

## Hypospadias Repair: Our Experience in BSMMU & Others Private Hospital in Dhaka, Bangladesh

Dr. Susankar Kumar Mondal<sup>1\*</sup>, Professor A.K.M. Zahid Hossain<sup>2</sup>, Dr. Md. Nooruzzaman<sup>3</sup>, Dr. Abu Bakar Akan<sup>4</sup>, Dr. Md. Noor Mahammad<sup>5</sup>, Dr. Mridul Prasad Joshi<sup>6</sup>, Dr. S. M. Shamsul Huda<sup>7</sup>

<sup>1</sup>Associate Professor, Department of Pediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

<sup>2</sup>Professor, Department of Pediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

<sup>3</sup>Associate Professor, Department of Pediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

<sup>4</sup>Assistant Professor, Department of Pediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

<sup>5</sup>Medical Officer, Department of Pediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

<sup>6</sup>Resident, Department of Pediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

<sup>7</sup>Assistant Professor, Department of Surgery, Shahid Taj Uddin Ahmed Medical College, Gazipur, Bangladesh

DOI: [10.36347/sasjs.2021.v07i08.013](https://doi.org/10.36347/sasjs.2021.v07i08.013)

| Received: 02.07.2021 | Accepted: 03.08.2021 | Published: 26.08.2021

\*Corresponding author: Dr. Susankar Kumar Mondal

### Abstract

### Original Research Article

**Background:** Hypospadias is an abnormality of frontal urethral and penile development. The urethral opening is ectopically located on the ventral surface of the penis. It is one of the common congenital anomalies that affect children and early adults as a birth defect. Urethroplasty is an open surgical reconstruction which also called hypospadias repair. Hypospadias repair can take many forms or techniques, like meatal advancement and glanuloplasty (MAGPI) repair methods, Mathieu meatal-based flip-flap technique repair methods and snodgrass or tubularized incised plate (TIP) repair methods. The repair methods are depending on the severity of the deformity.

**Objective:** The objective of this study was to assess the success rate of snodgrass or tubularized incised plate (TIP) methods hypospadias repair procedure. **Materials and Methods:** This prospective observational study was conducted in the Bangabandhu Sheikh Mujib Medical University (BSMMU) & other private hospitals in Dhaka, Bangladesh during the period from January 2013 to January 2020. Ethical clearances were taken from concerned authorities of the assigned hospitals. Properly written consent was taken from all the parents before starting the intervention. A total of 150 patients who needed urethroplasty, of 2 to 12 years of age with proper documents were finalized as the study population. Data were collected, analyzed, and disseminated by MS Office and SPSS version 16 program as per need.

**Results:** In this study, the mean age of the participants was  $5.25 \pm 2.50$  years. In analyzing the length of defect we found 62.67% of participants got <4 cm whereas 37.33% of participants got 4+ cm length. On the other hand, in 5.33%, 10%, 20%, and 64.67% of patients glanular, coronal, distal penile, and mid penile locations were found respectively. As complications, we found dribbling and incontinence in 23.33% separately which was the highest in ratio. According to the follow-up report in 80% of cases (n=120), the hypospadias repair was found successful whereas in 20% of cases (n=30) did not become successful. **Conclusion:** In this study, like location, mid penile hypospadias repair was found as the highest in number. So it should get more attention in cases of hypospadias repair. On the other hand, dribbling and incontinence should be considered as potential complications in such a technique. Physicians should try to maximize the success rate of 80%.

