

Erectile Restoration

Penile Prosthesis Surgery

ZSI
Zephyr Surgical Implants



SWISS
MADE
QUALITY

Pre-operative Considerations

Antibiotics

Corporal Measurement, Dilatation and Cylinder Placement

To Drain or Not to Drain

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Simultaneous Surgery with Penile Prosthesis Implantation



Pre-operative Considerations

Antibiotics



How can we prevent and treat infections in prosthetic surgery?

PREVENTION

**PREVENTION OF INFECTION
IS ONE OF THE KEY TO SUCCESS**

Pre-operative Considerations

Antibiotics

- ♂ The most frequent bacteria to infect a penile implant are *Staphylococcus epidermidis* and *Staphylococcus lugdunensis*. These opportunistic bugs live on skin and do not cause clinical infection in any other setting except where a medical device is implanted.
- ♂ According to medical literature, antibiotics given immediately before the surgery decreases risk of infection in the patient; antibiotics given in the postoperative period shows no effect.
- ♂ Mostly the regimen is Vancomycin and Gentamycin intravenously beginning 30 minutes before the surgery.
- ♂ The Vancomycin has to be dripped slowly or "red man syndrome" developed. Frequently the Vancomycin is still going when the surgeon make the skin incision.

Pre-operative Considerations

Antibiotics

- **Irrigate peno-scrotal incision** with local antibiotics, before during and after device implantation.

- *500 ml of sterile Saline Solution 0.9%*
- *600 mg Rifampicin*
- *640 mg Gentamicin (8 ampules = 80 mg/2 ml).*

– During procedure:

The pump should be wrapped in a clean gauze.

The pump must not touch the skin.

Pre-operative Considerations

Antibiotics

♂ The best oral therapy for the organisms is a combination of Rifampin and Trimethoprim/Sulfa. The Bactrim potentiates the Rifampin and the combination is much more powerful than either drug by themselves. Another potent antibiotic for the skin organisms is Tetracycline. If an infection is salvaged or if an infection is suspected, these are the drugs I use in an outpatient setting where IV Vancomycin is not an option.

Pre-operative Considerations

Corporal Measurement, Dilatation and Cylinder Placement

♂ Occasional implanters tend to lack confidence in corporal measurement.

♂ The 3 piece inflatable implants are quite forgiving and a successful outcome will result even if the cylinder is up to 2 cm too long or too short. This is possible because the subsequent capsule formation will stabilize the cylinder and provide a satisfactory erection even if the cylinder is a bit too long or too short.



Pre-operative Considerations

Corporal Measurement, Dilatation and Cylinder Placement

♂ Dilatation of the corpora may be done in many ways. The Dilamez insert requires only one pass but has lost popularity because of inadvertent tunical perforations.

♂ Hegar dilators have the disadvantage that the entire length of the instrument is the same diameter creating higher resistance. Brooks dilators are easier to use, encountering less resistance because the bullet configuration on the end dilates the same size as the previously mentioned dilators but the dilating portion is quite short.

♂ The patients with vascular insufficiency and resultant stenotic corpora tend to have shelves of fibrosis in the proximal and distal corpora making achievement of dilatation to 13 difficult.



Pre-operative Considerations

Corporal Measurement, Dilatation and Cylinder Placement

- ♂ Corporal measurements should be within one centimeter of each other or something is wrong. Disparity of more than 1 cm means there is a problem on one side: perforation, fibrotic shelf proximally, fibrotic band distally, crossover.
- ♂ It is advisable in the vast majority of situations for the physician to implant the same size cylinder on each side. Dissimilar sizes of cylinders and particularly rods encourage penile curvature and make revision operations problematic.



Pre-operative Considerations

Corporal Measurement, Dilatation and Cylinder Placement

- ♂ It is much easier to place the base of the cylinder first, rather than initially pulling the tip into the distal penis by pulling on the guide strings.
- ♂ After passing the Furlow and firing the needle through the glans, the author uses the back of the De Bakey forceps to assist insertion of the base of the cylinder. The base of the cylinder is inserted and the back of the forceps used to push the base into the proximal corporal body.
- ♂ ZSI suggests using the back of metal tool included with the accessory kit for this maneuver.



