Non-medical Treatment for Erectile Dysfunction

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Contemporary History of Erectile Dysfunction Management

- Age of naturopathic remedies
- Age of mental disorders
- Era of safe and effective surgery: 1970s
- Epoch of pharmacotherapy
  - 1980s: injectable vasodilator
    - goal-directed approach → urologist
  - 1998: PDE5 inhibitor - sildenafil
    - process of care model → primary care physician

Tom F. Lue
Surgery for Erectile Dysfunction

- Penile Prostheses
  25-30% ED p’t do not respond to oral pharmacotherapy
  10-15% IC pharmacotherapy
  15% candidate for implantation surgery

- Vascular surgery
History of ED Surgery

- 1936 Lowsley and Reuda venous plication procedure and venous ligation surgery
- 1966 Beheri intracavernous placement of polyethylene prosthesis
- 1972 Pearman silicon prosthesis
- 1973 Scott et al. inflatable penile prosthesis
- 1979 Ebbehoj and Wagner venous ligation based on dynamic cavernosography
- 1980 Mikal father of modern vascular surgery for ED arterial revascularization
- 1982 Virag deep dorsal vein arterialization
Penile Implants

- Semi-rigid malleable silicone elastomer rods
  - AMS 600-650, Mentor Acuform
- Inflatable
  - two-piece implant: Ambicor
  - three-piece implant:
    - AMS 700CX, Ultrex
    - Mentor Alpha 1
- Patient’s preference, cost, surgeon’s preference
Assessing a candidate for a penile implant
- detailed systemic and sexological medical history

- Good general health
- Failure of other therapeutic options
- Psychological stability
- Patient and partner fully informed
- Complete medical assessment
- Informed consent for surgery
Surgical approach of penile implant

- According to type of implant, surgeon’s preference and the previous surgical history of the patient
  - Semi-rigid: subcoronal, infrapubic, scrotal
  - Inflatable: infrapubic, scrotal
Prosthetic infection prevention

- No infection
- No lesions, bleeding scars or dermatitis in the genital area
- Balanoposthitis—circumcise and delay surgery
- During the days before surgery, genital scrubs with iodopovidone
- Genital shaving before surgery
- 10 to 15 minutes skin preparation
- Antibiotics: aminoglycosided and vancomycin (or cephalosporin) 1 h before to 48 h after implantation. Then quinolones for 7-10 days
- Avoid” traffic” in the operating room!
- Hydrophilic and antibiotic-coated prosthesis
Surgical technique

- Placement of a Foley catheter
- Continuously wash the surgical field with an antibiotics solution of protamine and vancomycin
- Dilate the corpora cavernosa
- Measure the length and insert the cylinder
- Place the pump
- Place the reservoir
- Oral antibiotics for 20 days
- Sexual activity 6 wks later
Comparison of satisfactory rates and erectile function in patients treated with sildenafil, IC PGE1 and penile implant

J Urol. 2003
Complication of penile implant

- Intraoperative – crural perforation
- Infection – 1-10%, Staphyloccus epidermidis
  risk factors: 2nd implantation, uncontrolled DM, paraplegia, surgeon’s inexperience

- position – inadequate cylinder length
  SS deformity
  high riding pump
  kinked reservoir

- Pressure erosion
- Mechanical complication
Radiological assessment of penile prosthesis: the role of MRI

- Buckling of one cylinder
- Penile edema and sepsis
- SST deformity or hypermobile glans
Penile implant infection

- Remove the prosthesis and reinsert it later, usually at least 3 months
- Salvage procedure – remove the prosthesis and all foreign materials, clean the wound by a series of antiseptic solutions and reinsert a new prosthesis
  Mulcahy 2003 84% success rate
- Irrigating solutions
  - vancomycin and GM (1g/L and 80mg/L)
  - half-strength hydrogen peroxide
  - half-strength betadine
  - pressure-wash with 5L NS containing vancomycin-GM mixture
  - half-strength betadine
  - half-strength hydrogen peroxide
  - half-strength antibiotics solution
### Table 3.2. Inflatable Penile Prostheses and Mechanical Failure: Summary of Studies Published after Those Included in the 1996 Report Analysis

