



Hypospadias repair and outcome in Abuja, Nigeria: A 5-year single-centre experience

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ABSTRACT

Background: To determine the outcome of hypospadias repair in children. **Patients and Methods:** This was a retrospective study of all patients with hypospadias managed at the University of Abuja Teaching Hospital, Abuja, Nigeria from January 2009 to December 2013. **Results:** Twenty-four cases of hypospadias had corrective surgery during the 5-year period under review. Seventy-five percent of the patients ($n = 18$) were seen after the 1st year of life. There were two peaks of ages at corrective repair; 45.8% between age 1 and 3 years and 29.1% between age 5 and 10 years. The average age at time of surgery was 44.9 months. Distal hypospadias were more common (58.4%), followed by glanular (20.8%) and proximal (20.8%) hypospadias. Associated anomalies included chordee, maldescended testicles and inguinal hernia in 20.8%, 4.1% and 8.3% cases, respectively. Operative techniques were single-stage procedures in 79.1% of patients consisting of simple circumcision in two cases (10.5%), Mathieu's peri-meatal based flap in four cases (21%), meatal advancement and glanuloplasty incorporated in three cases (16%) and Snodgrass tubularised incised urethral plate tubularised incised plate in 10 cases (52.5%). The remaining 20.9% ($n = 5$) had multi-staged procedures. The most common post-operative complications were urethrocutaneous fistula in nine patients (33.3%) and metal stenosis in 3 patients (12.5%). **Conclusions:** Our results show that hypospadias repair is fraught with attendant high complications in our setting.

Key words: Hypospadias, outcome, repair

INTRODUCTION

Hypospadias is the abnormal location of the urethra on the ventral surface of the penis, variably associated with the aborted development of the urethral spongiosum, ventral prepuce (with dorsal hooding), and ventral penile chordee.^[1] Incidence is currently reported as 1 in 300 live male births^[2] with an increasing incidence in western countries.^[3] Not much studies have been published on this pathology in Nigeria, although Okeke *et al.* reported an incidence of 1.1% among primary school children in eastern Nigeria.^[4] Hypospadias is classified as anterior (glanular and sub coronal), mid-penile (distal penile, midshaft, and proximal penile), and posterior (penoscrotal, scrotal, and perineal) accounting for 50%, 30%, and 20%, respectively.^[5]

Hypospadias may be associated with other urogenital tract anomalies such as pelvi-ureteric junction obstruction, vesicoureteric reflux and renal agenesis.^[5-7] Proximal hypospadias associated with cryptorchidism enlarged utricule, or micro-penis (penile size <2.5 cm) could be confused with intersex disorders.^[8]

Since Celsius and Galen's first description of urethral hypoplasia and hypospadias malformation,^[9] numerous techniques of repair have evolved in response to the challenge of creating a functional neo-urethra and aesthetic meatus.^[10] The most favourable age for hypospadias repair is reported as 6-18 months.^[11,12] The present study reports our experience with the pattern of presentation, techniques and outcomes of repair of hypospadias in children.

PATIENTS AND METHODS

This was a retrospective study of all patients with hypospadias repair at the University of Abuja Teaching Hospital, Abuja, Nigeria from January 2009 to December 2013. All medical records of male patients managed for hypospadias reviewed. Data were analysed for

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demographic and clinical presentation, surgical treatment, complications, and their management using Microsoft Excel for Windows 2013 and the qualitative variables were presented as frequencies and simple percentages.

RESULTS

A total of 24 patients were included in this study with age ranging from 1 month to 10 years and an average age of 32.2 months at presentation. Seventy-five percent of the patients ($n = 18$) presented for the first time after the 1st year of life. Two peaks of ages at corrective surgery were observed; 45.8% and 29.1% were operated in the 1-3 years and the 5-10 year age window respectively. The average age at time of surgery was 44.9 months.

Distal hypospadias (consisting of sub coronal, distal penile and mid-shaft) was the most common type in our study population accounting for 58.4% ($n = 14$) patients, followed by glanular hypospadias and proximal hypospadias (proximal penile, penoscrotal and perineal), which had five cases (20.8%) each [Table 1].

Of the total study population, 33.3% ($n = 8$) had associated anomalies. The most common type of anomaly was chordee in 20.8% ($n = 5$) patients. The chordee was present in all the five cases of proximal (100%) penile, penoscrotal and perineal hypospadias managed. A total of 8.3% ($n = 2$) of the patients had associated inguinal hernias, while maldescended testis was observed in just 4.1% ($n = 1$) case.

Of the total 24 cases of hypospadias, 79.1% ($n = 19$) were repaired in a single-stage procedure while 20.9% ($n = 5$) had staged repair. Of the 19 patients managed by a single-stage procedure, Snodgrass tubularised incised plate (TIP) was the predominant procedure performed in 10 (52.5%) cases. The remaining nine patients had meatal advancement and glanuloplasty incorporated, Mathieu's peri-meatal based flap and simple excision of the hooded-prepuce (circumcision) in 16% ($n = 3$), 21% ($n = 4$) and 10.5% ($n = 2$) respectively.