Pre-operative Considerations

To Drain or Not to Drain

♂ Many frequent implanters drain since they do not wish to experience the complication of scrotal hematoma. Most occasional implanters do not wish to drain since they presume an increased infection incidence by the use of a tissue drain.

♂ There are two extensive studies that showed the incidence of hematoma was decreased in a statistically significant fashion while the incidence of infection was unchanged in patients undergoing closed suction drainage for 24 hours.



Pre-operative Considerations

Cylinder Selection for Dummies

- ♂ Corporal measurement does not have to be exact to the half centimeter. It is, however, advisable that the same size cylinder be implanted on both sides.
- ♂ Pick out a reference point and measure proximal and distal.
- ♂ Do not be tempted to use .5 cm RTE(Rear Tip Extenders). This confers the idea that measurement is an exact science and encourages the physician to spend inordinate amounts of time fiddling with measurement. If the measurement is 18 on one side and 19 on the other implant 18.



Pre-operative Considerations

Cylinder Selection for Dummies

- ♂ Shorter is always better than longer particularly with **Semi-rigid** rods.
- ♂ If one of these devices is longer than the corporal body can accommodate, the patient may have persistent pain, protrusion of the cylinders far into the glans or curvature of the penis when it is erect.
- ♂ Semi-rigid rods should be downsized 0.5 cm less than the measured length of the corpora. This allows comfortable bending with fewer tendencies to spring back.
- ♂ With most inflatable cylinders the cylinder of the same size as the measured corporal length should be implanted.



Pre-operative Considerations

Proximal Perforation During Corporal Dilatation

- ♂ Crural perforation during dilatation occurs relatively frequently. Patients with vascular insufficiency or Peyronie's Disease may have fibrotic proximal corporal bodies. Commonly the surgeon will encounter a shelf of scar tissue immediately above the ischial tuberosity in these patients.
- ♂ Difficult insertion of cylinders into scarred corporal bodies (e . g. priapism or previous infected implant), are also set ups for a crural perforation because the surgeon is basically blasting a tunnel into scar tissue.
- ♂ A perforation rate of as high as 50% is common in these difficult cases.



Pre-operative Considerations

Proximal Perforation During Corporal Dilatation

♂ **All the repairs have in common placing a cylinder length equal to the non-perforated side and somehow stabilizing the cylinder so the base does not migrate into the perforation.**

♂ **Rods:** If a perforation is sustained, stabilization of the cylinder is easy in a malleable or rod implant. There is no danger of perforation of the inflatable cylinder and the rod can be stabilized with non-absorbable suture to tunica adjacent to the corporotomy. Pass a suture through the corporal wall, then out the corporotomy, then through the body of the rod and back through the corporotomy. Tie the suture after making certain the rod is nicely seated under the glans penis.



Pre-operative Considerations

Proximal Perforation During Corporal Dilatation

♂ **Inflatable Cylinders:** Cylinder size should be equal on both sides and determined by the non-perforated side. After placement of the cylinder, pull on the guide strings to make certain the tip of the cylinder is situated underneath the glans penis. Stabilize the cylinder by passing a non-absorbable suture through the corporal wall adjacent to the corporotomy and placing the same suture above and below the input tubing.

This method of stabilization causes the input tubing to act as an anchor and prevent the base from migrating into the perforation.



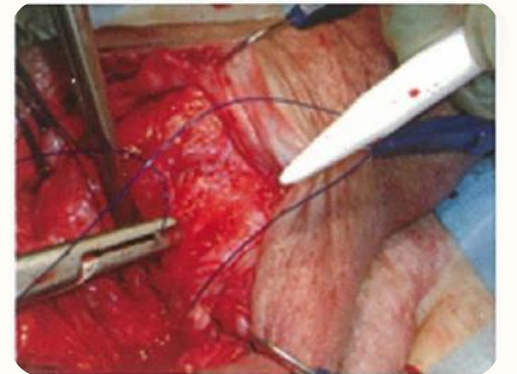
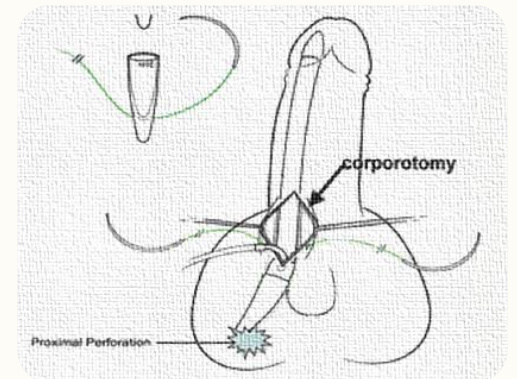
Pre-operative Considerations

