## Ann & Robert H. Lurie Children's Hospital of Chicago®

M Northwestern Medicine® Feinberg School of Medicine

#### To Stage or Not to Stage: Surgeon Intuition and Early Complications in Proximal Hypospadias Repair

Anthony D'Oro, Yvonne Chan, Ilina Rosoklija, Emilie K. Johnson, David Chu, Bruce Lindgren, Dennis Liu, Edward Gong, Max Maizels, Theresa Meyer, Earl Cheng, Elizabeth Yerkes Ann & Robert H. Lurie Children's Hospital of Chicago Division of Urology September 27, 2019







#### Disclosures

• No authors have any disclosures to report

Morthwestern Medicine<sup>®</sup> Feinberg School of Medicine



Background





## Proximal hypospadias (PH) has a broad range of pre-op phenotypes

Ann & Robert H. Lurie Children's Hospital of Chicago®



#### Background

- Proximal hypospadias (PH) has a broad range of pre-op phenotypes
- The surgeon decides which PH repair technique to pursue —Single-stage vs Multi-stage

Morthwestern Medicine<sup>®</sup> Feinberg School of Medicine



- Surgeon whim ?
- Intuition ?
- Experience ?
- Science ?

M Northwestern Medicine<sup>®</sup> Feinberg School of Medicine







#### Aims

- To identify:
  - 1. Pre-operative characteristics contributory to staging decisions
  - 2. Early outcomes associated with single- and multi-stage repair



#### Hypotheses

- More atypical genital features
- Narrower glans and urethral plate widths
- Higher ratio of post- to pre-degloving penile length
- Longer urethroplasty

Surgeons choose multi-stage repair



#### Hypotheses

- More atypical genital features
- Narrower glans and urethral plate widths
- Higher ratio of post- to pre-degloving penile length
- Longer urethroplasty

Surgeons choose multi-stage repair

Single-stage repair

Patients have higher complication rate + unplanned surgeries \*



### Methods

- Retrospective cohort study
  - Single-stage vs. Multi-stage
- Single-center
- Primary repair: 07/2011-03/2018
- Inclusion:
  - Included within a prospectively managed database of intra-operative data
  - Proximal hypospadias (either pre- or post-degloving)
- Exclusion:
  - No intra-operatively documented measurements



### 07/2011-03/2018





Comparisons between cohorts 1. Clinical Characteristics 2. Intra-operative Findings



3. Rates of early post-operative complications and unplanned surgeries after final planned stage



#### **1.** Clinical Characteristics

M Northwestern Medicine<sup>®</sup> Feinberg School of Medicine

Ann & Robert H. Lurie Children's Hospital of Chicago®

#### Pre-Degloving Meatus Location



Ann & Robert H. Lurie Children's Hospital of Chicago®





Ann & Robert H. Lurie Children's Hospital of Chicago®



Ann & Robert H. Lurie Children's Hospital of Chicago®







M Northwestern Medicine

Feinberg School of Medicine



#### 2. Intra-Operative Findings

Ann & Robert H. Lurie Children's Hospital of Chicago®

#### Post-Degloving Meatus Location



Ann & Robert H. Lurie Children's Hospital of Chicago®







	Single-Stage (Range), [N]	Multi-Stage (Range), [N]	P-Value
Glans Measurements Median Glans Width (mm)	<b>15</b> (8-19), [N=49]	<b>13.5</b> (7-20), [N=60]	0.015
Penile Length Measurements Length of Urethroplasty (mm)			

M Northwestern Medicine<sup>®</sup> Feinberg School of Medicine



	Single-Stage (Range), [N]	Multi-Stage (Range), [N]	P-Value
<u>Glans Measurements</u> Median Glans Width (mm) Median Glans Urethral Plate Width (mm)	15 (8-19), [N=49] <b>5</b> (2-9), [N=49]	13.5 (7-20), [N=60] <b>4</b> (1-10), [N=56]	0.015 0.004
Penile Length Measurements			
Length of Urethroplasty (mm)			

Morthwestern Medicine<sup>®</sup> Feinberg School of Medicine



	Single-Stage (Range), [N]	Multi-Stage (Range), [N]	P-Value
Glans Measurements Median Glans Width (mm) Median Glans Urethral Plate Width (mm)	15 (8-19), [N=49] 5 (2-9), [N=49]	13.5 (7-20), [N=60] 4 (1-10), [N=56]	0.015 0.004
Penile Length Measurements Median Non-stretched Length (mm)	29 (15-45), [N=45]	<b>25</b> (6-40), [N=55]	0.008
Length of Urethroplasty (mm)			



	Single-Stage (Range), [N]	Multi-Stage (Range), [N]	P-Value
<u>Glans Measurements</u> Median Glans Width (mm) Median Glans Urethral Plate Width (mm)	15 (8-19), [N=49] 5 (2-9), [N=49]	13.5 (7-20), [N=60] 4 (1-10), [N=56]	0.015 0.004
Penile Length Measurements Median Non-stretched Length (mm) Median Post-Degloving Length (mm)	29 (15-45), [N=45] <b>40</b> (30-56), [N=31]	25 (6-40), [N=55] <b>35</b> (15-50), [N=33]	0.008 0.026
Length of Urethroplasty (mm)			

Morthwestern Medicine<sup>®</sup> Feinberg School of Medicine



All measurements in mm	Single-Stage (Range), [N]	Multi-Stage (Range), [N]	P-Value
<u>Glans Measurements</u> Median Glans Width Median Glans Urethral Plate Width	15 (8-19), [N=49] 5 (2-9), [N=49]	13.5 (7-20), [N=60] 4 (1-10), [N=56]	0.015 0.004
Penile Length Measurements Median Non-stretched Length Median Post-Degloving Length	29 (15-45), [N=45] 40 (30-56), [N=31]	25 (6-40), [N=55] 35 (15-50), [N=33]	0.008 0.026
Length of Urethroplasty	<b>18</b> (7-35), [N=47]	<b>38</b> (18-70), [N=40]	<0.001

Morthwestern Medicine<sup>®</sup> Feinberg School of Medicine



#### 3. Outcomes after final planned stage

#### • Median follow-up: 18.2 months (range: 0.1-70.8 months)

# Single-stage patients have higher rates of complications

Ann & Robert H. Lurie Children's Hospital of Chicago®



# Single-stage patients have higher rates of unplanned surgery

Ann & Robert H. Lurie Children's Hospital of Chicago®





#### Conclusions

 Patients selected for multi-stage repair have more atypical genital features

 However, patients selected for multi-stage repair had fewer post-operative complications and unplanned surgeries

Morthwestern Medicine<sup>®</sup> Feinberg School of Medicine



#### **Future Directions**

 Case-control studies to identify predictive factors of complications

 Lengthened follow-up with standardized documentation to clarify long-term outcomes

M Northwestern Medicine<sup>®</sup> Feinberg School of Medicine



## Thank you!