Two-stage hypospadias repair was the predominant surgical procedure for all types of proximal hypospadias managed. In the first stage of the repair, all five patients had correction of chordee, followed by Byar's flaps in three patients and buccal mucosa graft in two patients respectively. At the second stage operation, the well-incorporated graft and flap were tubularised to form the neo-urethra.

Table 1: Characteristics of the repair and outcome of 17 patients with hypospadias

Variable	Frequency	Percentage	Range of values	Mean values
Number of patients/ age range/mean age at presentation	24	100	1 month-10 years	32.2 months
Types of hypospadias				
Glanular	5	20.8		
Distal	14	58.4		
Proximal	5	20.8		
Associated anomalies at presentation				
Chordee	5	20.8		
Meatal abnormalities	Nil			
Inguinal hernia	2	8.3		
Maldescended testis	1	4.1		
Mean age at repair				46.8 months
Surgical repair employed				
Single stage procedures	19	79.1		
Simple circumcision	2	10.5		
Mathieu's peri-meatal based flap	4	21		
MAGPI	3	16		
Snodgrass TIP	10	52.5		
Multi-staged procedures	5	20.9		
Type of sutures employed				
Vicryl 4/0	11	45.8		
Vicryl 5/0	6	25		
Vicryl 6/0	4	16.7		
PDS 5/0	2	8.3		
PDS 6/0	1	4.1		
Utilization of operating magnification				
No operating loupes/ microscopes	Nil	100		
Utilization of repair stents				
Duration of in-situ stenting (days)			3-18 days	10.2 days
Postoperative complications				
Urethrocutaneous fistulas	9	37.5		
Meatal stenosis	3	12.5		
Postoperative complications as per stage of procedure				
Single stage procedures	7	58.3		
Multi-staged procedures	5	41.7		

MAGPI: Meatal advancement and glanuloplasty incorporated; TIP: Tubularised incised plate; PDS: Polydioxanone suture

All corrective repair procedures were performed by specialist urologic surgeons without the aid of intra-operative magnification. In 91.7% ($n = 22$) of cases, in-dwelling stents were employed in the repairs with an average stent period of 10.2 days.

The overall complication rate observed in this review was significant at 50% with urethrocutaneous fistula

(UCF) being the most common complication in 37.5% ($n = 9$) and was highest for proximal hypospadias. The second most common complication was meatal stenosis observed in 12.5% ($n = 3$).

While 33.3% ($n = 3$) of the UCF closed spontaneously during a 1-3 month post-operative period of observation, 55.5% ($n = 5$) and 11.1% ($n = 1$) had to be repaired by subsequent single surgical procedure and multiple surgical procedures, respectively thus leaving the corrected post-operative complication incidence of UCF at 25%.

The rates of complications for both single-stage and two-staged hypospadias repair were 58.3% ($n = 7$) and 41.7% ($n = 5$), respectively.

DISCUSSION

The mean age at presentation in this study is comparable to the report in other local studies.^[12,13] Glanular and sub-coronal hypospadias have been reported at about 50% of all hypospadias,^[14,15] similar to the finding in this study, but at variance with others.^[12]

Our patients presented late as in earlier reports,^[12,13,16] compared with those in the developed countries.^[17] Early presentation and intervention before 18 months of age may prevent significant psychological morbidity which may be associated with genital surgery and gender identity confusion. In our setting, however, late intervention may still be preferred because of problems associated with a paediatric anaesthesia.

Until date, there is no goal standard for the repair of hypospadias urethroplasty, The repair technique would depend on the location and severity of the urethral defect, state of the urethral plate, degree of chordee, presence or not of other defects, intact foreskin, availability of equipment's (magnification and microsurgical instruments) and skill of the surgeon. Whichever technique is utilized, the goal is to achieve a functionally normal urethra and a cosmetically acceptable penis with good urinary and sexual function.^[18] Of the three basic categories (tubularisation of the urethral plate, supplementation or substitution of the urethral plate with skin flaps, and urethral plate substitution with grafts) the most common form of primary repair is the urethral plate tubularisation.^[14,19,20]

Two patients in our series (10.5%) with glanular hypospadias required no repairs since the condition will unlikely affect future fertility. All they needed was a simple circumcision, excising the hooded prepuce.

The most common operation to repair distal hypospadias in our series was the Snodgrass TIP procedure, which accounted for 52.5% ($n = 10$) of the cases in those that had a single-stage operation.

The choice of this procedure over others in these cases was the surgeon's preference, which could be related to skill and experience. All proximal hypospadias in our series (20.9%, $n = 5$) had a two-staged procedure. The choice of staging the repairs in these instances was again the surgeon's preference, which is related to skill and experience.

The reported incidence of complications following hypospadias repair ranges from 6% to 30%, with UCF ranking highest.^[12-14,21] This also was our experience with the UCF constituting almost 38% out of the 50% complication rates. Most of the UCF usually closed spontaneously during a 1-3 month post-operative period. Thus, we suggest at least 1-3 month postoperative period of masterly inactivity before embarking on UCF repair.

CONCLUSION

The most common type of hypospadias in our current review was the distal penile type. The most common complications were UCFs and meatal stenosis. The prevalence of postoperative complications may be minimized by observing best-practice guidelines such as operating within the prescribed age-window and the use of intraoperative magnification and microsurgical instruments which we lacked.

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