



Better Defining the Spectrum of Adult Hypospadias: Examining the Effect of Childhood Surgery on Adult Presentation

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OBJECTIVE	To describe the spectrum of adult presentations with hypospadias-related complications and examine the effect of childhood surgical repair on these adult presentations.
METHODS	A retrospective chart review over a 10-year period, from August 2004 to December 2014, demonstrated 93 adult patients who presented to a reconstructive urologist with complications related to hypospadias. Patients were divided into 2 groups: those with no prior hypospadias surgery (Group 1, N = 19) and those who underwent surgical correction as a child (Group 2, N = 74). Charts were reviewed for age at presentation, initial complaints, history of repair, and surgical intervention required.
RESULTS	The mean age at presentation was 34.6 ± 0.6 years. Overall, lower urinary tract symptoms (LUTS) (49%) was the most common presenting complaint, followed by spraying (24%), urethrocutaneous fistula (18%), recurrent urinary tract infections (UTIs) (15%), and chordee (14%). Comparison demonstrated that Group 2 patients were more likely to present with LUTS (55% vs 26%; $P = .038$) and recurrent UTIs (19% vs 0%; $P = .050$). There was a trend toward Group 1 patients presenting more commonly with cosmetic dissatisfaction (16% vs 4%; $P = .06$). Urethral stricture was demonstrated more commonly in Group 2 (47% vs 11%; $P = .0043$). Of these, strictures were significantly longer in the previous surgery group (5.5 ± 0.6 cm vs 3.0 ± 0.6 cm, $P = .019$).
CONCLUSION	Correction of hypospadias as a child likely increases the future risk of urethral stricture, recurrent UTIs, and subsequent LUTS, with a trend toward improving patient satisfaction with cosmesis compared to nonsurgical management. Follow-up of hypospadias repair patients should extend into adulthood, as a significant portion of adult presentations ultimately require surgical intervention. UROLOGY 99: 281–286, 2017. © 2016 Elsevier Inc.

Hypospadias is one of the most common congenital problems encountered in pediatric urology with an incidence between 1 in 200 and 1 in 300 live male births and is likely becoming more common.¹⁻³ The literature supporting outcomes for pediatric hypospadias repair has established excellent short-term results.² Although surgical techniques are constantly evolving, the majority of hypospadias studies lack follow-up into adulthood.⁴ The impact of hypospadias almost assuredly continues through adulthood. Genital and psychosexual maturation can adversely impact how patients perceive the success of their surgery both functionally and cosmetically, often despite a technically satisfactory procedure.⁵

Complications associated with hypospadias may be caused by poor surgical technique, postoperative infection, wound dehiscence, urine extravasation, or hematoma leading to poor healing of the reconstructed tissue.^{6,7} Some of these complications may be detected in childhood. However, due to rapid genital growth during puberty, there is a potential risk of de novo complications. New or previously asymptomatic urethrocutaneous fistulae may subsequently become bothersome or the neourethra may not grow sufficiently, causing urethral stricture or curvature. Sexual dysfunction related to hypospadias and surgery, including erectile and ejaculatory dysfunction, may occur earlier, but are not clinically significant until late adolescence or adulthood.^{8,9} Other complications may not present for several decades, including strictures, difficulties catheterizing, and hair emanating from the urethra. Although pediatric urologists have advocated for follow-up of hypospadias patients until completion of sexual maturity, the exact nature and range of adult hypospadias complications remain poorly defined.¹⁰ It is likely that males born

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with hypospadias are at increased risk for urologic complications as adults; however, it is unclear how childhood surgery modifies this risk.

The objective of this study is to better define the spectrum of adult presentations with hypospadias-related complications and examine the effect of childhood surgery on these complications. It is our hypothesis that hypospadias-related signs and symptoms presenting as an adult differ between those patients undergoing childhood surgery and those without surgical correction as a child.