**Keywords:** Hypospadias repair, penile, urethral, congenital, urethroplasty.

Copyright © 2021 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## I. INTRODUCTION

Hypospadias repair is one of the most common congenital genital anomalies for which surgery early in life is indicated. Day by day the surgical treatment is changing progressively, often by repeating treatment strategies that have been used decades ago. Two-stage procedures were replaced by a one-stage procedure, historically. Hypospadias is one of the most common congenital defects affecting the external male genitalia

[1]. The incidence is 1 in 250 male newborns, although its incidence seems to be increasing [2, 3]. Hypospadias is distinct as an inadequate development of the urethral fold and the ventral foreskin, with or without penile curvature. Hypospadias classification is based on the position of the meatus, within three categories: distal or anterior hypospadias with the meatus on the glans penis, at the corona, or sub-coronal. Mid-penile hypospadias with a urethral opening located on the

distal penile shaft, mid shaft, or on the proximal penile shaft. Proximal hypospadias has a peon-scrotal or perineal urethral meatus location. Hypospadias can take many forms, likes meatal advancement and glanuloplasty (MAGPI) repair methods, mathieu meatal-based flip-flap technique repair methods and snodgrass or tubularized incised plate (TIP) repair methods. The repair methods are depending on the severity of the deformity. Type of procedure depended on regarding the position of urethral meatus and urethral plate and surgeon's choice and expertise. Snodgrass tubularised incised plate urethroplasty found application in various types of hypospadias with a success rate up to 80%. In the Western world, distal hypospadias is the most common finding. In Asia, more proximal forms are observed [2, 3]. There is some controversy about this classification. In some studies, authors classify only the position after surgical devolvment of the penis. In fact, on first examination proximal hypospadias can become mid-penile after dissection. In general, the repair technique will be chosen with the decision-making process based on an assessment of anatomy. Native meatus location, penile curvature, size, and on the aspect of the ventral skin before and after devolvment [4]. In trying to describe the reconstructive techniques for hypospadias repair one could state that there are as many techniques and their alterations as there are surgeons who perform hypospadias repair. Therefore, it is impossible to obtain a consensus-based on outcomes and provide guidelines. Part of the problem is that well- designed prospectively controlled studies are rare. Anterior urethroplasty can fail due to inadequate extension of the urethrotomy into the normal healthy urethra on both ends of the stricture during graft or flap procedures. A common area for the failure of Buccal mucosal graft (BMG) urethraplasty is at the distal end of the repair. Here the recurrent stricture is often easy to manage by minimally invasive techniques due to low stricture density. More complex stricture recurrences after tissue substitution surgery are often due to poor vascular and structural support of grafted tissues or flap ischemia, infection, or coexistent microvascular disease. Failure of posterior urethroplasty is often the result of inadequate resection of scar tissue on the proximal aspect of the urethral distraction defect [5]. Difficult exposure of the proximal urethral segment often occurs in conjunction with traumatic pubic bone destructions within the retropubic space. Risk factors for stricture recurrence and complications where Buccal mucosal graft (BMG) urethraplasty is performed include the patient's age at the time of surgery, anatomical site of the urethral stricture, length of stricture, and etiology [6]. Long-term postoperative follow-ups for urethroplasty is necessary because of the occurrence of late failure, especially following substitution urethroplasty. Evaluation of procedure failure is both radiological and clinical. Patients with stricture recurrence present with a poor urinary stream or a split stream.

## II.OBJECTIVES

### General Objective

To assess the success rate of snodgrass or tubularized incised plate (TIP) methods hypospadias repair procedure.

### Specific Objective:

- To collect information regarding the baseline characteristics of participants.
- To collect information regarding the complications among participants.
- To collect information regarding final outcomes among participants.

