Genitourinary Complications Associated with Transmale Genital Surgery

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Disclosures:

- I have no relevant financial relationships to disclose
Outline

1) Background
2) GU Anatomy after gender confirmation
3) Post-operative care and complications
   Radiographic findings
   Treatment options
   Outcomes of revisions
Background

• Gender Dysphoria: discomfort felt by people whose innate gender identity, the sense of being a man or woman, conflicts with their visible sex characteristics

• Not a lifestyle choice

1) Reed, B et al, Gender Variance in the UK GIRES. 2009
Background

• Observed incidence (UK): 8-45 per 100,000\(^1\)
• Up to 600 per 100,000
• Male to Female 80%
• Female to Male 20%

1) Reed, B et al, Gender Variance in the UK GIRES. 2009
Background

- SSA Data: 135,367 gender changes 1936-2010
- Estimated 700,000 in the US (0.3%)
- 1981 – DHHS issued National Coverage Determination denying Medicare coverage for "experimental treatment"
- 2014- Appeal and reversal of NCD

1) Harris B, US Census Bureau, 2015
2) Gates, G, Williams Institute, USLA School of Law 2011
Background

• Medicare is covering transgender surgery (May 2014)
• Increase in pts undergoing confirmatory surgery
Steps of Treatment (FtM)

• Documented gender dysphoria
• Hormonal treatment >12 months
• Live in new gender >12 months
• Two letters of recommendation from MHP
• Mastectomy
• Hysterectomy, oopharectomy
• Vaginectomy, phalloplasty

Case 1

• 18 yo FtM, phalloplasty 3 months earlier
• Radial Forearm Neophallus
• Early perineal abscess, I&D
• 6 weeks with catheter
• Failed TOV
Unexpected Anatomy
Case 1

• What was the original operation?
• What is the expected new anatomy?
• What are the problems?
Types of Surgery

• Metoidioplasty
  – Suitable for voiding upright
  – Clitoral dissection, elongation
  – Local flaps only

• Phalloplasty
  – Suitable for sexual and voiding functions
  – Local flaps for “bulbar urethra”, pars fixa
  – Free flaps for “penile urethra”, pars pendulans
Metoidioplasty

Perovic S. and Djordjevic M, BJUI 92. 2003
Metoidioplasty

Perovic S. and Djordjevic M, *BJUI* 92. 2003
Phalloplasty: Start with “bulbar urethra”
Add Neophallus: tube within a tube

Example: Thigh Flap

Photo by Dr. Curtis Crane
Vascular Pedicle- Perforators

Photo by Dr. Curtis Crane
Flap before tunneling

Photo by Dr. Curtis Crane
Harvest Site Closure

Photo by Dr. Curtis Crane
Harvest Site Closure

Photo by Dr. Curtis Crane
Flap in Final Position

Photo by Dr. Curtis Crane
Example: Radial Forearm Flap

Template

Photo by Dr. Curtis Crane
Radial Forearm Flap: tube within a tube
Flap in situ prior to harvest

Photo by Dr. Curtis Crane
Preparation of perineal site

Photo by Dr. Curtis Crane
Preparation of perineal site
Preparation of perineal site

Photo by Dr. Curtis Crane
Free Flap Transfer

Photo by Dr. Curtis Crane
Radial Flap Anatomy

- Radial Artery
- Sephalic Vein
- Medial A.C.N.
- Lateral A.C.N.

Seok-Kwun Kim et al, Plast Reconstr Surg 2009; 62
Radial Flap Anatomy

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Seok-Kwun Kim et al, Plast Reconstr Surg 2009; 62
Phalloplasty: penile urethra

Lumen N et al, European Urology 2010
Phalloplasty: Expected Anatomy

Lumen N et al, *European Urology* 2010
Complications of Neophallic Urethra

287 patients, 119 (47%) had urological complications

<table>
<thead>
<tr>
<th>Urologic</th>
<th>Count (Percentage)</th>
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<tbody>
<tr>
<td>Early fistula (closing spontaneously)</td>
<td>51 (17.7)</td>
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<tr>
<td>Stricture treated conservatively</td>
<td>21 (7.3)</td>
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<tr>
<td>Fistula/stricture requiring urethroplasty (97 additional operations)</td>
<td>52 (18.1)</td>
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Unexpected Anatomy
Distal Stump

Anastomosis

Ventral Closure
Early Recurrence
Staged Procedure: BMG Augmented Perineal Urethrostomy
Case 1: Follow up

8 months follow up
Observed GU Complications:

1) **Anastomotic stricture**
2) Proximal UC fistula
3) Pelvic cavity (remnant)
4) Meatal stenosis
5) Distal UC fistula
6) Obliteration of Phallic Urethra