Proximal Perforation During Corporal Dilatation

Inflatable Cylinders: Another popular technique is to create a RTE sling of non-absorbable suture.

Rear Tip Extender (RTE) Sling

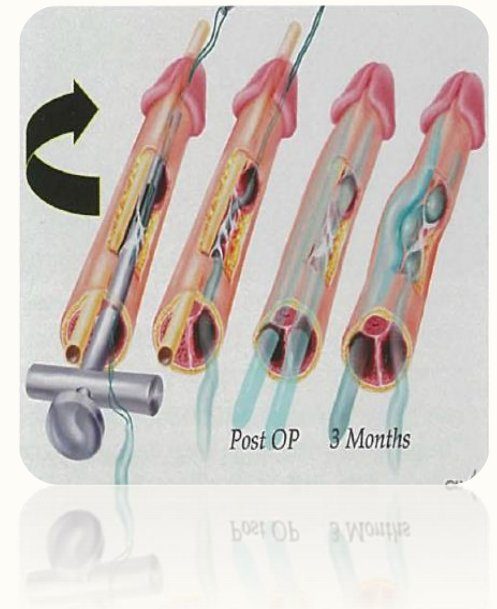
- Select cylinder & RTE same length as non-perforated side
- Use non-absorbable suture: from outside corpora into corporotomy
- Then pass suture through base of RTE
- Pass suture back inside corporotomy and through corporal wall
- Implant cylinder and pull on guide strings
- Close coporotomy by tying stay stitches
- Inflate prosthesis and again pull on guide strings
- Finally, tie RTE sling while pulling on guide strings



Pre-operative Considerations

Cylinder Crossover

Cylinder crossover may occur during passage of the Furlow distally or passage of the cylinder base proximally. Rarely, cylinder crossover occurs in properly placed cylinders as a result of migration. The septum of the corporal bodies is fenestrated i.e. has windows and may be as filamentous as a spider web. If the surgeon is not careful, during dilatation or cylinder insertion the cylinder can traverse the window and wind up on the wrong side. Many surgeons cannot believe a crossover can occur since they are certain they would never pass the Furlow on one side and fire the needle though the other side of the glans penis. What is misunderstood is that crossover is always an over and back maneuver as the Furlow, without resistance, passes in one window and out another in its journey to the tip of the penis.



Pre-operative Considerations

Cylinder Crossover

♂ Distal crossover occurs more frequently in infrapubic placement of cylinders. The penis is not on stretch and the Scott retractor is not used to keep the penis straight.

♂ If the physician is not careful it is quite easy to pass the Furlow over to the opposite side and back to the same side before firing the needle through the glans. Distal cylinder crossover is very subtle at the time of surgery.



Pre-operative Considerations

Cylinder Crossover

- Place a large Hegar in the side both cylinders had occupied
- Redilate other side and pass Furlow Inserter with Hegar in place on contralateral side
- Remove Hegar and pass Furlow on side originally holding both cylinders

Proximal crossover can occur as a result of faulty dilatation or disoriented cylinder base placement. It seems more common in obese patients and is more common with penoscrotal incisions than infrapubic ones. The diagnosis of proximal crossover is when the physician has extreme difficulty seating the base of the second cylinder. This is because the first cylinder base has passed through a window of the septum and is occupying the base of the other side's corpora. Proximal crossover is easy to fix. It is not necessary to repair the septum. The fix is similar to the correction of distal crossover. Place a large Hegar in the proximal corpora of the side sustaining the crossover. Then properly dilate and place the other cylinder with the Hegar occupying the proximal corpora of the opposite side.



