Review of Surgical Treatment of Peyronie’s Disease

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Indications for Surgical Reconstruction

- Stable disease (≥ 6 mos)
- Painless deformity
- Compromised/Unable to engage in coitus (2° to deformity and/or inadequate rigidity)
- Failed conservative therapy
- Extensive plaque calcification
- Desire most rapid and reliable result

Ralph et al JSM 2010
Levine et al J Urol
Evaluation - PD

- History
  - Time of onset
  - Association with trauma (20-30% remember)
  - Pain, estimated curve, length loss (1-4” reported)
  - Erectile hardness (0-10 scale)
  - Capability to have penetrative sex
  - Risk factors for ED (DM, HTN, ↑ chol, smoking)
Evaluation - PD

- **Exam**
  - Penis on stretch amplifies palpation of scar
  - Measure stretched length (pubis to corona)

- **Duplex Ultrasound**
  - Assess for calcification (up to 32%)
  - Measure pre/post injection cavernosal art diameter
  - Assess flow parameters (PSV, EDV, RI)
  - Measure curvature w/ goniometer & girth with string
  - Assess erectile response vs. home erection
Examine Penis on Stretch
Stretched Penile Length
Measure Curve w/ Goniometer
Measure Girth
Severe Curve
Severe Curve w/ Hinge
Pre-operative Consent

Set expectations regarding outcome

- **Persistent/Recurrent Curvature**-
  - Goal- “Functionally Straight”- <20°
  - Insure stable disease pre-op

- **Change in length**
  - More likely shorter with plication vs grafting

- **Diminished rigidity**
  - ≥ 5% in all studies – esp w/ grafting
  - ≥ 30 % if suboptimal pre-op rigidity. Dependent upon pre-op erectile quality

- **Decreased Sexual Sensation**
  - Common but rarely compromises orgasm/ejaculation
PD-Progession

Courtesy of K. Angermeir MD
PD – Surgical Algorithm

- When rigidity adequate +/- pharmacotherapy
  1) Tunica plication techniques
     - Simple curve < 60 degrees
     - No hourglass or hinge-effect
     - When length ↓ < 20% total erect length
  2) Incision/ Partial Excision and Grafting
     - Complex curve > 60 degrees
     - Destabilizing hourglass or hinge
Surgical Plication Techniques

- Nesbit – Excision & closure
- Yachia – Incision & plication
- Lue – 16 dot – No incision plication
- Duckett/Baskin/Levine TAP – Partial incision & plication
Plication Procedures

- All shorten the long side of the penis
- Nesbit procedure:
Yachia Technique
Yachia Technique
The 16 dot Procedure

Non-absorbable:
2-0 Ticron or Tevdec
Recurrent Curve after 16-dot
## Outcome of Tunical Shortening Procedures for Peyronie's Disease

<table>
<thead>
<tr>
<th>Procedure Type</th>
<th>First Author</th>
<th>Number of Patients</th>
<th>Mean follow up duration (months)</th>
<th>Straight at latest follow-up (%)</th>
<th>Erectile Dysfunction (%)</th>
<th>Satisfaction Rates (%)</th>
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8-359  12-89 mos  29-100%  2-60%  62-96%
# Plication Procedures

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<th>PROS</th>
<th>CONS</th>
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<td>- Simple</td>
<td>- +/- penile shortening</td>
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<tr>
<td>- Minimally invasive</td>
<td>- Best for smaller unidimensional curves</td>
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<td>- Preserve potency in most</td>
<td>- May worsen narrowing or hinge effect</td>
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Drawbacks of Tunica Plication for PD

- Does not correct shortening
- May ↑ length loss
- Does not address hinge or hourglass
- Pain, knots, sensory changes possible
Recommendation-
Plication Procedures

There is no evidence that one surgical approach provides better outcomes over another, but curvature correction can be expected with low risk of new ED

Grade C

Ralph et al JSM 2010; 7
Incision/Partial Excision & Grafting - Indications

- Must have good pre-op erections !!!
- Curvature > 60 degrees
- Significant shaft narrowing
- Hinge-effect present
- Extensive plaque calcification

N.B. – Plaque and deformity stable & coitus compromised 2° deformity

Ralph et al JSM 2010;7
Advantages of PIG/PEG Procedure

- Best opportunity to correct severe curvature > 60-70°
- Only approach to reestablish girth & correct hinge
- Least likely to cause further length loss
- Most likely to enhance length with or without traction post-op
Risks of PIG/PEG

- #1 thru 10 – Diminished rigidity to complete ED

- Others
  - Incomplete correction/recurrent curve – 5-10%
  - Shortening – rare
  - Diminished sexual sensation – temporary
Ultimate Disaster of PEG
PD-Patient Preference

- 55° Curve
- 10/10 Rigidity
- Refused TAP-fear of ↓length
PD-Patient Preference

- 50° curve w/ borderline EF
- 2” Shortening
- Requested PEG, understood ↑ED risk
60° curve w/ hinge
Severe Curve with Hinge

“Luggage Handle”
PD w/ Calcified Plaque

47 yo male – 90° dorsal curve
severe indent w/ hinge – grade 3 Ca++
26 x 4 mm & 6 x 2.4 mm
Why would I advise against having a grafting procedure?

