
Outcomes of Delayed Hypospadias Repair: Implications for Decision Making

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Purpose: The current American Academy of Pediatrics recommendation is to perform hypospadias repair at age 6 to 12 months. Primary hypospadias repair at adolescence or beyond is uncommon, and there is little reported about the postoperative course of such patients. We report the outcomes for a series of patients who underwent primary hypospadias repair at age 10 years or older.

Materials and Methods: We identified patients seen at our institution between 1979 and 2002 who underwent primary hypospadias repair at age 10 years or older. Electronic and paper charts were abstracted for baseline demographics, degree of hypospadias, surgical technique, complications and reoperation.

Results: A total of 31 patients were identified, with a median available followup of 14 months. Median patient age at first hypospadias surgery was 13 years. The location of the urethral meatus was distal in 19 patients, mid shaft in 7, proximal in 4 and undetermined in 1. A variety of techniques were used, including meatal advancement and glanuloplasty, meatal based flaps, island onlay flaps, Snodgrass repair and staged procedures. Complications were noted in 48% of patients (15 of 31), including fistula (10), stricture (4), hematoma (2) and other complications (2).

Conclusions: Although retrospective in nature, these data suggest that delay of primary hypospadias repair into the teen years or beyond may result in more complications than currently accepted for infant hypospadias repair.

Key Words: hypospadias, outcome assessment (health care), postoperative complications, urologic surgical procedures

Hypospadias is a congenital malformation of the penis caused by the incomplete tubularization of the urethral folds during embryonic development. The incidence is approximately 1 in 300 live male births, making it one of the most common congenital anomalies.¹ In addition, there has been concern that the incidence of hypospadias is increasing in the United States and Europe.^{1,2} The hallmark abnormality is a urethral meatus that is abnormally located on the ventral surface of the penis. The phenotype ranges from a distal glanular meatus to a proximal perineal meatus. Associated defects include a dorsal hood prepuce, ventral angulation or chordee and, in more severe cases, bifid scrotum and genital ambiguity.

Hypospadias surgery presents a challenge and historically has been recommended for 3 reasons, namely improved voiding, sexual function and cosmesis. The surgical goals include a cosmetically normal penis and urethral meatus, a straight penis during erection, a normal urinary stream and normal fertility with improved semen delivery.

Several factors should be considered when deciding on the timing of genital surgery, including hypospadias repair. Based on the developmental, psychological, anesthetic and surgical factors involved in this decision, the current recommendation of the American Academy of Pediatrics and European experts is to perform hypospadias surgery at age 6 to 12 months.^{3,4} Others have suggested that some types of genital surgery be delayed until the patient reaches the age of consent.^{5,6}

It is unknown whether surgical outcomes for delayed hypospadias repair are comparable to those performed in the first year of life. We performed a retrospective study of primary hypospadias repair in patients 10 years and older. The age of 10 was chosen to include all peripubertal and postpubertal males. The number of postoperative complications and reoperations was determined and compared to accepted complication rates for infants undergoing primary hypospadias repair.

MATERIALS AND METHODS

The population was drawn from a tertiary pediatric urology referral center. Using billing records from 1979 to 2002, we identified all patients 10 years or older who underwent initial surgical repair of hypospadias at or after age 10, and who had at least 1 month of followup. Paper and electronic charts were reviewed to verify that the underlying diagnosis was hypospadias, and that the first repair was done at or

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after age 10 years. Charts were also abstracted for demographics, location of meatus, surgical technique, surgical complications, reoperations and long-term results when available. A medical history abstraction form was used, and data were abstracted by 2 reviewers. Statistical analysis was performed using Intercooled Stata® 8.2 statistical software.

RESULTS

A total of 31 patients were identified who fulfilled inclusion requirements, with a median available followup of 14 months (range 1 to 288). Median patient age at first hypospadias surgery was 13 years (range 10 to 62). Of the subjects 71% were white and 26% were black.

The location of the urethral meatus was distal shaft in 9 patients, coronal in 8, mid shaft in 7, penoscrotal in 3, glanular in 2, perineal in 1 and undetermined in 1. A variety of techniques were used, including meatal based flaps (7 patients), MAGPI (5), island onlay flaps (5), staged procedures (5), Snodgrass repair (2) and others (7).

