

# Failed pediatric hypospadias repair: Flap or graft for reconstruction?

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# Overview of urethroplasty trends

- Meeks et al 2009
  - Meta-analysis 2000 - 2008
    - 302 articles → 86 articles
      - 5617 patients
  - Overall stricture length 4.9cm
    - Stricture location
      - Bulbar (43%) penile (37%) posterior (19%)
  - Overall stricture recurrence rate was 15.6%
    - Range from 8.3% (2002) to 18.7% (2006)
      - Recurrence rate was highest for penile strictures (18.4%)

# Overview of Urethroplasty Trends

- Meeks et al 2009
  - Substitution urethroplasty reported in 64% of manuscripts
    - Graft selection in these manuscripts
      - Buccal mucosa (44%)
      - Multiple tissue sources (16%)
      - Penile skin (27%)
      - SIS (4%)
      - Lingual (3%)
- *Flap use described in only 3% of manuscripts*

# Graft or Flap?

- Why accelerated graft use over past ten years?
  - Outcomes of lichen sclerosis related stricture disease
    - Failure with one stage penile skin flap
      - Success with single or staged non-genital graft tissue (Venn et al, Kulkarni et al)
  - Abundance of non-genital skin available and ease of harvest
    - Oral mucosa
      - Lingual mucosa outcomes appear similar to buccal mucosa (Barbagli et al)
    - Post-auricular skin

# Graft or Flap?

Abundance of non-genital skin available and ease of harvest

- Small intestine submucosa (SIS) (Palminteri et al 2007)
- Human cadaveric acellular matrix
- Human cadaveric demineralized bone ( el-Kassaby, Atala 2008)
  - Acellular matrix
- Abdominal wall skin (Meeks et al 2009)

