



## Research Article

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## A single center experience of Hypospadias Repair in Dar es Salaam, Tanzania

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### Abstract

**Background:** Hypospadias is one of the common congenital anomaly that affects children. It can present classically with abnormal ventral opening, chordee and dorsal hood however isolate hypospadias do also exist. Hypospadias repair is one of the commonly performed surgical procedures at Muhimbili National Hospital (MNH) and the outcome of repair is influenced by several factors. Our study aimed to assess the Profile and Early Outcome of Hypospadias repair at Muhimbili National Hospital. **Methodology:** This was a cross sectional study which involved all children with hypospadias aged  $\geq 6$  months and underwent first repair recruited by convenient sampling at Muhimbili national Hospital from March 2018 to January 2019 with a follow up of 30 days from surgery. We excluded children who had Repair before, those who underwent hypospadias repair and died within 24 hours post-operative. Mothers of each participating patient gave an informed consent. Data were collected by a standardized questionnaire and analyzed by using SPSS program version 20. **Results:** Sixty-three children were enrolled in the study with mean age of 3.7 years. Majority of our patient had Subcorona hypospadias with Snodgrass tubularized incised plate urethroplasty being the common surgical technique. Thirty-seven (58.7%) patients had successful hypospadias repair while 26(41.3%) had complications. The most commonly found early complications were surgical site infection, hematoma, oedema, flap necrosis, urethrocutaneous fistula, urethral stricture, wound dehiscence and meatal stenosis. Age $>3.5$  years at repair, previous circumcised, type and duration of urine drainage $< 7$  days, type of dressing and changing the 1<sup>st</sup> dressing  $< 3$  days were found to influence complications rate. **Conclusion:** Hypospadias is still the common pediatric urological condition with Snodgrass technique being preferred for repair. The outcome of the repair can be influenced by different factors regardless of the technique of repair.

**Keywords:** Hypospadias, Repair, Outcome

### INTRODUCTION

Hypospadias is a congenital anomaly characterized by proximal urethral meatus, dorsal hooded prepuce and may have a ventral curvature (chordee). It may also be a part of disorder of sex differentiation, when present with Congenital anomalies such as Cryptorchidism, scrotal and /or Anorectal anomalies. These deformities impair the dual functions of penis which are voiding in a standing posture, cosmetic appearance, sexual intercourse (coitus) and insemination. The incidence is highest among Caucasians, less in Hispanics and least in blacks. It probably results from multiple factors such as endocrine, genetic and environmental factors [1, 2].

Classification of hypospadias is based on the position of the urethral meatus, such as distal hypospadias meatus at Glans penis, Corona or Subcoronal, Mid hypospadias urethral meatus at Distal, Mid penile or Proximal penile location, the proximal hypospadias with urethral meatus at penoscrotal, scrotal or perineal position [3].

The evolution of the surgical management of hypospadias can be grouped into three distinct periods, the first starts in first 3 centuries AD, the second during the middle ages or Medieval period and the third period runs from the 19th century until today. These periods seem to be closely linked to advances in instrument manufacture, anesthesia and suture material and surgical technique [1]. There are about 250 surgical procedures of hypospadias repair but they can be mainly divided into single stage or multistage repair. The sequence of surgical repair consists of orthoplasty, urethroplasty, meatoplasty and glanuloplasty, scrotoplasty and skin coverage. Outcome of surgical repair is influenced by several factors such as severity of deformity, androgen therapy, and timing of surgery, instruments, use of magnification, suture materials and techniques, urine drainage, preoperative and post-operative antibiotics [4-6]. Our study aimed to assess the Profile and Early Outcome of Hypospadias repair at Muhimbili National Hospital.