## III. MATERIALS AND METHODS

This prospective observational study was conducted in the Bangabandhu Sheikh Mujib Medical University (BSMMU) & Others private hospitals in Dhaka, Bangladesh during the period from January 2013 to January 2020. Ethical clearances were taken from concerned authorities of the assigned hospitals. Properly written consent was taken from all the parents before starting the intervention. In total 150 male patients who needed urethroplasty, of 2 to 12 years of age up to mid penile variety, moderate chordee with proper documents were finalized as the study population. Patients who had prior instrumentation within the previous 3 months, as well as those with urethral stenosis and with severe chordee, were excluded from the study. Urethroplasty surgeries performed by other surgeons had their files excluded from the analysis. Data included patients' demographic details such as age, morbidity status. Success was defined as unobstructed voiding as reported by the patient, flow rate above 12-15 ml per second and or American Urological Association Symptom Index (AUA-SI) below 8 points, Predictive value of platelet reactivity unit (PRU) less than 100 miles on abdominal ultrasound scan, freedom from instrumentation or absence of need for further surgical intervention. a standard questionnaire was entered and stored in a computer excel program. Data were collected, analyzed, and disseminated by MS Office and SPSS version 16.0.

## IV. RESULTS

In this study, the mean age of the participants was  $5.25 \pm 2.50$  years. In analyzing the length of defect we found 62.67% of participants got <4 cm whereas 37.33% participants got 4+ cm length. On the other hand, in 5.33%, 10%, 20%, and 64.67% patients glanular, coronal, distal penile, and mid penile locations were found respectively. As complications, we found dribbling and incontinence in 23.33% separately which was the highest in the ratio of complication. Besides these, moderate chordee, donor site scar, *erectile dysfunction* (ED), Fistula, UTI, scrotal pain, orchitis, and wound sepsis were found in 3.33%, 2%, 2%, 11.33%, 8.67%, 2%, 3.33% and 6.67% participants respectively. In some cases, some co-morbidities were

found. As co-morbidities, Asthma, Haemophilia, Thalassemia, Epilepsy, Epistaxis, TB, Renal failure and renal tumor were found in very few cases. According to the follow-up report in 80% of cases (n=120), the hypospadias repair was found successful whereas in 20% of cases (n=30) it was not successful.

**Table I: Baseline characteristics of participants (N=150)**

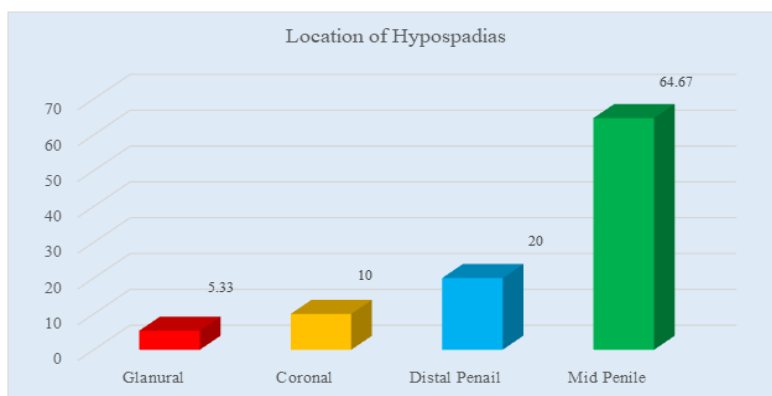
Variable	Frequency (n)	%
Age in years		
Mean ( $\pm$ SD)	5.25 $\pm$ 2.50	
Length of defect in cm		
<4 cm	94	62.67
4+ cm	56	37.33
Location		
Glanular	8	5.33
Coronal	15	10.0
Distal Penile	30	20.0
Mid Penile	97	64.67

**Table II: Complications among participants (N=150)**

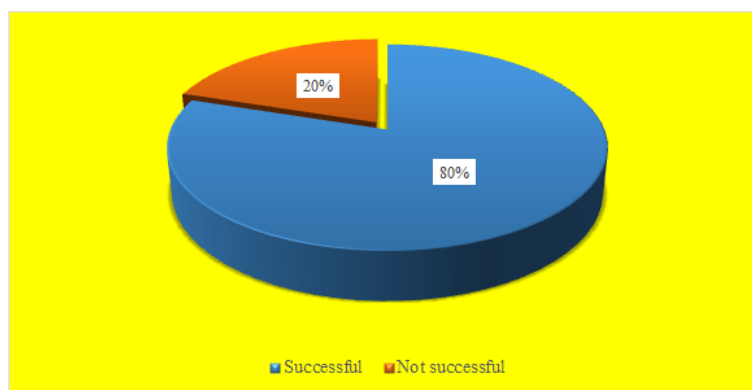
Variables	n	%
Dribbling	38	25.0
Incontinence	35	23.33
Fistula	23	15.6
Urethral defect	15	10.0
Urinary tract infection (UTI)	13	8.67
Wound sepsis	11	7.65
Moderate chordee	8	5.33
Orchitis	5	3.33
Scrotal pain	3	2.0
Donor site scar	3	2.0

