Penile Prosthesis Implantation after Priapism

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Disclosures

- American Medical Systems (AMS)
- Auxilium Inc.
- Endo Pharmaceuticals
- Lilly
- Pfizer Inc.
- Reflexonic LLC
- VIVUS
- National Institutes of Health
Overview

- Role of Surgery: Place in the Treatment Algorithm
- Penile Prostheses: When is this a Reasonable Option?
- Technical Considerations
Historical Treatments

- Warm baths
- Cold or hot packs
- Antibiotics
- Anticoagulants
- Tobacco enemas
- Camphorated mercurial ointment
- Leeches
- Trichloracetic acid
- Sedatives
- Hypnotics
- Anesthetics
- Dorsal artery ligation
- Perineal nerve transection
- Ischiocavernosus muscle division
- Penile amputation
- Corporal incision/aspiration

Burnett AL. J Urol 170: 26-34, 2003
Surgical Challenge

- Major ischemic priapism is frequently refractory to clinical management and inappropriately or unsuccessfully managed priapism of this particular form is met with the daunting course of slow pain resolution, penile deformity, and substantial erectile function loss.

- There is a need to continue to evaluate and develop effective surgical management approaches.
Management Algorithm for Priapism

Olujohungbe A, Burnett AL, Br J Hematol 2013; 160: 754-65
Penile Prosthesis Management: Premises

- Overcome corporeal rigidity\(^1\)
  - Postulated advantage of semi-rigid prosthesis
- Limit long term anoxic injury and corporal fibrosis\(^2,3\)
- Lessen psychological trauma of repeated priapism episodes\(^4\)
- Decrease complication rates (by immediate insertion)\(^4,5\)
  - Potential opportunity for acute refractory presentations

5. Rees RW et al. BJU Int 90:893-7, 2002
Role of Penile Prosthesis Surgery:
Recommendations of International Consultation on Sexual Medicine 2009

■ Indications
  - Failed aspiration and sympathomimetic intracavernous injection
  - Failed distal and proximal shunting
  - Presence of ischemia >36 hours
  - Management of confirmed ED (delayed setting)

■ Optional Procedures (to document corporal smooth muscle necrosis)
  - Magnetic Resonance Imaging prior to surgery
  - Corporal biopsy at surgery

Surgical Management of Ischemic Priapism: Guidelines

■ Indications
  ➢ Failed adequate trial of corporal aspiration and alpha-agonist administration

■ Preparation
  ➢ Documentation of baseline erectile function, duration of priapism, history of stuttering, and prior interventions
  ➢ Informed consent process
Issues Regarding Informed Consent

- Size of penis—usually slight loss in penile length
- Possible need for revision surgery
  - Infection
  - Malfunction
  - Tissue damage
- Sensation
- Ejaculation
- Discuss alternative treatments, eg, vacuum constriction device (VCD), Medicated Urethral System for Erections (MUSE), Pharmacologic Erection Program (PEP), etc
- Variety of prostheses
- Reduced erectile function if device removed
Types of Prostheses

- Malleable/semirigid (AMS, Coloplast)
- Mechanical rod (Duraphase)
  - soft silicone
- Inflatable
  - 2-piece (Ambicor)
  - 3-piece – AMS (CX, CXM, Ultrex/LGX)
    - Coloplast (Alpha-1, Titan, Narrow Base)
Implant Surgical Technique

- **Infrapubic approach**
  - Familiar surgical approach for urologists
  - Easy placement of reservoir
  - Potential injury to dorsal penile nerve

- **Penoscrotal approach**
  - Easy dissection and corporal dilation
  - Penile nerves not in surgical field
  - Blind placement of reservoir sometimes difficult
Challenges

- Device infection
- Auto-inflation
- Glans problems
- Reservoir displacement
- Distal cylinder erosion or extrusion
- Cavernosal fibrosis
Penile Prosthesis Infections

- Most dreaded complication in prosthetic surgery (urology, orthopedics, vascular surgery)
- Historically, occur in 1% to 8% of penile implant cases
- Risk factors
  - Prolonged hospitalization
  - Diabetes
  - Immunocompromised state
  - Multiple surgical procedures
  - Use of foreign bodies (GorTex, Dacron)
  - Remote infections (e.g., dental abscess, urinary tract infection)
  - Paraplegia
  - Spinal cord injury
  - Other neurologic conditions
  - Priapism
Penile Prosthesis Infections (cont’d)

Prevention measures
- Perioperative antibiotics
- Effective skin prep
- Limiting operating room traffic
- Sterile technique
- Shorter surgical duration
Corporal Fibrosis

- Careful dilation/cavernotomes
- Cavernosal tissue excision
- Narrow cylinder use
Penile Prosthesis Management: Technical Considerations

- Corporectomy (sharp dissection and tissue excavation)\(^1-3\)
  - Pain management without prosthesis insertion as an additional possible indication
- Corporoscopic excavation\(^4\)
- Reimplantation (tissue expansion)\(^5\)
- Cylinder fixation\(^5,6\)

Cavernosal Fibrosis: Excision and Reconstruction

Intra-Operative Complications

- Unequal corporal length
- Proximal/distal crossover
- Proximal perforation
- Distal perforation
- Bladder rupture
Postoperative Complications

- Infection
- Device malposition
- SST deformity
- Erosion
- Device malfunction
Basic Management

- History
- Physical Examination
- Imaging
  - MRI
MRI of Cylinder Buckling

Conclusions

- Clinical treatment of refractory presentations of ischemic priapism in addition to post-priapism ED merit consideration for surgical intervention (penile prosthesis surgery).

- Special surgical techniques can be applied to facilitate penile prosthesis implantation in the fibrotic penis resulting from priapism.

- Penile prosthesis surgery can be successful with adherence to perioperative principles.