There were no recorded complications in 16 cases (52%). Postoperative complications were noted in the remaining 15 patients (48%, 95% confidence interval 30–67, binomial, exact). Table 1 outlines the complications observed, location of the meatus at first repair, surgical technique used and number of repeat procedures needed. Complications included 10 fistulas (32% of patients), 4 strictures (13%), 2 hematomas (6%), 1 loss of repair (3%) and 1 urethral web causing spraying of stream (3%).

Among the group experiencing complications the median age at initial hypospadias surgery was 13 years (mean 17.9) and median followup was 24 months (48.6). For the group with no reported complications the median age at initial hypospadias surgery was 12.5 years (mean 16.3) and median followup was 7 months (mean 25.8, table 2).

Although it was difficult to determine retrospectively the reason for delay of initial surgery in many cases, a possible reason was identified in 13 individuals. The family either was advised to wait or did not seek urological care until later in life in 7 patients, circumcision was performed at birth in 3 (possibly contributing to the delay in repair of hypospadias) and the presence of medical co-morbidities was a likely cause of delay in 4, including other congenital abnormalities

TABLE 2. Patients with no complications of primary hypospadias surgery performed after age 10 years

Pt No.	Age*	Yr	Meatus Location	Repair Technique	Mos Followup†
1	10	1983	Glanular	Ombredanne	76
2	44	1990	Subglanular	Onlay flap	108
3	14	1981	Coronal	MAGPI	2
4	14	2001	Coronal	Snodgrass	12
5	10	1995	Subcoronal	Flip-flap	96
6	11	1985	Subcoronal	MAGPI	1
7	12	1985	Distal shaft	MAGPI	1
8	23	1988	Distal shaft	Staged	14
9	11	1985	Distal shaft	MAGPI	2
10	11	1991	Distal shaft	Staged	46
11	35	1991	Distal shaft	Flip-flap	9
12	13	1993	Mid shaft	Island onlay	3
13	12	1995	Mid shaft	Unknown	4
14	17	1995	Mid shaft	Staged	30
15	11	1980	Mid shaft	Tube graft	5
16	13	1984	Penoscrotal	Staged	3

* Mean 16.3 years, median 12.5 years.

† Mean 25.8 months, median 7 months.

such as cleft lip and palate, aortic coarctation, seizure disorder, Down syndrome and prematurity.

DISCUSSION

In this retrospective study of 31 patients undergoing initial hypospadias repair after age 10 years more complications were observed than was expected based on reported complication rates for infants. The proportion of patients who experience complications after undergoing hypospadias repair as an infant is reportedly 2% to 15%.⁷⁻⁹ However, this rate varies depending on the degree of hypospadias and the surgical technique used. The most commonly reported complications in this population include fistula, stricture and wound breakdown. However, in most series the success rates after 1 repeat procedure are greater than 90%.¹⁰

The observation of an increased number of postoperative complications in older patients has been reported previously. Hensle et al published their findings concerning long-term results and complications of hypospadias repair in 42 adults.¹¹ Overall, 52.3% of men had postoperative complications. However, the final long-term success rate after secondary surgery was 88.1%. This study included patients who

TABLE 1. Patients with complications of primary hypospadias surgery performed after age 10 years

Pt No.	Age*	Yr	Meatus Location	Repair Technique	Mos Followup†	Complications	Repeat Procedures
1	11	1987	Coronal	Flip-flap	108	Other	0
2	10	1983	Subcoronal	Ombredanne	2	Fistula	0
3	62	1998	Subcoronal	Snodgrass	24	Fistula, stricture	1
4	12	1980	Subcoronal	MAGPI	19	Other	1
5	10	1994	Distal shaft	Island onlay	12	Fistula	1
6	14	1992	Distal shaft	Unknown	12	Fistula	1
7	15	2001	Distal shaft	Flip-flap	7	Hematoma, fistula	2
8	18	1995	Distal shaft	Unknown	24	Fistula, stricture	2
9	12	1985	Mid shaft	Ombredanne	2.5	Fistula	0
10	11	1995	Mid shaft	Island onlay	18	Fistula	2
11	13	1991	Mid shaft	Tube graft	24	Fistula	1
12	15	1994	Penoscrotal	Island onlay	32	Hematoma	1
13	21	1991	Penoscrotal	Staged	132	Stricture	1
14	32	1981	Perineal	Tube graft	288	Stricture	1
15	12	1999	Unknown	Unknown	24	Fistula	1

* Mean 17.9 years, median 13 years.

† Mean 48.6 months, median 24 months.

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