

Managing hypospadias in a tertiary hospital in northern Ghana: a retrospective study

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Background: This study investigated the clinical characteristics, methods of repair and surgery outcomes of hypospadias.

Methods: This retrospective study examined 58 male patients with hypospadias whose urine had no infection and were presented to the Urology Unit of the Tamale Teaching Hospital (TTH) from 1 January 2014 to 1 January 2020. Binary logistic analysis was conducted to determine the predicting factors of postoperative complications. The odds ratio of each associated factor was estimated.

Results: The 58 patients had a median age of 36 months (IQR 16.7–72.0) at surgery. The distal penile shaft subtype (26; 44.8%) was the most common. Fifty-three (91.4%) had tubularised incised plate urethroplasty. After secondary procedures, the number of successful procedures increased from 24 (41.4%) to 42 (72.4%). Surgical site infection (9; 20.9%) and urethrocutaneous fistula (9; 20.9%) were the most common complications of hypospadias repairs followed by wound dehiscence (8; 18.6%). The use of dartos fascia (52; 89.7%) as an intermediate waterproof layer prevented wound dehiscence ($p = 0.02$) and urethrocutaneous fistula ($p = 0.03$) significantly. Patients who had mid-shaft hypospadias were less likely to develop urethrocutaneous fistula compared to proximal hypospadias (OR 5.18, 95% CI 1.097–24.457, $p = 0.03$).

Conclusion: Urethroplasty involved tubularisation of urethral plate among boys whose median age was three years. The predictors of postoperative complications were the severity of hypospadias and tissue used for coverage. Postoperative complications are common in hypospadias repair necessitating secondary procedures for final successful outcomes.

Keywords: hypospadias, tubularised, incised, plate, urethroplasty

Introduction

Hypospadias is a fairly common congenital anomaly affecting the urethra of males. Owing to conflicting data on its prevalence and variations in countries and ethnicity, it is difficult to estimate its worldwide prevalence.¹ The incidence seems to be increasing and a rate of approximately 1 in 250 male newborns has been reported.² In the West African subregion, prevalence is 1.1% among primary school pupils from south-eastern Nigeria³ and accounts for 0.3% of paediatric urological surgeries at the Korle-Bu Teaching Hospital in Ghana.⁴

Classification of hypospadias, based on the position of the meatus after orthoplasty, falls within three major categories: distal hypospadias comprising glanular, coronal and subcoronal; the middle hypospadias comprising the distal penile shaft, midshaft and proximal penile shaft; and proximal hypospadias comprising penoscrotal, scrotal and perineal.⁵

The anomaly of hypospadias is corrected by reconstructing the urethra. Although several techniques abound, tubularised incised plate (TIP) urethroplasty is the most commonly performed technique.⁶ Hypospadias repairs may be associated with complications. The incidence of postoperative complications has been reported to be 6–30% and varies with severity of hypospadias.^{7,8} Such

complications may be associated with unfavourable outcomes such as a penis that is not straight on erection, with the patient unable to void standing and an unacceptable cosmetic appearance.

The characteristics, methods of repair and outcome of urethroplasty for hypospadias are yet to be described at the Tamale Teaching Hospital (TTH), Ghana. The objective of this study was to characterise hypospadias, describe the type of surgery needed and evaluate the outcome of urethroplasty for hypospadias patients at TTH. The findings of this study may influence policy and change practice.

Methods

Study type

This retrospective hospital-based study was conducted between 1 January 2014 and 1 January 2020. The study included 58 males who presented to the Urology Unit of TTH. Hypospadias was classified as distal if it involved the glanular, coronal and subcoronal aspect of the penis; as middle hypospadias if it comprised the distal penile shaft, midshaft and proximal penile shaft; and as proximal hypospadias if it comprised the penoscrotal, scrotal and perineal. The surgical operations performed were recorded. The primary outcome of the study was to describe the success of urethroplasty for hypospadias up to six months after surgery. The secondary

outcome of this study was to evaluate the complications associated with the urethroplasties.

Preoperative evaluation

The preoperative evaluation of the participants included history, physical examination, urine culture and sensitivity, and full blood count. If urinary tract infection was present, it was treated before urethroplasty.

Inclusion criteria

Any patient with hypospadias whose urine had no infection were included in this study.

Exclusion criteria

Patients were excluded if they had failed hypospadias repair that was done elsewhere. Also, patients who had untreated urinary tract infections were excluded.