Pre-operative Considerations

Reservoir Placement in Scarred Pelvic Areas

♂ The usual location for the reservoir is the prevesical space. If this space is excessively scarred following pelvic surgery or the removal of a bladder, the reservoir can be placed in an alternative location - even within the peritoneal cavity. This is the only area of the body that capsule formation is not stimulated. Without a capsule, the large peritoneal space prevents the transmission of intrabdominal pressure to the reservoir.

IPP reservoirs can be placed in the abdominal wall, anterior to the transversalis fascia but under the muscle layers.



Pre-operative Considerations

Urethral Injury

♂ **Penoscrotal area:** Damage to the urethra can occur during the initial dissection in the penoscrotal area. The sign is the physician will visualize the Foley catheter placed to empty the bladder while cleaning off the corpora or placing the corporotomy.

♂ The urethra is quite thick in this location and can be repaired by a two-layer closure and the surgery can proceed. Make certain the repair is water tight by injecting fluid into the meatus and watching the urethra distend without the repair leaking. The physician should leave the Foley in place 3-7 days rather than removing the Foley immediately after the surgery as is our usual practice.

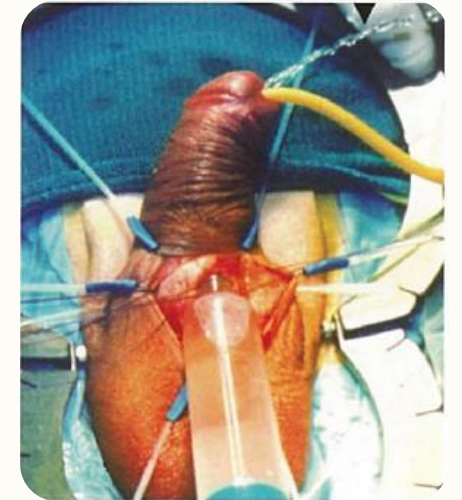


Pre-operative Considerations

Urethral Injury

♂ **Urethral laceration at the end of the penis:** Damage to the urethra at the meatus of the penis occurs during dilatation. Resistance might be met to the scissors or dilator and the physician pushes a bit harder. When the resistance yields suddenly the momentum of the dilator carries the instrument into the urethra.

♂ Placing an Bulb syringe in the corporotomy and irrigating forcefully confirm the diagnosis of urethral injury. If the urethra is damaged, fluid will be seen coming out the meatus around the catheter.



Pre-operative Considerations

Urethral Injury

♂ **Repair of the lacerated distal urethra is not required.** Foley drainage beyond 3 days is not required. In fact, prolonged Foley drainage may cause strictures at the meatus. Without a catheter, the urethra rapidly heals without complication. When the reimplantation is attempted in 2 or 3 months there will be no discernable scar tissue and the implantation will be no more difficult than a patient who has never had surgery. It is a misconception that previous implant surgery without infection causes scar tissue. In our experience previous surgery without infection only rarely increase either the scar tissue or difficulty of the implantation.



Pre-operative Considerations

Peyronie's Disease

♂ Peyronie's Disease is the deposition of fibrotic tissue on the inside of the tunica albuginea. The normally elastic tunica becomes fibrotic and does not expand, as does the unaffected tunica. When the penis becomes erect the Peyronie's area does not expand or lengthen. This causes deformation of the erection as the penis is pulled to the fibrotic side and appears narrower (wasp waisting) where the plaque has been deposited. Patients complain of bent penis, flail penis, torsion (corkscrew) and lack of rigidity. If the disease is extensive it can interfere with blood supply and ED can result.

♂ Peyronie's Disease often occurs after age 40. It begins with pain on erection and deformity follows as the plaque proliferates. The disease usually burns itself out after 2 years and the plaque and deformity stabilizes after the pain ceases.



