to be appropriate for current nerve-sparing techniques. Until even more sophisticated surgical techniques and treatment for bladder cancer are developed, the majority of these patients will have to continue to look to one of the penile implants or penile injection as an alternative to impotence. Viagra and/or Muse will not help these patients, but they may be beneficial for patients who sustain only partial nerve damage.

Since 1982, the use of vasodilatory drugs to treat erectile dysfunction has gained worldwide acceptance. PEP, the pharmacological erection program, or penile injection, has been used in Europe since the early 1980s and in the United States since the mid-1980s. PEP has produced satisfactory results for a large number of men. The recent addition of the Caverjet injection offers another option. When these drug are injected into the corpora cavernosum, the vessels in the penis dilate and fill with blood to produce an erection. In most cases, an injection given shortly before intercourse will produce an erection within five to fifteen minutes that can last even after orgasm. The length of time the erection lasts varies with the amount of drug injected and patient response; a period of one to three hours is not uncommon. Once the proper dosage has been determined and the patient has been trained in the sterile procedure, penile injection is fairly simple and convenient to use. Although complications have reportedly been minimal, the patient should be closely monitored at regular intervals. Repeated use of penile injection for impotence may result in bruising, bleeding or burning pain on injection, infection, local fibrosis at the site of injection, damage to the

urethra, a drop in blood pressure, and elevated liver function. The most

serious complication is a form of priapism, a prolonged and painful erection that may last for several hours. Priapism requires a trip to the

urologist (or emergency room)and usually an injection of an agent to

constrict the blood vessels. In comparison to the penile implants, the

penile injection is relatively inexpensive, and also eliminates the

implantation of a permanent foreign substance into the body and the risk of mechanical failure.

Physicians and patients who are considering the use of penile injections to treat impotence should be aware that long-term side effects and results are not yet conclusive. Although a number of clinical reports attest to the overall success and patient satisfaction with penile injection, it must be noted that neither PEP drug (papaverine and phentolamine) has been approved for the treatment of impotence by the Food and Drug Administration (FDA). Additionally, some of the drug manufacturers have issued statements advising against the use of vasodilatory drugs to treat impotence. One of the drug companies includes the following warning in their package insert, "Papaverine hydrochloride is not indicated for the treatment of impotence by intracorporeal injection. The intracorporeal injection of papaverine hydrochloride has been reported to have resulted in persistent priapism requiring medical and surgical intervention." Nonetheless, the option of using an approved drug for an unapproved use is left open to the physician's discretion by the FDA, and many physicians and patients find the use of penile injection an attractive and convenient alternative for treating impotence.

Another option is a vacuum type device which, when placed over the penis and properly activated, produces vacuum tumescence with constriction at the base of the penis. Although the procedure, vacuum tumescence/constriction therapy, has proven to work quite satisfactorily to achieve penile fullness, the penis is not appropriately "anchored," and

therefore does not provide as stable an erection as either an inflatable or

semirigid rod prosthesis.

The following quote is from Roni Olsen's book, A Guide to Bladder Cancer, Urostomy and Impotence [unfortunately out of print]:

"Happily we can report that the inflatable implant has enabled us to resume our sexual activities with all the vigor and pleasure we enjoyed in the past. Actually, aside from the vagaries of the normal aging process, very little has changed. The normal, pleasurable feeling of tumescence of the penis is gone, there is no ejaculate or natural lubrication, and it does take a few seconds to inflate the cylinders. On the plus side, however, there is the ability to sustain an erection as long as desired, whether twenty minutes or two hours. The benefits of this should be obvious to anyone who has ever had a performance problem or wished for a few minutes more. Furthermore, sensations are little changed in intensity or pleasure, and all worry of failure to perform is eliminated. Impotent patients who have enjoyed a normal vigorous sex life in the past and are considering a similar implant, whether after radical pelvic surgery or any of the many other reasons for physical impotence, should confidently expect similar results."

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