Surgical procedure

Under general anaesthesia, the participant was placed in the supine position and the surgical site was cleaned with antiseptic solution. A 3.5 magnification optical loupe was used in all procedures. The surgical site was marked appropriately for the chosen technique. We commonly performed TIP urethroplasty as described by Snodgrass,⁹ and simple tubularisation of urethral plate (modified Thiersch-Duplay).¹⁰ In two participants, we used the preputial island flap for urethroplasty, as described by Duckett.⁸ In addition, Mathieu's perimeatal base flap urethroplasty was done in three participants. After de-gloving the penile skin, dissecting the ventral dartos and releasing the corpus spongiosum wings from underlying corpora cavernosa and glans wings, an artificial erection was done to assess the degree of chordee. For those with ventral chordee less than 30 degrees by visual estimation, the penis was straightened by dorsal plication. For those with ventral chordee greater than 30 degrees, the penis was straightened by transecting the urethral plate at the corona and dissecting proximally to the meatus, followed by dorsal plication. None of our participants had ventral corporotomy with or without dermal grafts. For participants with chordee greater than 30 degrees, a two-stage procedure was usually planned. We used preputial skin and byars' flap to cover the ventral aspect of the shaft. Where there was skin deficiency, especially among previously circumcised, buccal mucosa was used to cover the ventral aspect of the liberated, straightened shaft. The urethra was stented with an appropriate-size Foley catheter or nasogastric tube. Where the nasogastric tube was used, it was fixed at the tip of the glans with a nylon 4/0 or 3/0 suture. Tubularisation was done using a 6/0 polyglactin (Vicryl) suture. The neourethra was covered using either dartos fascia taken dorsally or tunica vaginalis. Haemostasis was achieved using bipolar energy from an electrosurgical unit. Compressive wound dressing was applied to the penile shaft in all our participants and was removed on the seventh day. The dressing was changed on the third postoperative day, if heavily stained with blood. All surgeries were performed by a single consultant urologist.

Postoperative management

The urethral Foley catheter or nasogastric tube was left in situ for seven days for continuous bladder drainage and was removed on the seventh postoperative day in all participants. The stent was also removed on the seventh postoperative day. Antibiotics were given to the participants for seven days. Wound swabs and culture-directed treatment were prescribed for wound infections, where this occurred. The follow-up period ended at six months.

Evaluation of outcome

A successful repair was defined as a straight penis on erection with the meatus near the tip that allowed voiding in the standing position. The cosmetic appearance of the penis was assessed by the surgeon. Uroflowmetry was not done to assess function.

Statistical analysis

Data on demographics, characteristics of hypospadias, methods of repair and complications of urethroplasty for hypospadias were retrieved. Data on age were first collected quantitatively before participants were grouped into 12-months intervals. Statistical Package for Social Science (SPSS) version 21 (IBM Corp., USA) was used for data entry and analysis. Data were reported as frequencies (percentage), means ($\pm$ standard deviation [SD]) or median (interquartile range [IQR]), and presented in tables. Binary logistic regression was used to predict the significant preoperative risk factors of the most common complications such as wound dehiscence and urethrocutaneous fistula as well as to examine other complications such as haematoma formation, oedema, surgical site infection, meatal stenosis, penile shortening, residual chordee, penile torsion and urethral stricture. The odds ratio (OR) and confidence interval (CI) of each factor was estimated. A p -value < 0.05 was considered statistically significant.

Results

Demographic characteristics

We retrieved fifty-eight patient records. At the time of the surgery, their median age was 36 months (IQR 16.7–72.0 months). The greatest proportion of hypospadias managed was among toddlers (20 participants; 34.5%) who were aged 13–36 months (Table I).

Characteristics of hypospadias

Of the 58 participants consecutively managed, 26 (44.8%) participants presented with distal penile shaft hypospadias, followed by 11 (19.0%) participants who presented with subcoronal type.

Table I: Age group of patients

Age group (months)	Frequency (%) <i>n</i> = 58
Infants (1–12)	10 (17.2)
Toddlers (13–36)	20 (34.5)
Pre-school (36–48)	8 (13)
School-age (49–120)	13 (22.4)
Adolescents (121–216)	6 (10.3)
Adults (> 216)	1 (1.7)

There were 19 (32.8%) participants with chordee (Table II). Also, we found that 42 (72.4%) participants were circumcised before surgery. Only three (5.2%) participants had cryptorchidism.