**Table III: Comorbidity among participants (N=150)**

Variable	n	%
Asthma	4	2.67
Haemophilia	3	2.0
Thalasaemia	2	1.33
Epilepsy	2	1.33
Epistaxis	2	1.33
TB	1	0.67
Renal failure	1	0.67
Renal tumor	1	0.67



**Fig-I: Location of Hypospadias (N=150)**



**Fig-II: Outcomes Among Participants (N=150)**





**Fig III: Hypospadias with dorsal hooding**



**Fig-IV: Penoscrotal hypospadias with severe chordee**



**Fig-V: Tabularization process**



**Fig-VI: Completion of urethroplasty**

## V. DISCUSSION

The aim of this study was to assess the effectiveness of the hypospadias repair procedure. The success rate of our study is may be considered satisfactory. But we found similarities and dissimilarities with our findings. In another study, revision urethroplasty was less efficacious with a 58.5% success rate contrary to studies elsewhere.7 Rosenbaum et al. report a success rate of 83%, emanating from Buccal mucosal graft (BMG) urethroplasty [8]. Blaschko *et al.*, in an outcome analysis of 130 patients that underwent revision urethroplasty, established that 78% of patients were successfully treated [9]. Joseph and O' Riordan studies were confounded by previously unsuccessful open procedures being evaluated in the same category with patients who had failed prior Direct vision internal urethrotomy (DVIU) before urethroplasty [10]. It has been established that prior Direct vision internal urethrotomy (DVIU) has an overall negative impact on the outcome of urethroplasty [5]. However, Barbagli *et al.*, in a study of 93 patients, with bulbar urethral strictures who underwent urethroplasty with or without prior urethrotomy established that urethrotomy did not adversely affect outcome [11]. Accordingly, Morey *et al.*, recommend a systematic decision-making process for failed anterior urethroplasty based on stricture length, location, and complexity [12]. From the foregoing results, the patient's age, stricture location, and etiology did not seem to have affected the outcome. However, in studies conducted elsewhere, several factors influence the outcome of urethroplasties such as patient's age at surgery, dense stricture fibrosis, variation in stricture length, location, etiology, type of surgery performed, surgeon's experience, number of previous surgeries, and duration of follow-up [13]. In our study in analyzing the length of stricture we found 62.67% participants got <4 cm whereas 37.33% participants got

4+ cm length. Roehrborn *et al.*, concur with the significant contribution made by urethral length, location, and type of surgery in determining the outcome of urethroplasty [14]. In our study, the majority of urethral strictures were bulb membranous in both cohorts. Levine *et al.*, in a comparative analysis found a preponderance of bulb membranous urethral strictures in both revision and urethroplasty naïve cohorts [7]. The bulbar location is a common site for traumatic and inflammatory urethral strictures. The mean age was 5.25±2.50 out of 150 patients in the current study. As complications we found dribbling 25.0% which was highest in ratio, followed by incontinence 23.33%, fistula 15.6%, urethral stricture 10%, urinary tract infection (UTI) 8.67%, wound sepsis 7.65% and moderate chordee 5.33%. Besides these, orchitis 3.33%, scrotal pain 2%, and donor site scar 2% respectively. Among the sampled population, some co-morbidities were found. As co-morbidities Asthma, Hemophilia, Thalassemia, Epilepsy, TB, Renal failure, renal tumor, and Brain tumor were found in very few cases. According to the follow-up report in 80% of cases (n=120), the hypospadias repair was found successful whereas in 20% of cases (n=30) it was not successful.