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## MATERIALS AND METHODS

This was a hospital based cross sectional study that was conducted at Muhimbili National Hospital. Muhimbili is a National Referral Hospital and University Teaching Hospital with 1,500 bed facility, attending 1,000 to 1,200 out patients week, admitting 1,000 to 1,200 inpatients per week. It is located in Dar es Salaam, Ilala district, Upanga ward. MNH has 3 pediatrics surgeons, 8 urologists and 3 professors in urology that operates on hypospadias patients. Our study targeted all children who were admitted and underwent hypospadias repair at Pediatrics surgery wards, kibasila wards 14, 16 and Sewahaji wards 17, 18 for the period of March 2018 to January 2019 with a follow up of 30 days from surgery being recruited by convenient sampling. We excluded children who had Repair before, those who underwent hypospadias repair and died within 24 hours post-operative. Data were collected by a standardized questionnaire and analyzed by using SPSS program version 20 while association between variables was determined by chi square test. Association with p value of < 0.05 was considered significant.

### Ethical issues

Ethical clearance was obtained from the Muhimbili University of Health and Allied Sciences (MUHAS) research and publication committee and MNH research and publication committee and the permission to conduct the study in the hospital was obtained from MNH management. Mothers of each participating patient gave an informed consent.

## RESULTS

A total of 63 patients met our inclusion criterion and were recruited in the study. Majority (52.4%) patients had age between 1-3 years with mean age of 3.7 years. {Table 1}.

**Table 1:** Age group of patient with hypospadias at primary repair at MNH

Age group in years	Frequency	Percentage
< 1 year	1	1.6
1-3 years	33	52.4
>3 - 6 years	20	31.7
>6 years	9	14.3
Total	63	100

Most our patients (92.1%) had dorsal hooded prepuce while 30(47.6%) patients were found to have ventral curvature (chordee) of varying degree, 3(4.8%) had small glans penis warranting the to be given testosterone for 3 weeks before surgery together with 4(6.3%) who had small penile shaft {Tables 2}.

**Table 4.1:** Early outcome of hypospadias repair before being discharged N=63

	Frequency	Percentage
Hematoma		
<b>Yes</b>	<b>20</b>	<b>31.7</b>
No	43	68.3
Oedema		
Severe	18	28.6
Mild	45	71.4
Surgical site infection		
<b>Yes</b>	<b>23</b>	<b>36.5</b>
No	40	63.5
Flap necrosis involving skin only		
Yes	1	1.6
No	62	98.4
Flap necrosis involving both skin and dartos fascia		
<b>Yes</b>	<b>17</b>	<b>27</b>
No	46	73

**Table 2:** Clinical presentation N=63

	Frequency	Percentage
Presence of Prepuce		
Dorsal hooded prepuce	58	92.1
Previous Circumcised	5	7.9
Size of Glans penis		
Small (<14 mm)	3	4.8
Adequate (≥14 mm)	60	95.2
Size of penis		
Small	4	6.3
Adequate	59	93.7
Location of urethral meatus		
Glans penis (megameatus)	1	1.6
Subcorona	21	33.3
Distal penile	8	12.7
Mid penile	8	12.7
Proximal penile	16	25.4
Scrotal	6	9.5
Perineal	3	4.8
Ventral curvature		
Yes	30	47.6
No	33	52.4
Presence of testes		
Yes	61	96.8
No	2	3.2

Four surgical techniques were commonly used at Muhimbili National Hospital with Tubularized incised plate (Snodgrass) being most popular by 55.6% followed by staged hypospadias repair 14(22.2%). Meatal advancement and Glanuloplasty was applied by 13(20.6%) while Onlay prepuccial skin graft was a least popular technique by (1.6%). {Table 3 below}.

**Table 3:** Common surgical technique used

	Frequency	Percent
<b>Tubularized incised plate (Snodgrass)</b>	<b>35</b>	<b>55.6</b>
Staged hypospadias repair	14	22.2
Meatal advancement and glanuloplasty	13	20.6
Onlay prepuccial skin flap	1	1.6
Total	63	100

Majority of our patients 37(58.7%) had successful hypospadias repair upon a follow up of 30 days while 26(41.3%) patients had complications post hypospadias repair in which surgical site infection was the commonest complication 23(36.5%) followed by hematoma formation 20(31.7%), urethral stricture and flap necrosis involving skin only rare complications by 1(1.6%) respectively. {Tables 4.1 and 4.2}.