Table II: Characteristics of hypospadias

Characteristics	Frequency (%) n = 58
Location of the urethral meatus	
Distal	
Glanular	2 (3.5)
Subcoronal	11 (19)
Middle penile	
Distal penile shaft	26 (44.8)
Midshaft	7 (12.1)
Proximal	
Penoscrotal	9 (15.5)
Scrotal	2 (3.4)
Perineal	1 (1.7)
Presence of chordee	19 (32.8)
Degree of chordee	
Mild	7 (12.1)
Moderate	6 (10.3)
Severe	6 (10.3)

Method of repair

We deployed different techniques to repair the hypospadias, as indicated in Table III. There were 49 (84.5%) one-stage repairs and nine (15.5%) two-stage repairs. Simple urethral plate tubularisation was the most-used technique, used in 27 (46.6%) participants. This was closely followed by TIP urethroplasty, used in 26 (44.8%) participants. Penile dartos flap was the most frequently used tissue for coverage and was used in 52 (89.7%) participants. All of the participants received broad-spectrum antibiotics as prophylaxis. Cefuroxime was the most commonly used, and was used for 42 (72.4%) participants. Double-layer closure of the urethral plate was used in 30 (51.7%) participants. The urethra was stented using a Foley catheter in 33 (56.9%) participants, whereas a feeding tube was used in 25 (43.1%) participants.

Table IV: Complications of hypospadias repair

Complications of repair	Overall complication rate n = 58	Complications of primary vs redo-urethroplasty	
	n (%)	Redo n (%), n = 14	Primary n (%), n = 44
Complications at seven days after surgery (day of discharge home)			
Surgical site infection	9 (15.5)	3 (21.4)	6 (13.6)
Wound dehiscence	8 (13.8)	3 (21.4)	5 (11.4)
Complications at six months			
Residual chordee	3 (5.2)	1 (7.1)	2 (4.5)
Penile torsion	2 (3.4)	1 (7.1)	1 (2.3)
Urethrocutaneous fistula	9 (15.5)	2 (14.3)	7 (15.9)
Meatal stenosis	4 (6.9)	1 (7.1)	3 (6.8)
Penile shortening	3 (5.2)	2 (14.3)	1 (2.3)

Table III: Method of repair

Method of repair	Frequency (%) n = 58
Tubularisation technique employed	
Simple urethral plate tubularisation	27 (46.6)
Tubularised incised plate	26 (44.8)
Transverse preputial island flap (Duckett's tube)	2 (3.4)
Mathieu's perimeatal-base flap	3 (5.2)
Neourethral coverage	
Dartos flap	52 (89.7)
Tunica vaginalis	6 (10.3)
Suturing technique	
Continuous single layer	28 (48.3)
Continuous double layer	30 (51.7)
Antibiotic used	
Ampicillin	1 (1.7)
Ceftriaxone	15 (25.9)
Cefuroxime	42 (72.4)
Repair stage	
One-stage procedure	49 (84.5)
Two-stage procedure	9 (15.5)

Outcome

Of the 58 participants, there were 44 (75.9%) primary repairs and 14 (24.1%) redo-urethroplasties. The redo-urethroplasties were found to have worse outcomes as 13 (92.8%) of these participants experienced complications compared to 25 (56.8%) participants with primary repairs, as shown in Table IV. At six months, the overall success rate was 24 (41.4%) participants. The success of the repairs increased from an initial 24 (41.4%) to 42 (72.4%) after secondary procedures were performed to correct the complications observed during the six months postoperative period.

Table IV presents the complications recorded within the first postoperative week, which included eight (18.6%) wound dehiscence, of which six (75%) were glans dehiscence and two (25%) complete wound dehiscence. There were also nine (20.9%) wound infections. The organisms isolated from wound swabs for culture and sensitivity were *Citrobacter*, *Pseudomonas* and *Staphylococcus aureus*. These organisms were sensitive to

Table V: Risk factors for wound dehiscence after urethroplasty for hypospadias

Variable	Wound dehiscence n (%)		OR	CI	p-value
Age grouping	Yes	No			
≤ 5 years	7 (17.1)	34 (82.9)	0.30	0.034–2.680	0.28
> 5 years	1 (5.9)	16 (94.1)			
Type of hypospadias					
Distal	0	13 (100)			
Middle	5 (15.2)	28 (84.8)	1.87	0.371–9.399	0.45
Proximal	3 (25.5)	9 (75.5)			
Tissue for coverage					
Dartos flap	5 (9.6)	47 (90.4)	9.40	1.483–59.597	0.02
Tunica vaginalis	3 (50)	3 (50)			
Single stage repairs					
Yes	7 (14.3)	42 (85.7)	0.75	0.81–6.959	0.80
No	1 (11.1)	8 (88.9)			
Type of stent					
Feeding tube	2 (8)	23 (92)	2.56	0.470–13.908	0.28
Catheter	6 (18.2)	27 (81.8)			
Primary vs redo-urethroplasty					
Primary	5 (11.4)	39 (88.6)	2.13	0.438–10.238	0.35
Redo	3 (21.4)	11 (78.6)			

