Tips and Tricks in Penile Prosthetic Surgery

**Moderator:** Edgardo F Becher (Argentina)

**Panelists:**
- Juza Chen (Israel)
- Sidney Glina (Brazil)
- Ran Katz (Israel)
- Sid Radomski (Canada)
- Raanan Tal (Israel)
- Ryan P Terlecki (USA)
## Financial and Other Disclosures

- Off-label use of drugs, devices, or other agents: None
- Data from IRB-approved human research is not presented

<table>
<thead>
<tr>
<th>I have the following financial interests or relationships to disclose:</th>
<th>Disclosure code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No financial relationships</td>
<td>N</td>
</tr>
</tbody>
</table>
Penile Prosthesis in 2016

- Available since 1973
- Established surgical technique
- Growing market
- Infrequently done by general urologists
- Why?
  - Patient handling
  - Management of complications
  - Inconsistent residency training with implants
Penile Prosthesis Surgery: Current Recommendations From the International Consultation on Sexual Medicine

Laurence A. Levine, MD, Edgardo Becher, MD, PhD, Anthony Bella, MD, William Brant, MD, Tobias Kohler, MD, Juan Ignacio Martinez-Salamanca, MD, Landon Trost, MD, and Allen Morey, MD

Patient’s requisites

- Psychologically stable
- Organic ED
- Well oriented
- Realistic expectations
- Motivated
- Manual dexterity
- Informed consent
PP choice
Infection control

• Minimize OR circulation
• Check for preexisting infections
• Prophylactic ATB
• Shave in OR
• Scrub & prep
• Use impermeable drapes
• Irrigation
# Infection Risk Factors: Patient

<table>
<thead>
<tr>
<th>Patient factor</th>
<th>Study outcome</th>
<th>Overall level of evidence (highest level)</th>
<th>Type of study and population studied</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre operative site cleansing with antiseptic</td>
<td>Meta-analysis of placebo-controlled randomized trials showed no statistical decrease in surgical site infection</td>
<td>1</td>
<td>Meta-analysis of randomized trials</td>
<td>Webster et al.168 Chlebicki et al.179</td>
</tr>
<tr>
<td>Smoking status</td>
<td>Smokers’ increased risk of surgical site infection vs never smokers; cessation of smoking 4 wk before surgery decreased risk</td>
<td>1</td>
<td>Meta-analysis of cohort studies</td>
<td>Sorensen67</td>
</tr>
<tr>
<td>HIV status</td>
<td>Data from orthopedics implant data showed no significant increased infectious risk after sensitivity analysis</td>
<td>1</td>
<td>Meta-analysis of orthopedic cohort studies</td>
<td>Kigera et al.70</td>
</tr>
<tr>
<td>Revision surgery</td>
<td>Markedly increased risk of infection seen in multiple studies</td>
<td>2</td>
<td>Retrospective reviews with good sample size and prospective cohort study; penile implant studies</td>
<td>Wilson and Delk.22 Wilson et al.78 Jarow79</td>
</tr>
<tr>
<td>S. aureus nasal carriage and treatment</td>
<td>Increased risk of SSI in orthopedic cases in which patient had positive nasal swab for S. aureus but often S. aureus isolates from the wound were a different strain than that from nasal cultures; treatment of patients with nasal swabs positive for S. aureus decreased rate of infection from 7.9% to 3.4%</td>
<td>2</td>
<td>Multicenter prospective cohort study of surgical and orthopedic patients</td>
<td>Bode et al.70 Berthelot et al.81</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Retrospective review of manufacturer’s database of explants showed significantly increased risk of infection in diabetics (n = 624) compared to normal controls (n = 6,071); 1.88% vs 1.53% in non-diabetics; increased risk seen in some assessments and higher risk, but not reaching statistical significance, seen in other studies</td>
<td>3</td>
<td>Penile implant-specific meta-analysis and prospective trials</td>
<td>Mulcahy an Carson.71 Bishop et al.72 Wilson et al.73</td>
</tr>
<tr>
<td>History of radiation therapy</td>
<td>No Increased risk</td>
<td>3</td>
<td>Retrospective review of implant series</td>
<td>Wilson and Delk.22 Duboc et al.75</td>
</tr>
<tr>
<td>Tight blood sugar control in diabetics</td>
<td>Insulin dependence or higher fasting sugar levels did not confer higher risk; patients with HgbA1c &gt; 11.5 at time of surgery showed increased risk</td>
<td>3</td>
<td>Prospective penile implant studies</td>
<td>Bishop et al.72 Wilson et al.75</td>
</tr>
<tr>
<td>Long-term steroid use and immunosuppression</td>
<td>No increased risk In 1 study (0 of 13) and 50% risk of in another (5 of 10)</td>
<td>3</td>
<td>Retrospective review of implant series</td>
<td>Wilson and Delk.22 Siddi et al.82</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>6% risk of infection in patients with SCI; no infections in patients with SCI; multiple other studies showed increased risk but had no statistical analysis</td>
<td>3</td>
<td>Retrospective review of implant series</td>
<td>Wilson and Delk.22 Dikmen and Sonda,77 Collins and Hacker,77 Jarow,77 Rodomski and Herschorn83</td>
</tr>
<tr>
<td>Obesity</td>
<td>No increased risk</td>
<td>3</td>
<td>Retrospective review of implant series</td>
<td>Wilson and Delk</td>
</tr>
</tbody>
</table>
Infection Risk Factors: Patient II