Urethrocutaneous fistulae		
Yes	11	17.5
No	52	82.5
Poor urine stream with straining		
Yes	1	1.6
No	62	98.4
Complete urethroplasty dehiscence		
Yes	7	11.1
No	56	88.9

**Table 4.2:** Outcome of hypospadias patient 30 days post repair and discharge N=63

	Frequency	Percentage
<b>Successful repair</b>		
Yes	37	58.7
No	26	41.3
Urethral meatus at the tip of glans penis		
Yes	52	82.5
No	11	17.5
Meatal stenosis		
Yes	11	17.5
No	52	82.5
<b>Urethrocutaneous fistula</b>		
Yes	15	23.8
No	48	76.2
<b>Urethral stricture</b>		
Yes	3	4.8
No	60	95.2
Complete urethroplasty dehiscence		
Yes	7	11.1
No	56	88.9

Age above 3.5 years at primary repair had complication was found to influence complications rate by 51.7% compared to 32.4% of patients with age  $\leq$ 3.5years, previous circumcision influenced complication rate by 60%, single staged repair for posterior hypospadias was accompanied with complications when compared to 6(37.5%) patients

with posterior hypospadias who underwent staged repair. Urine drainage by cystostomy and stent for more than 7 days was in favor of good outcome although it was not significant with a p value of 0.06. The influence to the outcome of suture materials, use of magnifying lens and surgeons experience were not established. {Table 5}

**Table 5:** Univariate analysis of factors influencing outcome of hypospadias repair N=63

Variable	Total	Complicated (%)	Successfully (%)	P value	RR(reference)
Age group in years at primary surgery				0.12	
>3.5	29	15(51.70)	14(48.30)		1.59(0.87-2.91)
$\leq$ 3.5	34	11(32.40)	23(67.60)		
Circumcision				0.64	
Yes	5	3(60.00)	2(40.00)		1.51(0.69-3.31)
No	58	23(39.70)	35(60.30)		
Glans penis size				0.1	
Small	3	1(33.30)	2(66.70)		0.80(0.15-4.07)
Adequate	60	25(41.70)	35(58.30)		
location of urethral meatus				0.86	
Posterior	25	10(40.00)	15(60.00)		0.95(0.51-1.71)
Anterior	38	16(42.10)	22(57.90)		
Duration of urine drainage				0.06	
<7 days	3	3(100)	0		2.60(1.89-3.59)
$\geq$ 7 days	60	23(38.30)	37(61.70)		
When is the first dressing changed				0.45	
<3	14	7(50.00)	7(50.00)		1.28(0.68-2.42)
$\geq$ 3	49	19(38.80)	30(61.20)		
TIP (snodgrass)				0.77	
Yes	35	15(42.90)	20(57.10)		1.09(0.60-1.98)
No	28	11(39.30)	17(60.70)		
Staged hypospadias				0.45	
Yes	14	7(50.00)	7(50.00)		1.28(0.68-2.42)
No	49	19(38.80)	30(61.2)		
MAGPI				0.13	

Yes	13	3(23.10)	10(76.90)		0.50(0.17-1.14)
No	50	23(46.00)	27(54.00)		

## DISCUSSION

Hypospadias is recommended for repair at the age of six months and above [2], in this study majority of patients 45 (71%) were within standard operating window 6/12 to 4years which is associated with less psychological trauma, which is compared with a study done by Ramanathan [5]. At the same time majority of the patients 21(33.33%) had subcorona hypospadias, followed by proximal penile hypospadias 16(25.4%) patients, which is similar to the findings of the study conducted by Massati *et al* [4]. We found that 3(4.8%) patients had small glans ( $\leq 14\text{mm}$ ) penis and 4(6.3%) patients were found to have small penis ( $< 3.8\text{cm}$ ) necessitating them to be given testosterone for 3 weeks before surgery for good outcome, which is compared to the study by Sunil *et al* [7]. It was also found undescended testes was the only associated anomalies found in 2(3.2%) patients and they underwent orchidopexy prior to hypospadias repair, while congenital hernia, hydrocele, torsion of penis or persisted mullerian duct structures were not found during the study period different results from the study by Khan M *et al* [2].