## VI. CONCLUSION

Type of procedure depended on type of presenting type of hypospadias, other prescribed criteria regarding the position of urethral meatus and urethral plate and surgeon's choice and expertise. Snodgrass tubularised incised plate urethroplasty found application in various types of hypospadias with a success rate up to 80%.

In this study, like location, mid penile hypospadias repair was found as the highest in number. So it should get more attention in cases of hypospadias repair. On the other hand, dribbling and incontinence should be considered as potential complications in such technic. The findings of this study may not reflect the exact state of the whole country due to limited sample size. For getting more specific findings we would like to recommend conducting more studies regarding the same issue with the large sample sizes.

## REFERENCES

- Hinman, F. Jr., & Baskin, L. S. (2008). Hypospadias. In: Hinman's Atlas of Pediatric Urologic Surgery. 653–661, 2nd ed. Philadelphia: Saunders Elsevier.
- Kraft, K. H., Shukla, A. R., & Canning, D. A. (2010). Hypospadias. *Urologic Clinics*, 37(2), 167-181.
- Baskin, L. S., & Ebberts, M. B. (2006). Hypospadias: anatomy, etiology, and technique. *Journal of pediatric surgery*, 41(3), 463-472.
- Hayashi, Y., & Kojima, Y. (2008). Current concepts in hypospadias surgery. *International journal of urology*, 15(8), 651-664.
- Koraitim, M. M. (2003). Failed posterior urethroplasty: lessons learned. *Urology*, 62(4), 719-722.
- Spilotros, M., Sihra, N., Malde, S., Pakzad, M. H., Hamid, R., Ockrim, J. L., & Greenwell, T. J. (2017). Buccal mucosal graft urethroplasty in men—risk factors for recurrence and complications: a third referral centre experience in anterior urethroplasty using buccal mucosal graft. *Translational andrology and urology*, 6(3), 510.
- Levine, M. A., Kinnaird, A. S., & Rourke, K. F. (2014). Revision urethroplasty success is comparable to primary urethroplasty: a comparative analysis. *Urology*, 84(4), 928-933.
- Rosenbaum, C. M., Schmid, M., Ludwig, T. A., Kluth, L. A., Dahlem, R., Fisch, M., & Ahyai, S. (2016). Redo buccal mucosa graft urethroplasty: success rate, oral morbidity and functional outcomes. *BJU international*, 118(5), 797-803.
- Mugalo, E. L., Bwombwongo, S. O., & Ayuo, P. O. (2013). Aetiology of urethral strictures at moi teaching and referral hospital. *Annals of African Surgery*, 10(1), 10-14.
- Blaschko, S. D., McAninch, J. W., Myers, J. B., Schlomer, B. J., & Breyer, B. N. (2012). Repeat urethroplasty after failed urethral reconstruction: outcome analysis of 130 patients. *The Journal of urology*, 188(6), 2260-2264.
- Joseph, J. V., Andrich, D. E., Leach, C. J., & Mundy, A. R. (2002). Urethroplasty for refractory anterior urethral stricture. *The Journal of urology*, 167(1), 127-129.
- Roehrborn, C. G., & McConnell, J. D. (1994). Analysis of factors contributing to success or failure of 1-stage urethroplasty for urethral stricture disease. *The Journal of urology*, 151(4), 869-874.
- Erickson, B. A., Breyer, B. N., & McAninch, J. W. (2010). The use of uroflowmetry to diagnose recurrent stricture after urethral reconstructive surgery. *The Journal of urology*, 184(4), 1386-1390.
- Wood, D. N., Andrich, D. E., Greenwell, T. J., & Mundy, A. R. (2006). Standing the test of time: the long-term results of urethroplasty. *World journal of urology*, 24(3), 250-254.