Table 7. Continued

<table>
<thead>
<tr>
<th>Patient factor</th>
<th>Study outcome</th>
<th>Overall level of evidence (highest level)</th>
<th>Type of study and population studied</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concomitant circumcision</td>
<td>No increased risk with circumcision at time of surgery; not performing circumcision at time of prosthesis placement was a risk for infection</td>
<td>3</td>
<td>Retrospective review of implant series</td>
<td>Wilson and Delk, Sidi et al.</td>
</tr>
<tr>
<td>Prior renal transplantation</td>
<td>No increased risk</td>
<td>3</td>
<td>Retrospective review of implant series</td>
<td>Wilson and Delk, Sidi et al.</td>
</tr>
<tr>
<td>Age ≥75 y</td>
<td>No significant difference in device survival or revision</td>
<td>4</td>
<td>Retrospective review of implant series</td>
<td>Chung et al.</td>
</tr>
<tr>
<td>Intermittent catheterization</td>
<td>No infections in patients who routinely performed catheterization with indwelling prosthesis</td>
<td>4</td>
<td>Retrospective Review of implant series</td>
<td>Diokno and Sonda</td>
</tr>
</tbody>
</table>

HgbA_m = hemoglobin A_m; S. aureus = Staphylococcus aureus; SCI = spinal cord injury; SSI = surgical site infection.
Infection Risk Factors: Surgical