- Borderline “stuffable” or less rigidity (i.e. ≤ 7/10) with or without PDE5i tx regardless of curve

- “Long” penis w/o hinge and/or mild/moderate curvature (<70°)
Why Not Do Grafting

- It’s a complicated surgery in men with unreliable rigidity ± PDE5i – better to offer TAP or IPP

- But if it makes sense and all parties are informed

- Centers of Excellence should do these procedures and train those interested
Surgical Grafting Techniques

- Plaque incision/partial excision
  
- Goal- Limit trauma to cavernosal tissue to maintain veno-occlusive relationship w/tunica & graft
4 x 6 cm
4 mos post-PEG

Patient self-photo
Risk of Post-op ED

1) Age > 45y (n=56)\(^1\)
2) Curvature > 60°\(^1\)
3) Pre-op venous leak\(^1\); RI < 0.80 (n=11)\(^2\)
4) Only parameter – pre-op EF status (n=37)\(^3\) (n=218)\(^4\)

\(^1\) Flores S et al. J Sex Med 2011; 8: 2031-7
\(^2\) Alphs H et al. J Sex Med 2010; 7: 1262-8
Post-Straightening Rehabilitation

- Begin message & stretch
  - 5 min BID x 4 wks
  - 2 wks post-op

- Consider PDE5i qhs early post-op to enhance nocturnal erections
  - Levine et al J Urol 2005

- Penile Extender Tx ~2-3wks post-op x 3 mos
  - Moncada et al, AUA 2007, abst 750

- No perceived or measured length loss when traction used as compared to no traction use N=111
  - Rybak et al, AUA 2011, abst 1814
Post-op Length Change

Measured length change (cm) TAP: +0.9 cm (0.25-1.75) - 9% (0.25-1.75)

Measured length change (cm) PEG: +1.5 cm (-1 to +2.5) - 89% (-1 to +2.5)

Perceived length change (inches) TAP: +0.2 cm (-1 to +2.5) - 37% (-1 to +2.5)

Perceived length change (inches) PEG: +0.3 in - 67% (+0.7 in)

Rybak et al JSM 2012;9(9):2396-403
Surgical Reconstruction for PD Following Clostridial Collagenase (Xiaflex) Injection

- N=7 TAP-2; PEG-1; PEG & TAP-4 \( \bar{x} \) age 56
  - Mean pre & post-ILI curve – 59° & 58°
  - Mean pre & post-op rigidity (0-10) – 8.2 & 8.9
  - Mean preoperative SPL – 10.3 & 11.1 cm
  - Post-op satisfaction 85% (1/7 - c/o shorter)

- **Concl:** Surgical reconstruction can be successfully performed w/o added difficulty after collagenase (Xiaflex) IL injection

Larsen & Levine ISSM 2012
PD – Surgical Algorithm
(Levine and Dimitriou 2000)

- When inadequate rigidity
  3) Penile Prosthesis Placement
     - IPP alone (not Ultrex/LGX)
     - With modeling (Wilson)
     - With incision
     - With incision and grafting (defect >2 cm)
- Plication b/4 IPP placement

Morey et al JSM 2013
PD
– Prosthesis/Manual Modeling

- Peno-scrotal approach
- Requires high-pressure cylinder
- Place prosthesis first – close corporotomies
- Protect pump – shod tubing
- Bend & hold x 60-90 sec.
- Repeat PRN
- S/E -
  - Wilson & Delk (J Urol 1994) – urethral injury – 4%
  - infection – 4.8%
- Personal experience – No change in sensation, no recurrence or urethral injury, successful when curve < 60°
Outcomes & Satisfaction w/IPP in men w/PD & ED

■ Methods: 90 IPP’s placed b/t 2001-2009
  Modified EDITS & chart review
  Pre-op curve x 53° (0-105°)

■ Results:
  x f/u 49 mos. (5-162)
  IPP alone 4%, modeling only 79%,
  incision 4%, incision plus grafting 12%
  Infection rate – one
  Mechanical failure – 7% (CX700-4, Ambicor-3, Titan-0)

Questionnaire completed – 56 (62%)
Overall sat – 84%
Curve correction sat – 73%
Functional IPP – 95%
Easy to Inflate – 84%
Lost Length – 54%

Levine et al JSM 2010; 7
PD- Conclusion

- Far more prevalent than previously thought – growth area in Urology.
- Failure to understand pathophysiology compromises treatment
- Large-scale, multi-center, PC trials necessary
- Combination therapy may be best approach today
- Surgery remains gold standard but counseling critical