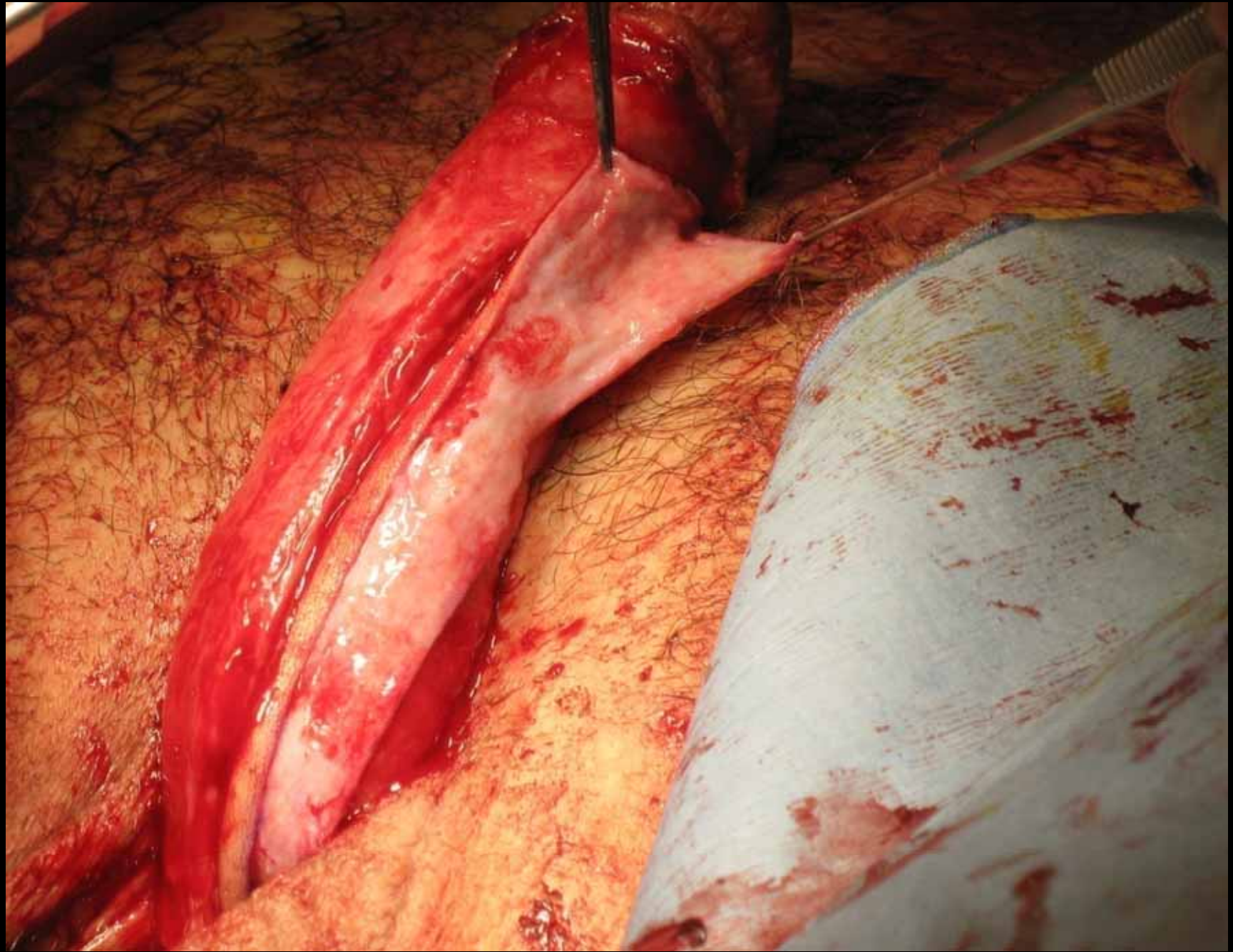


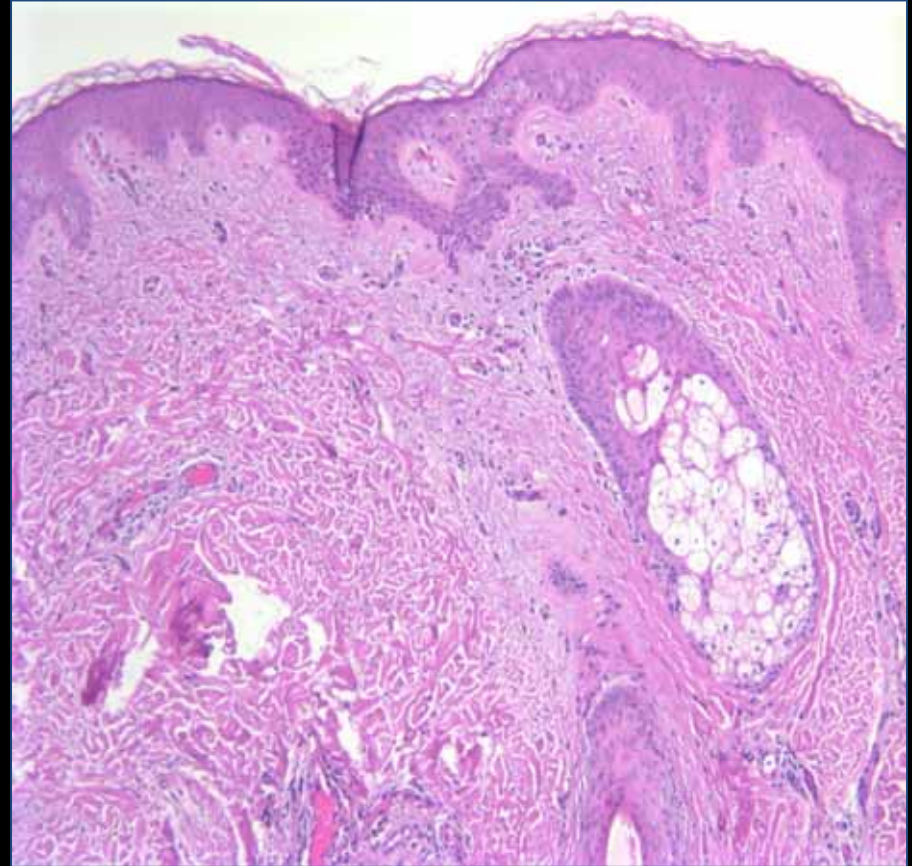


# Graft preparation









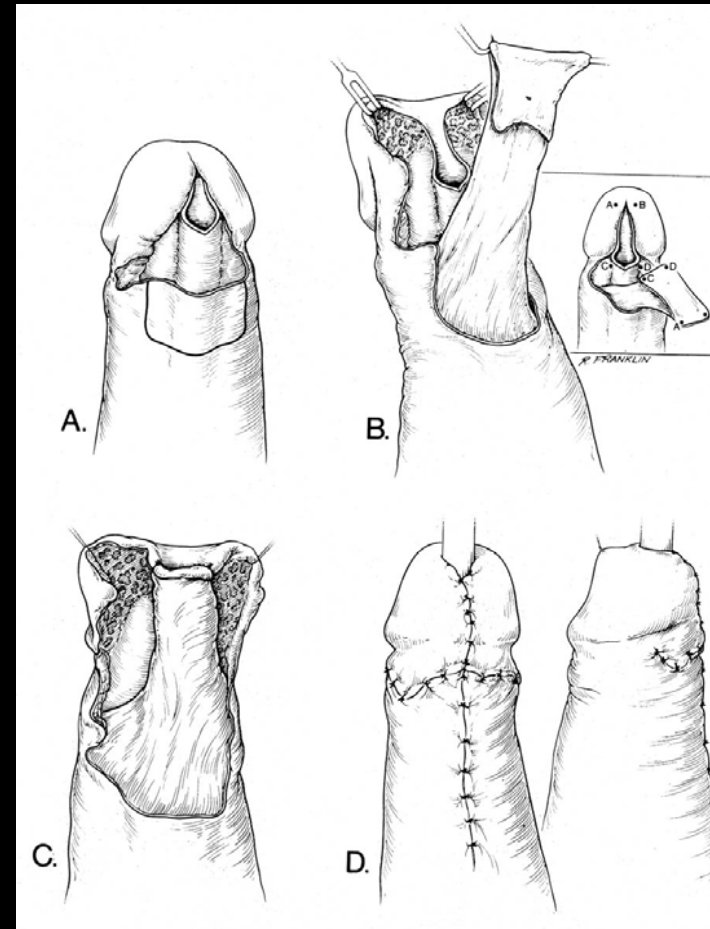
# Flap or Graft?