In this study the most common surgical technique used at Muhimbili National Hospital is Snodgrass tubularized incised plate urethroplasty with 35(55.6%) patients with 57.10% successful repair, which is compared to the study by Massati *et al* [5] and similar study by Snodgrass *et al* [8].

Most of our patients 37(58.7%) had successful hypospadias repair with overall complication rate of 41.3% mainly being surgical site infection 23 (36.5%) which is related to hematoma formation, oedema and peri-dripping stent urine leaking, different results when compared to the study by Ismail Y *et al* [6], similar study by Khan M *et al* [2], Where by 17(27%) patients had flap necrosis involving both skin and dartos fascia which may be due to destruction of blood supply during flap mobilization, which compared to the study by Khan M *et al* [2] and 15 (23.8%) patients developed urethrocutaneous fistula which is associated with infection, flap necrosis involving both skin and dartos fascia and urethral meatal stenosis, which is compared to the study by Yung-chin *et al* [7] and similar study by Ismail *et al* [6], Also 11(17.5%) patients were found to have meatal stenosis which is associated with ischemic changes post repair and surgeon attempt to reach the tip of glans penis, which is similar to the study by Bakal U *et al* [9]. Furthermore 7(11.1%) of repaired patients had repair dehiscent associated with leaking of urine per incision site and surgical site infection contrary to the findings from the study by Snodgrass [8].

We found different factors including surgical technique used for hypospadias repair, other factors influencing outcomes of repair including age at repair as patients with age group  $\leq 3.5$  years had 19.3% less complication when compared to patients with age group  $> 3.5$  years which is similar to different studies [5, 10-15]. At the same time uncircumcised patients (dorsal hooded prepuce) has 20.3% less complication repair when compared to circumcised patients which is different when compared with the study done by Bang *et al*. [11]. Also severity of deformity and selection of surgical technique has influence on the outcome of repair as patients with posterior hypospadias who underwent staged repair had 6.9% less complication repair when compared to patients with posterior hypospadias who underwent single staged repair which is compared to the study by Asopa and Barbagli [15, 16].

Moreover in our study patients who had urine drainage by cystostomy and dripping stent had 9.3% less complication when compared to patients dripping stent only and duration of urine drainage  $\geq 7$  days have 61.7% less complication when compared to patients with  $< 7$  days urine drainage with bladder spasm being more severe in patients with

stenting alone presented by pain during micturition and peri-dripping stent leaking of urine this was similar to the study by Saleh *et al* [17]. At the same time dressing material had no much influence on the outcome of repair but duration of first dressing has influence on the outcome, as patients with the first dressing changed  $\geq 3$  days has 11.2% less complication repair when compared to patients with first dressing changed  $< 3$  days which is compared to the study by Searles *et al* [18].

It was difficult to assess the influence of other factors such as suture material as this have been reported to influence outcome in different studies [12, 13], use of magnifying lens and surgeons experience as there was mixing up of both monofilament and multifilament absorbable sutures and inconsistency of using magnifying lens. As well as less number of hypospadias patients to reach 50 cases per surgeon per year in our environment, different results from study by Searles *et al* [18] and Spinoit *et al* [19].

## CONCLUSION

Common early complications observed includes surgical site infection, hematoma, oedema, flap necrosis, urethrocutaneous fistula, meatal stenosis, wound dehiscent and urethral stricture. Factors influencing the outcome of repair include age  $> 3.5$  years at repair, previous circumcised, type and duration of urine drainage  $< 7$  days, type of dressing and changing the 1<sup>st</sup> dressing  $< 3$  days. Further studies are recommended to find the influence of the factors including surgeon experience, suture material and use of magnifying lens together with long term follow up of patients.