gentamicin, cefixime and vancomycin, respectively. Complications recorded at the six-month follow-up were urethrocutaneous fistula in nine (20.9%), urethral stricture in five (11.6%), meatal stenosis in four (9.3%), residual chordee in three (7%), penile shortening in three (7%) and penile torsion in two (4.7%) participants, in descending order of prevalence.

Risk factors for wound dehiscence after urethroplasty for hypospadias

We relied on binary logistic regression to examine the factors that could predict the probability of wound dehiscence after urethroplasty for hypospadias (Table V). The use of dartos fascia as an intermediate waterproof layer prevented wound dehiscence

Table VI: Risk factors for urethrocutaneous fistula after hypospadias repair

Variable	Urethrocutaneous fistula n (%)		OR	CI	p-value
Age grouping	Yes	No			
≤ 5 years	6 (14.6)	35 (85.4)	0.80	0.175–3.651	0.77
> 5 years	3 (17.6)	14 (82.4)			
Type of hypospadias					
Distal	0	13 (100)			
Middle	4 (12.1)	29 (87.9)	5.18	1.097–24.457	0.03
Proximal	5 (41.7)	7 (58.3)			
Tissue for coverage					
Dartos flap	6 (66.7)	3 (33.3)	7.67	1.252–46.958	0.03
Tunica vaginalis	46 (93.9)	3 (6.1)			
Stage of repairs					
Single	8 (16.3)	41 (83.7)	0.64	0.070–58.55	0.69
Two-stage	1 (11.1)	8 (88.9)			
Type of stent					
Feeding tube	4 (16)	21 (84)	0.94	0.224–3.923	0.93
Foley catheter	5 (15.2)	28 (84.8)			
Primary vs redo-urethroplasty					
Primary	7 (15.9)	37 (84.1)	0.88	0.161–4.827	0.88
Redo	2 (14.3)	12 (85.7)			

significantly ($p = 0.02$). Primary urethroplasties were less likely to be associated with wound dehiscence (OR 2.13, 95% CI 0.438–10.238, $p = 0.35$) compared with redo-urethroplasties, which was not statistically significant.

The age, type of hypospadias, type of stent, and whether or not the procedure was staged, were also not significant in predicting wound dehiscence following hypospadias repair.

Risk factors for urethrocuteaneous fistula after hypospadias repair

We used binary logistic regression to examine factors that could predict the probability of urethrocuteaneous fistula after hypospadias repair, as shown in Table VI.

This study revealed that participants who had middle hypospadias were 5.18 times more likely not to develop urethrocuteaneous fistula compared to proximal hypospadias, and this was statistically significant (OR 5.18, 95% CI 1.097–24.457, $p = 0.03$).

The use of dartos fascia as an intermediate waterproof layer prevented urethrocuteaneous fistula significantly ($p = 0.03$).

Regarding urethrocuteaneous fistula, primary urethroplasties were more likely to be linked to the complication (OR 0.88, 95% CI 0.161–4.827, $p = 0.88$) compared to redo-urethroplasties.

Persons younger than five years, single-stage repairs and the use of feeding tube as a stent were not significant in predicting urethrocuteaneous fistula (Table VI).

Discussion

The median age of the participants was 36 months with the majority (35%) being toddlers aged 13–36 months. The median age of these boys managed at our centre agrees with the trend in sub-Saharan Africa, where the age of repair of hypospadias was reported to be 18–65 months.^{4,11,12} The median age of 36 months, as revealed in the study, was due to late reporting to the hospital. Delays in seeking appropriate and timely health care in low and middle-income countries have been emphasised by several authors who suggest that seeking alternative treatment, poverty, ignorance and bad roads are the key factors.^{13,14} The study also revealed that boys younger than five years did not have significantly less wound dehiscence after hypospadias repair compared to children older than five years. Though the practice of urethroplasty for hypospadias is commonly conducted among older boys in the West African subregion, earlier authors had suggested that the younger age of patients should not prevent operations on the external genitalia. The period from six months was a relatively good time for surgery while surgeries scheduled for patients younger than six months may be considered too early and carry anaesthetic concern. The proposal to operate on the external genitalia of relatively younger babies was aimed at addressing psychological problems that the child might develop, and not merely the technical considerations of the procedure as this could be handled by an experienced paediatric urologist, anaesthesiologist and nurses.¹⁵