Lumen N et al, *European Urology* 2010
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Observed GU Complications:

Expect Numerous Simultaneous Complications!
Reconstructive techniques

- Meatoplasty
- Excision and primary anastomosis
- Heinecke-Mikulicz
- Oral mucosa graft (one-stage or staged)
- Pedicle flap
Proposed Algorithm:

Example: Meatal stenosis

Photo by Dr. Lee Zhao
Meatoplasty

Photo by Dr. Lee Zhao
Strictured Entire Pendulous Urethra

- Two-stage repair
  vs
- Perineal Urethrostomy
Stricture of Pars Pendulum: 2-Stage

Augmented Plate

Addition of BMG Distally

Tubularization
Stricture of Pars Pendulum: 2-Stage

Closure in layers
Follow Up

6-weeks

8-months follow up
Pelvic Cavity + Fistula
Pelvic Cavity + Fistula

Neo-meatus

Fistula tract
Pelvic Cavity + Fistula

Cavity obliteration

Ventral urethrorrhaphy
Pelvic Cavity + Fistula

Urethral closure in layers
Anastomotic Stricture + Cavity

Gracilis was placed by the original surgeon to prevent fistula
Anastomotic Stricture + Cavity

- Graclis dissection, and “recycling”
- Removal and obliteration of vaginal cavity
- Splitting of gracilis flap (part is used to reinforce vaginal obliteration)
- Dorsal BMG inlay
- Ventral BMG onlay on the split gracilis
- Lateral closure of the urethral hemi-plates
Vaginal cavity (remnant)
Native meatus
Retracted Gracilis
Vaginal cavity (remnant)
Native meatus
Retracted Gracilis
Obliterated Vaginal cavity
Partially Closed Pars Fixa
Split Gracilis
Obliterated Vaginal cavity
Stricture
Obliterated Vaginal Cavity

P. Fixa Urethral Stump

Split Gracilis

Obliterated Vaginal Cavity
Distal Stump
Spatulated

Dorsal BMG Inlay
(Asopa type)
Ventral BMG Onlay
Quilted on Gracilis
Edges of Pars Fixa and BMG-Gracilis flap anastomosed apex to apex

Approximated on the right over 16-French catheter

Closed in layers

Penrose left for 3 days
Follow up

4-months follow up

Pre-op

Post-op
Ventral Fistula

• Isolated Fistula
  - Excision
  - Simple closure (layers)
Fistula + Stricture

- Two-stage repair
- BMG graft
Fistula + Stricture (stage 1)
Fistula + Stricture (stage 1)
Fistula + Stricture (stage 2)
Fistula + Stricture

Pre-op
RUG

Post-op
VCUG

Distal Fistula

Stricture
Reported Outcomes

• Levine, *J. Urol* 1995
  – 9 pts, various techniques, 67% failure
  – Only BMG urethroplasty (3 pts) succeeded

• Pariser et al, *Urology* 2015
  – 10 pts, BMG ventral onlay, 50% failure

• Lumen et al, *Eur Urol* 2010
  – 79 pts, various techniques, 41% failure
Reported Outcomes

Most strictures are at anastomoses!

34% required >1 urethroplasty

Lumen N et al, European Urology 2010
Failure Rates: higher than cisgender

- Meatotomy - 25%
- Two stage - 30%
- Pedicle flap - 40%
- EPA - 43%
- Free graft - 50%
- Urethroplasty - 62%
- Overall - 41%

Lumen N et al, European Urology 2010
Surgical Considerations

• Understanding of the anatomy after prior surgery is key for success
• Creative techniques are necessary
• New technology allows for innovative approaches to pelvic surgery
• Recurrent problems remain very common
Surgical Considerations

• Risk of DVT/PE on hormonal replacement
  • Break from hormones prior to procedures
  • DVT prophylaxis

• Avoid compromising vascular pedicle to the flap
  • Careful positioning to avoid compression
  • Avoid dissection near the pedicle (read surgeons note)
  • Use Doppler
Surgical Considerations

• Avoid blind placement of Foley catheters
  • Use flexible cystoscopy and placement over a wire
  • Suprapubic tube

• Avoid large caliber and rigid scopes in neo-urethra
  • Use flexible cysto/ureteroscopes, pediatric scopes
  • Consider percutaneous procedures
Conclusions

• Expect pts with Neophallus + GU complications
• Complications are common
• Numerous simultaneous problems
• Anatomy is different from a “native male”
• High reported failure rate
• Need more data
Conclusions

• Patients need GU follow up
• Routine GU procedures tailored with respect to new anatomy
Thank you!