## Competing interests

The authors declare no competing interests.

## Authors' contributions

**DSM:** designed the study, collected data, performed data analysis and wrote the report with a manuscript.

**OVN:** participated in the study design and manuscript preparation.

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## REFERENCES

- Hadidi AT. History of hypospadias: Lost in translation. *J Pediatr Surg*, 2017; 52(2):211-7.
- Khan M, Majeed A, Hayat W, Ullah H, Naz S, Shah SA, *et al*. Hypospadias Repair: A Single Centre Experience. *Plast Surg*. 2014; 2014:1-7.
- Springer A, Springer A. Assessment of Outcome in Hypospadias Surgery – A Review Assessment of outcome in hypospadias surgery – a review. 2015.
- Massati M, Nyongole OV, Mteta AK. A Two Years Review of Patients with Hypospadias at Urology Department, Kilimanjaro Christian Medical Center in Moshi, Tanzania: What is the situation? *East Cent African J Surg*. 2014;19(3):39-44.
- Ramanathan C. Three-year experience of hypospadias surgery: Bracka's method. *Indian J Plast Surg*. 2006;39(2):130-5.

6. Ismail YHA, Khair OAM, Bagadi A. Outcome of Distal Hypospadias Repair in Pediatric Surgery Department at Alribat Teaching Hospital. 2013;13(5).
7. Sunil VK, Murthy K, Nanditha G, Prathik R. Hypospadias Repairs and Their Outcome in a Medical College Hospital in Rural India – A Prospective Study. 2015;4(3):2013-6.
8. Snodgrass W, Bush N. Recent advances in understanding/management of hypospadias. F1000Prime Rep. 2014;6:1-10.
9. Bakal Ü, Abeş M, Sarac M. Necrosis of the ventral penile skin flap: A complication of hypospadias surgery in children. Adv Urol. 2015; 2015:7–10.
10. El-labban MA, El-sayem K. Ventral Based Double Dartos Flap in Tubularized Incised Plate Urethroplasty Along with Foreskin Preservation. 2016;40(1):31-7.
11. Bang RL, Ebrahim MKH, Lari ARA. T flap hypospadias repair in circumcised patients. Br J Plast Surg. 1993;46(2):164-7.
12. Gupta A, Gupta R, Srivastav P, Gupta A. Comparison of interrupted- and continuous-suture urethroplasty in tubularised incised-plate hypospadias repair: A prospective study. Arab J Urol. 2017;15(4):312-8.
13. Cimador M, Castagnetti M, Milazzo M, Sergio M, De Grazia E. Suture materials: Do they affect fistula and stricture rates in flap urethroplasties? Urol Int. 2004;73(4):320-4.
14. Schneuer FJ, Holland AJA, Pereira G, Bower C, Nassar N. Prevalence, repairs and complications of hypospadias: An Australian population-based study. Arch Dis Child. 2015;100(11):1038–43.
15. Asopa HS. Newer concepts in the management of hypospadias and its complications. Ann R Coll Surg Engl. 1998;80(3):161–8.
16. Barbagli G, De Angelis M, Palminteri E, Lazzeri M. Failed Hypospadias Repair Presenting in Adults. Eur Urol. 2006;49(5):887–95.
17. Saleh AM, Wesam A, Amr A, Salah M. Urinary Drainage after Hypospadias Repair: Urethral Stent or Bladder Catheter. 2009;5(2):101–3.
18. Searles JM, Mackinnon AE. The 'SANAV' hypospadias dressing. BJU Int 2001;87(6):531–3.
19. Spinoit AF, Poelaert F, Van Praet C, Groen LA, Van Laecke E, Hoebeke P. Grade of hypospadias is the only factor predicting for re-intervention after primary hypospadias repair: a multivariate analysis from a cohort of 474 patients. J Pediatr Urol. 2015;11(2).