METHODS

After obtaining institutional review board approval, a retrospective chart review over a 10-year period, from August 2004 to December 2014, demonstrated 93 adult patients who presented to an adult reconstructive urologist with urologic complications related to hypospadias. As a tertiary-level urologic center, most complex reconstructive cases are seen by one of the authors. Although this review may not capture all patients with hypospadias-related complications presenting as an adult, it undoubtedly included all that would have required a surgical repair at our center. Patients were divided into 2 groups: those with no prior hypospadias surgery (Group 1, N = 19) and those who underwent childhood surgical correction (Group 2, N = 74). Charts were reviewed for age at presentation, initial complaint(s), signs and symptoms, meatal location at presentation, history of repair, and surgical intervention required. Patients with suspected urethral stricture were evaluated with flexible cystoscopy and urethrogram. Stricture was defined by an inability to pass a 16 Fr flexible cystoscope in association with lower urinary tract symptoms (LUTS).

Stricture length was determined by retrograde urethrogram. Patient satisfaction was evaluated with the global quality of life question "if you were to spend the rest of your life with your penis the way it is now, how would you feel about that."

Statistical Analysis

SPSS statistical software was used to calculate statistics. Categorical variables including all presenting signs and symptoms and meatal location were compared with a combination of Pearson's chi-squared test and Fisher's exact test where appropriate. Continuous variables, such as age at presentation and length of stricture, were compared with an unpaired *t* test. All *P* values were 2-tailed and a *P* value < .05 was considered statistically significant. Mean values are reported with the standard error measurement.

RESULTS

Table 1 summarizes the presenting signs and symptoms of the 2 groups. Patients may have presented with more than one sign or symptom. Overall, the mean age at presentation was 34.6 ± 0.6 years old. Meatal location at presentation was not statistically different between Groups 1 and 2, respectively: glans (26% [5 of 19] vs 45% [33 of 74]; *P* = .19), subcoronal (2% [6 of 19] vs 30% [22 of 74]; *P* = 1.0), coronal (11% [2 of 19] vs 1% [1 of 74]; *P* = .11), distal penile (16% [3 of 19] vs 10% [7 of 74]; *P* = .42), midshaft (11% [2 of 19] vs 5% [4 of 74]; *P* = .60), and penoscrotal (5% [1 of 19] vs 4% [3 of 74]; *P* = 1.0). LUTS (49% [46 of 93]) were the most common presenting complaint, followed by urinary spraying (24% [22 of 93]), urethrocutaneous fistula (18% [17 of 93]), recurrent urinary

Table 1. Initial presenting sign(s), symptom(s), and complications in the no surgery (Group 1) and previous surgery (Group 2) cohorts

Presenting Sign or Symptom	Group 1 N (%) N = 19	Group 2 N (%) N = 74	<i>P</i> Value
LUTS	5 (26)	41 (55)	.038*
Spraying of stream	7 (37)	15 (20)	.14
Chordee	3 (16)	10 (14)	.72
Genitourinary pain	0 (0)	9 (12)	.19
Ejaculatory dysfunction	0 (0)	1 (1)	1.00
Erectile dysfunction	1 (5)	0 (0)	.20
Hair-bearing urethra	0 (0)	9 (12)	.19
Hematuria	1 (5)	4 (5)	1.00
Urinary retention	3 (16)	7 (10)	.42
Incidental	2 (11)	3 (4)	.27
Urethral stricture	3 (16)	39 (53)	.0043*
Mean stricture length	3.0 ± 0.6 cm	5.5 ± 0.6 cm	.019*
Calculi	0 (0)	3 (4)	1.00
Urinary tract infection	0 (0)	14 (19)	.050*
Urethral fistula	2 (11)	15 (20)	.27
Dissatisfaction with cosmetic appearance	3 (16)	3 (4)	.060
Infertility	1 (5)	3 (4)	1.0
Need for surgical intervention	6 (32)	42 (57)	.071
Mean age at presentation (years)	34 ± 4	35 ± 2	.92
Meatal location	—	—	.14

LUTS, lower urinary tract symptoms.

* Denotes statistical significance *P* < .05.

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