Table 8. Oxford Criteria for Surgical Factors Postulated to Impact IPP Infection

<table>
<thead>
<tr>
<th>Surgical factor</th>
<th>Study outcome</th>
<th>Overall level of evidence (highest level)</th>
<th>Type of study</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative site scrub in operating room</td>
<td>Patients randomized to conventional scrub of surgical site with povidone-iodine or chlorhexidine-alcohol scrub before urologic prosthetic implantation; chlorhexidine-alcohol was protective against deep and superficial wound infections in clean-contaminated cases vs povidone-iodine preparation</td>
<td>1</td>
<td>Mixed</td>
<td>Kava et al, Daroulche et al, Paocharoen et al</td>
</tr>
<tr>
<td>Hair removal†</td>
<td>No statistically significant results based on insufficient power for hair removal; clipping is associated with fewer SSIs than shaving; no difference between hair removal the day before compared with day of surgery</td>
<td>1</td>
<td>Cochrane review of 14 trials</td>
<td>Tanner et al</td>
</tr>
<tr>
<td>Surgeon hand cleansing</td>
<td>Trial of alcohol vs traditional hand scrubbing showed equivalence; 1.5 min of hand scrubbing equivalent to 3 min</td>
<td>2</td>
<td>Prospective randomized</td>
<td>Parienti et al, Tanner et al</td>
</tr>
<tr>
<td>Antibiotic-impregnated implant</td>
<td>Meta-analysis of retrospective reviews showed decrease from 2.32% to 0.89% with antibiotic coating small single-institute retrospective study showed decreased infection rates with rifampin- and minocycline HCl-coated prostheses</td>
<td>2</td>
<td>Meta-analysis of retrospective reviews</td>
<td>Mandava et al, Abouassaly et al</td>
</tr>
<tr>
<td>Antibiotic coating choice</td>
<td>Analysis showed that infection rates of minocycline and rifampin (0.63%) and rifampin and gentamicin (0.55%) were superior to vancomycin and gentamicin (4.42%)</td>
<td>2</td>
<td>Meta-analysis of retrospective reviews</td>
<td>Mandava et al</td>
</tr>
<tr>
<td>Perioperative antibiotics around implantation</td>
<td>Significant decrease in implant infections; other studies trended toward decrease in implant infection; all studies showed significant decrease in wound infection</td>
<td>2</td>
<td>Prospective randomized vs placebo</td>
<td>Boxma et al, Jensen and Kimose, Verdel et al</td>
</tr>
<tr>
<td>“No touch” technique</td>
<td>Technique lowered infection rate from 2% to 0.45%</td>
<td>3</td>
<td>Cohort compared with same series of historical controls</td>
<td>Eid et al</td>
</tr>
<tr>
<td>Surgeon experience</td>
<td>Comparison of single surgeon with multiple surgeons implanting IPPs; single-surgeon model showed improvements in multiple factors but minimal data for infection</td>
<td>3</td>
<td>Retrospective review</td>
<td>Henry et al</td>
</tr>
<tr>
<td>Institutional process to decrease infection</td>
<td>Studies using comprehensive infection control program in institutional practices (limiting OR traffic, specific instrument handling practices, specially trained OR team, ventilation characteristics, etc.) checklist established for all IPP placements decreased infection rate</td>
<td>3</td>
<td>Varied</td>
<td>Stulberg et al, Katz et al, Gaf et al</td>
</tr>
<tr>
<td>Postoperative drain placement</td>
<td>Infection rates in patients with closed drainage did not differ from historical controls</td>
<td>3</td>
<td>Cohort compared with historical controls</td>
<td>Sadegh-Nejad et al</td>
</tr>
<tr>
<td>Surgical approach</td>
<td>Comparison of infra-pubic with penoscrotal approach; non-significant increase in rate of infection with infra-pubic approach</td>
<td>4</td>
<td>Retrospective review</td>
<td>Garber and Marcus</td>
</tr>
</tbody>
</table>

PP = inflatable penile prosthesis; OR = operating room; SSI = surgical site infection.

*The Sexual Medicine Society of North America recommends that surgeons be permitted their choice of razors or dippers for preoperative preparation of the male genitalia.
Intraoperative Complications

- Difficulty to dilate (fibrosis, Peyronie’s, reop.)
- Urethral lesion
- Distal perforation
- Proximal perforation
- Septal crossover
- Prosthesis damage
- Vascular/Visceral damage w/reservoir placement
Incision:
Penoscrotal Medial Vs. transverse
Infrapubic
Subcoronal
Urethral control: Foley?
Corporotomy: Size and location
Urethral Perforation Check

Equal length
Crossover
Distal perforation
Urethral perforation
Hypermobile Glans (SST Deformity)

Glans Tilts Down

Plication sutures pull the dorsal aspect of the glans back onto the corporal bodies.\textsuperscript{12}
Corporotomy closure
Reservoir placement
Caution post cystectomy or Lap or RARP
Pump implant
Postop

• In Vs Outpatient
• Simple Vs “Mummy wrap”
• Drain?
• ATB?:?
Early Post-op complications (first weeks)

- Hematoma, edema
- Pain
- Disuria
- Mechanical failure
- Erosion, (corporal, skin, urethral, visceral)
- Infection (wound, peri-prosthetic)
Late Post-op complications

• Prolonged edema
• Prolonged pain
• Infection
• Erosion (distal or proximal corporal, skin, urethral, visceral)
• Mechanical failure
• Auto-inflation
Infection: PP Rescue (Mulcahy)

1. ATB (Kana, Bacitrapin)
2. H2O2 50%
3. Iodopovidone 50%
4. Pressure ATB (Vanco, Genta)
5. Iodopovidone 50%
6. H2Os 50%
7. ATB (Kana, Bacitrapin)
8. Change drapes, gowns and gloves
9. New PP
10. Oral ATB as per culture 1 month

Erosion
Distal/urethral erosion
Distal repair
Proximal erosion
Conclusions

• PP implantation is expanding.
• Patient selection critical.
• Surgery straightforward in virgin cases.
• Complications minimized with simple steps.
• Reoperations, fibrosis, complex PD cases: seek help.
Thank You
Obrigado
Gracias