Each participant was assessed by the surgeon who considered the operation successful if: the penis appeared cosmetically acceptable, the penis was straight on erection and the meatus near the tip allowed voiding in the standing position. This study revealed that at six months postoperative, the overall success rate was 24 (41.4%). The success of these urethroplasties increased from an initial 41.4% to 72.4% after secondary procedures were performed to correct the complications. These secondary procedures included: dilatation of the meatus and short urethral strictures, buccal mucosa augmentation urethroplasty and closure of urethrocuteaneous fistula. There were no results on uroflowmetry and records on follow-ups beyond six months to ascertain urinary function were unavailable.

Surgical site infection and wound dehiscence were the leading early complications recorded in this study. Concerning postoperative penile shaft or scrotal oedema, the participants recovered uneventfully. Minimising tissue mobilisation and applying compressive wound dressing on the penile shaft for seven days during the postoperative period were enough to prevent oedema formation or keep it at the bare minimum. Residual minimal oedema without haematoma or infection resolved spontaneously without causing permanent damage. In contrast, Nonomura et al.¹⁶ reported the prevalence of penile oedema to be as high as 11.1%.

Surgical site infections are fairly common among patients following urethroplasty for hypospadias. As in all other surgical procedures, we employed strict adherence to aseptic techniques during urethroplasty as a preventive measure for surgical site infection. The majority of the participants (42; 72.4%) received cefuroxime 30 minutes preceding anaesthesia. This antibiotic prophylactic policy was similar to what has been widely accepted and recommended by practicing paediatric urologists.^{17,18} Despite these measures, we recorded surgical site infections among nine (15.5%) of the 58 participants, which constituted 20.9% of participants with complications. The *Citrobacter*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* that were isolated among the patients were sensitive to gentamicin, cefixime and vancomycin, respectively. To deal with these wound infections, antibiotics were prescribed as directed by the culture and sensitivity results. Considering the high infection rate in this study, the cefuroxime and ceftriaxone used in 72.4% and 25.9% of the participants, respectively, might have been ineffective as prophylaxis. Based on the microbial isolates and sensitivity pattern, practicing urologists at TTH may change their antibiotic policy for urethroplasty among boys with hypospadias. The surgical site infection rate among our participants was similar to those reported in other centres in Africa, where the surgical site infection following hypospadias repair ranged between 3.8% and 36.5%.^{19,20} In the work of Ratan et al.,²¹ *Coliforms* and *Staphylococcus aureus* were common organisms isolated in hypospadias repair and these bacteria were sensitive to cephalosporins and aminoglycosides. Baillargeon et al.,²² however, did not find evidence to support the use of preoperative antibiotic prophylactics.

Of the 43 (74.1%) participants who had a complication, 18.6% experienced wound dehiscence. On the contrary, wound dehiscence could be as low as 6.2%, as reported by earlier authors.^{11,20} Wound dehiscence may not only occur when there is a severe infection,

but also when repair of the glans or urethroplasty is under tension, as well as when devitalised tissues are used in urethroplasty. Debridement of devitalised tissue is uncommon in primary repair. If required during the postoperative period, no attempt at secondary closure should be made.²³

In our practice, we constructed all neomeatus to assume a conical shape, which was wide enough to administer an appropriate-sized dilator or stent. Our approach aimed at preventing distal obstruction; however, it did not eliminate urethrocutaneous fistulas. Nine (15.5%) of the 58 participants in this study, comprising 20.9% of those with complications, developed urethrocutaneous fistula, which is similar to the findings of Massati et al.²⁰ with 16.2%. In contrast, results published by Khan et al.²⁴ reported a higher urethrocutaneous prevalence (38.8%). It has been established that a stenosed meatus or distal stricture could lead to a urethrocutaneous fistula which has been reported as the most common complication after hypospadias repairs.^{11,12} Furthermore, poor tissue healing, local infection and ischaemia could have accounted for the urethrocutaneous fistulae encountered in the participants. In addition, unfavourable local anatomical factors could serve as risk factors for urethrocutaneous fistula. Using logistic regression, the middle hypospadias type was identified as protective against urethrocutaneous fistula compared to proximal hypospadias.