<table>
<thead>
<tr>
<th>Reference</th>
<th>Number of Patients</th>
<th>Follow-up in Months: Range (Mean)</th>
<th>Data Pre- or Postmodification</th>
<th>% of Devices Free of Mechanical Failure*</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>AMS 700CX/CXM (not modified)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choi et al (2001)</td>
<td>273</td>
<td>6 - 100 (49)</td>
<td>NA</td>
<td>90.4</td>
</tr>
<tr>
<td>Carson et al (2000)</td>
<td>372</td>
<td>38 - 134 (57)</td>
<td>NA</td>
<td>86.2</td>
</tr>
<tr>
<td>Montorsi et al (2000)</td>
<td>90</td>
<td>(60)</td>
<td>NA</td>
<td>93.1</td>
</tr>
<tr>
<td>Datch et al (1997)</td>
<td>111</td>
<td>1 - 112 (47.2)</td>
<td>NA</td>
<td>90.8</td>
</tr>
<tr>
<td>Dubocq et al (1998)</td>
<td>103</td>
<td>(66 across 3 groups)</td>
<td>NA</td>
<td>83.9†</td>
</tr>
<tr>
<td><em>AMS Ultrace (modified 1993)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montorsi et al (2000)</td>
<td>110</td>
<td>(58)</td>
<td>Both</td>
<td>79.4</td>
</tr>
<tr>
<td>Dubocq et al (1998)</td>
<td>103</td>
<td>(66 across 3 groups)</td>
<td>Both</td>
<td>84.2†</td>
</tr>
<tr>
<td>Milbank et al (2002)</td>
<td>85</td>
<td>&lt;1 - 136 (75)</td>
<td>Pre-1993</td>
<td>64.7</td>
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<tr>
<td><em>Mentor Alpha-1 (modified 1992)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Goldstein et al (1997)</td>
<td>434</td>
<td>&lt;1 - 44 (22)</td>
<td>Both</td>
<td>85†</td>
</tr>
<tr>
<td>Dubocq et al (1998)</td>
<td>117</td>
<td>(66 across 3 groups)</td>
<td>Both</td>
<td>95.7†</td>
</tr>
</tbody>
</table>

NA = not applicable.

* Kaplan-Meier survival estimates; 5-year estimates unless otherwise noted.
† 63-month estimate.
‡ Three-year estimate.

Source: AUA guidelines
Vascular surgery for ED and selection criteria

- Penile revascularization
  discrete focal aretrial lesions found on pudental arteriography
  younger patients who have a history of trauma
  no systemic disease

- Surgery for a veno-occlusive disorder
  normal cavernous arteries on color duplex ultrasound
  proved by pharmacocavernosography
Result of penile arterial reconstructive surgery

<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Surgery</th>
<th>Number of Patients</th>
<th>Months of Follow-up Overall: Range (Mean)</th>
<th>Success Rate % (N)</th>
<th>Success Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ang and Lim</td>
<td>Dorsal vein</td>
<td>6</td>
<td>8 to 37 (20)</td>
<td>66 (4)</td>
<td>NPT, Doppler</td>
</tr>
<tr>
<td>(1997)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DePalma et al</td>
<td>Dorsal artery</td>
<td>11</td>
<td>12 to 48</td>
<td>60% (7)</td>
<td>Doppler</td>
</tr>
<tr>
<td>(1995)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grasso et al</td>
<td>Dorsal artery</td>
<td>22</td>
<td>1 y for all</td>
<td>68 (15)</td>
<td>NPT</td>
</tr>
<tr>
<td>(1992)</td>
<td></td>
<td></td>
<td></td>
<td>36 (8)</td>
<td>Doppler</td>
</tr>
<tr>
<td>Jarow and DeFranzo</td>
<td>Mixed</td>
<td>11</td>
<td>12 to 84 (50)</td>
<td>91 (10)</td>
<td>Doppler; DUS</td>
</tr>
<tr>
<td>(1996)</td>
<td></td>
<td></td>
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</tbody>
</table>

DUS = duplex ultrasonography; NPT = nocturnal penile tumescence.

Source: AUA guidelines
## Results of surgery for veno-occlusive ED

<table>
<thead>
<tr>
<th>Study</th>
<th>P’ts</th>
<th>Excellent</th>
<th>Improve</th>
<th>Immediate success /later failure</th>
<th>failures</th>
<th>FU (mo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedman et al 1986-1991</td>
<td>46</td>
<td>11(24%)</td>
<td>8(17%)</td>
<td>23(50%)</td>
<td>4(9%)</td>
<td>31-33</td>
</tr>
<tr>
<td>Stief et al 1989-1992</td>
<td>77</td>
<td>31(40.3%)</td>
<td>8(10.4%)</td>
<td>38(49.4%)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Schultheiss et al 1987-1996</td>
<td>126</td>
<td>14(11%)</td>
<td>24(19%)</td>
<td>56(44%)</td>
<td>32(25%)</td>
<td>33±19.6</td>
</tr>
</tbody>
</table>

Penile edema, penile numbness, penile shortening

Source: AUA guidelines
The synergism of penile venous surgery and oral sildenafil in treating patients with ED

- Hsu GL Int J Androl 2005

- 65 patient underwent penile venous surgery + 12.5-100mg sildenafil
- 65 patients without surgery + 100mg sildenafil

control surgery group

initial IIEF 9.4+/- 3.9 9.2+/- 5.0
after surgery 15.1+/- 5.0 (p<0.001)
+ sildenafil 10.7+/- 3.5 20.1+/- 5.4 (p<0.0001)

- 61 men (93.8%) positive response to sildenafil after surgery
- 8 men (12.7%) felt a beneficial response in the control group