- Why deceleration of genital fasciocutaneous flap use?
  - Knowledge of lichen sclerosis and urethral stricture outcomes
    - Long term failure of genital skin
  - Surgeon's familiarity with procedure
    - Trend of literature favoring grafts
    - Harvest technique
  - Amount of healthy, hairless genital skin available



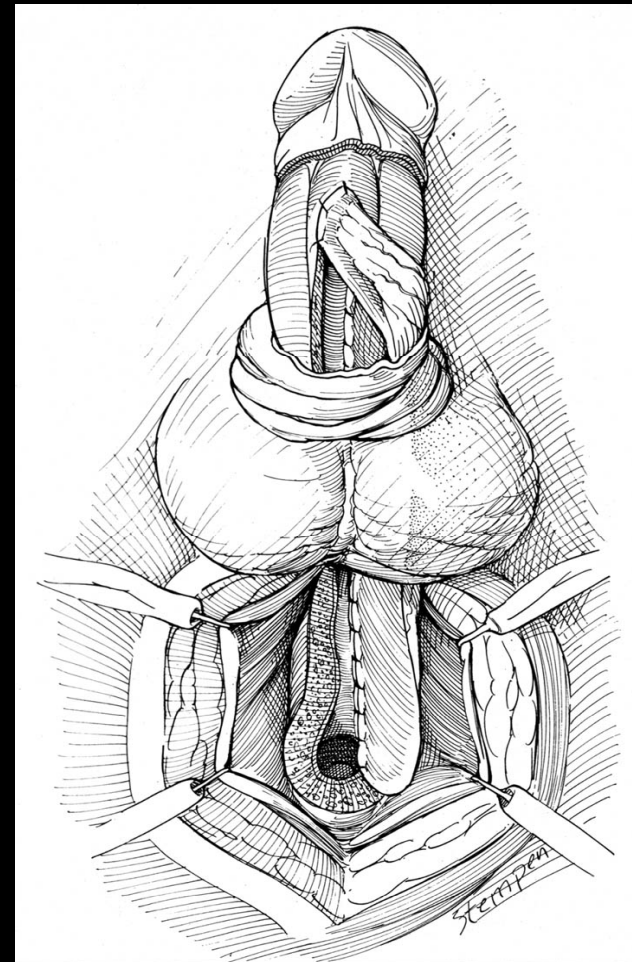
# Fossa Navicularis Stricture Disease

- Virasoro et al 2007
  - 83% success rate
    - 10 year follow-up
  - 23/23 in non-LS patients
    - 6/12 failures with LS
- Onol et al 2008
  - Post-prostatectomy fossa strictures
    - Short strictures < 1.5cm
      - Mean follow up 30 months
    - 25/26 recurrence free
- Morey et al 2007



# Complex Anterior Urethral Stricture

- Whitson et al 2007
  - 124 patients with circular fasciocutaneous flap
  - Median follow up 7.3 years
    - Median stricture length was 8.2cm
  - 1,3,5, and 10 years estimated success was 95%, 89%, 84%, and 79%
  - Predictors of failure
    - Smoking
    - Stricture length 7-10cm
    - *History of previous hypospadias repair*



# Flap or Graft?

- Failed pediatric hypospadias repair patients
  - Presence of lichen sclerosis
  - Urethral plate compromised
    - Hair within previous repair
    - Presence of diverticulum or fistula
    - Size of the penile shaft compromised
  - Concealed penis
  - Deficiency of healthy genital skin



# Flap or Graft for Stricture Disease?

- Prospective randomized study
  - Buccal mucosa (27) and genital skin flap (28)
    - Comparable rates of success at intermediate follow-up
      - Operative time, skin complications, post void dribbling, patient satisfaction less favorable with flap (Dubey et al 2007)
- Retrospective analysis
  - One stage penile urethroplasty (Barbagli et al 2008)
    - Graft (45 patients), Flap (18 patients)
      - Omitted hypospadias failures and lichen sclerosis
        - » Mean follow up 55 months
  - Grafts with higher success rate (80% versus 67%)
    - No difference in success between oral versus skin grafts

# Failed Hypospadias Repair in Adults?

- Barbagli et al 2006
  - One stage with graft technique superior
    - Buccal mucosa and penile skin grafts similar success
  - Buccal mucosa with better outcomes in staged repair
    - Penile skin flaps
- Bracka et al 1995, Meeks et al 2008
  - Multi stage repair acceptable results
    - Buccal mucosa, penile skin, abdominal wall skin
- No direct comparisons of flap versus graft

# Conclusions

- Proper patient selection is key
- Limited reports of fasciocutaneous flap use over past 10 years
  - Risk of recurrence may be higher in men with previous hypospadias repair
- Versatility and abundance of graft tissue provides distinct advantages
  - Hypospadias failure, Lichen sclerosis, single or staged procedure