Unlike reports from Europe, which suggest that distal hypospadias comprising glanular, coronal and subcoronal, constituted the majority (50–77%) of reported hypospadias,^{6,25} we found that middle hypospadias was the most common type repaired at our centre with the distal penile shaft subtype constituting the largest proportion (44.8%). In the series from Nigeria, Abdur-Rahman et al.¹¹ found distal penile hypospadias as the most commonly reported hypospadias (59.6%).

In this series, 32.8% of the participants had various degrees of ventral chordee and were subjected to orthoplasty procedures necessary for correction. We performed dorsal plication on our participants who had ventral chordee less than 30 degrees and which were not corrected after de-gloving the penile skin, but we transected the urethral plate for participants whose chordee was greater than 30 degrees. We did not use dermal graft for correction of chordee. Chordee associated with hypospadias is fairly common among African boys and ranges from 20–45%, according to Aisuodionoe-Shadrach et al.¹² and Mohammed et al.²⁶

Of the participants, 84% had a one-stage repair. This was achieved through TIP urethroplasty as described by Snodgrass⁹ in 44.8% and tubularisation without incision of the urethral plate in 46.6% of the participants. Tubularisation without incision of the urethral plate was done where the urethral plate was considered sufficiently wide and adequate. This in situ tubularisation of the urethral plate was considered an excellent option by Van Horn and Kass.²⁷ Snodgrass' technique has been popularised by several practicing urologists.^{6,10} Also, Mathieu's perimeatal base flap was raised to complete the urethroplasty in one stage among 5.2% of the participants. In addition, we deployed Duckett's procedure in 3.4% of the participants as an option for achieving a one-stage operation but these were later

observed to have developed penile torsion. Duckett's procedure had the advantage of one-move accomplishment.²⁸ The remaining participants had two-stage repairs. We used the two-stage repairs for patients with small penises, and those with proximal hypospadias comprising penoscrotal, scrotal or perineal hypospadias that was associated with severe chordee. For participants requiring staged procedure, the first stage was aimed at correcting the ventral chordee through transection of the urethral plate with or without dorsal plication and reconstruction of the neourethral plate.

Regarding tissue for coverage, we used either dartos fascia or tunica vaginalis. The majority of the participants (52; 89.7%) had neourethral tissue coverage with dartos fascia. In six participants (10.3%), tunica vaginalis was used especially in second-stage procedures where tissue coverage was deemed insufficient. Dartos fascia as a tissue for coverage was found to significantly protect participants against wound dehiscence. In addition, dartos fascia was found to protect participants against urethrocutaneous fistula, which was statistically significant. Our findings were consistent with those of Gafar²⁹ and Jawale³⁰ who described dartos fascia as a suitable waterproof tissue. The dartos fascia provides good blood supply and thus prevents urethrocutaneous fistula from developing.^{31,32}

We used Foley urethral catheters and feeding tubes to drain the bladder, as well as to stent the neourethra after hypospadias repair. Based on the drainage tube used, the feeding tube was 2.56 times more likely not to cause wound dehiscence compared to the Foley catheter, although this was not statistically significant. The infant feeding tube might be associated with complications such as knotting, dislodgment and coiling, but could serve as a suitable drainage tube as an alternative to the Foley catheter to drain the bladder after hypospadias repairs.³³ Acimi³⁴ reported satisfactory results when only feeding tubes were used for urinary diversion. On the other hand, Vuthiwong et al.³⁵ preferred to use Foley catheters as this lowered the incidence of dislodgment compared to feeding tubes.

Study limitations

A limitation of this retrospective study was that the study ended six months postoperatively. Thus, there was no long-term follow-up to ascertain the urinary function of the boys. Also, patient/parent-reported outcomes were not documented and surgeon-observed outcomes may be biased. The sample size was small and may affect the quality of results.

Conclusion

In conclusion, hypospadias repairs were done commonly among boys three years or older. Middle hypospadias and the distal penile shaft subtype were the most common. Single-stage repairs were commonly performed where the urethral plate was tubularised. The predictors of postoperative complications were the severity of hypospadias and tissue used for coverage. Postoperative complications are common in hypospadias repair necessitating secondary procedures for final successful outcomes.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

We obtained ethical approval from the Committee of Human Research, Publication and Ethics of the Kwame Nkrumah University of Science and Technology (CHRPE/AP/377/22) to conduct this study.

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