Pre-operative Considerations

Peyronie's Disease – Treatment Models

♂ There have been many operations designed to correct the curvature of Peyronie's Disease. They can be divided into two categories;

- First, **plication** procedures like the Nesbit or Lue 16-dot. These procedures shorten the long side and are associated with complaints of penile shortening after the surgery.
- Second, **plaque incision/excision**. These operations interrupt the integrity of the tunica albuginea and are associated with ED in as much as 30% of cases. In addition since 70% of Peyronie's involves the septum, the surgeon is required to elevate the neurovascular bundle of the penis in many of these operations. This is tedious and dangerous as damage to the dorsal nerve of the penis results in a penis with diminished glandular sensation.



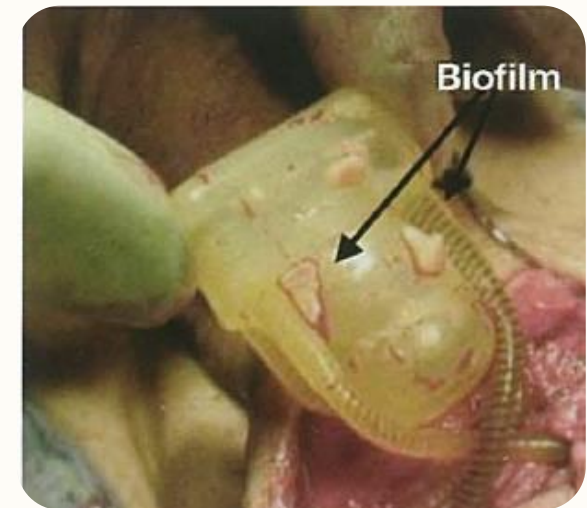
Pre-operative Considerations

Revisions for Mechanical Breakage or Medical Problems

♂ When implants malfunction the patient will present for correction of the problem. Usually, the implant has functioned for many years. Oftentimes the original implanting physician is no longer available and the patient will present to a younger, inexperienced urologist. It behooves the implanter to know how to correct mechanical breakage effectively while avoiding the historical 10% infection rate.

♂ **Mini Salvage Operations ("Wash Out") to Prevent Revision**

Infections: In 2005 it was first proposed to decrease revision infections by attempting to purge the implant spaces with antiseptic solutions. The idea is that the broken implant is contaminated from the original surgery with inactive bacteria protected by biofilm.



Pre-operative Considerations

Revisions for Mechanical Breakage or Medical Problems

♂ Wilson's Mini Salvage or "Wash Out" Steps

1. Remove all components if possible. **Reservoirs are frequently difficult to remove and removal may increase patient morbidity. Medical literature support is available for leaving behind this component in the absence of infection.** Reuse of the old reservoir is not recommended.

It is suggested that placing a new reservoir on the other side. Inform the patient the old component was deactivated and that if it ever causes trouble (less than 1%) it can be removed without compromising the new prosthesis.

2. Irrigate the implant spaces with the following solutions. One full bulb syringe in each implant space.

a. 1/2 strength peroxide

b. 1/2 strength Betadine

c. I G Vancomycin, 80 mg Gentamycin in 500 cc saline

3. Use closed suction drainage (e.g. Blake or Jackson Pratt) for 24 hours to facilitate evacuation so wash out solutions.

4. Place pump more superficial since scrotal swelling from the irrigations may make it more difficult to use immediately post op.



Pre-operative Considerations

Simultaneous Surgery with Penile Prosthesis Implantation

- ♂ Clean operations like hydrocele, hernia, vasectomy, circumcision can be done in conjunction with an IPP. The rule is to do the IPP first and then the other operation through a separate incision after the IPP incision has been closed.
- ♂ Do not do TURPs or urethral stricture incision simultaneously with IPP but in patients with bladder neck contracture who wish an IPP also do not place reservoirs prophylactically in patients having radical prostatectomy or cystectomy.



Prosthetic surgery for erectile dysfunction

THREE DIFFERENT TYPES OF PENILE IMPLANTS

SEMI-RIGID PENILE IMPLANT

(PVP Coating to fight against infection)

A simple and quick procedure



SOFT PENILE IMPLANT

(PVP Coating to fight against infection)



INFLATABLE PENILE IMPLANT

(PVP Coating to fight against infection)



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