

Outcome of Snodgraft (G-TIP) Urethroplasty for the Treatment of Primary Distal Hypospadias

Dr. Md Arifur Rahaman^{1*}, Dr. Md. Hasan Ullah², Dr. Syeda Nafis Jubaida³, Dr. Debashis Chakraborty⁴, Dr. Rezwana Areefin⁵, Dr. Md. Jahangir Alam⁶

¹Assistant Professor, Department of Paediatric Surgery, Central Medical College and Hospital, Cumilla, Bangladesh

²Assistant Professor, Department of Paediatric Surgery, Institute of Applied Health Science, Bangladesh

³Assistant Professor, Department of Pediatric, Central Medical College & Hospital, Comilla, Bangladesh

⁴Assistant professor, Department of Paediatric Surgery, Eastern Medical College & Hospital, Bangladesh

⁵Registrar, Department of Pediatric Surgery, Ad-din Medical College Hospital, Bangladesh

⁶Consultant, Paediatric & General Surgery, Ashulia Women and Children Hospital, Jamgora, Ashulia, Dhaka-1349

DOI: [10.36347/sajs.2024.v10i03.010](https://doi.org/10.36347/sajs.2024.v10i03.010)

| Received: 06.02.2024 | Accepted: 10.03.2024 | Published: 17.03.2024

*Corresponding author: Dr. Md Arifur Rahaman

Assistant Professor, Department of Paediatric Surgery, Central Medical College and Hospital, Cumilla, Bangladesh

Abstract

Original Research Article

Background: One of the most prevalent congenital abnormalities of the external genitalia in boys is hypospadias. One common method of treating distal penile hypospadias is tubularized incised plate urethroplasty. However, there are a few side effects of this procedure, such as neourethral stenosis, meatal stenosis, and urethro-cutaneous fistula. In distal hypospadias, snodgraft modification has been suggested as a way to lower the risk of meatal and/or neourethral stenosis.

Objective: To find out the outcome of Snodgraft urethroplasty technique in distal penile hypospadias. **Materials and Methods:** This prospective observational study was carried out in the Division of Pediatric Surgery, Bangladesh Shishu Hospital & Institute from January 2020 to March 2022. Total 40 patients having distal variety of primary hypospadias were included by selection criteria. All patients with single stage urethroplasty using inner prepuce skin graft has been done. Statistical analysis was carried out using the Statistical Package for Social Sciences version 26.0 for Windows.

Results: Majority of the patients had subcoronal variety 27(67.50%) followed by coronal 10(25.0%) and glanular hypospadias 3(7.50%). More than three fourth (77.5%) patients had urethral plate width 4-8 mm. Wound infection was developed in two patients out of 40, one coronal and one subcoronal. Four patients had developed urethro-cutaneous fistula among them one was coronal three was subcoronal. No meatal stenosis and urethral stricture was found in follow up period. **Conclusion:** The patient with Snodgraft (G-TIP) modification in repair of primary distal hypospadias leads to reduce the complication.

Keyword: Hypospadias, Snodgraft, Urethro-cutaneous fistula.

Copyright © 2024 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.

INTRODUCTION

Hypospadias is one of the most common anomalies of male external genitalia. It occurs in 0.4–8.2 of 1000 live male babies [1]. The Greek terms "hypo" (meaning under) and "spodon" (meaning a rent or fissure) are the source of the word "hypospadias." An stop in the normal development of the foreskin, ventral side of the penis, and urethra is known as hypopadias. It may alternatively be described as inadequate growth of the tissue forming the ventral aspect of the penis due to incomplete virilization of the genital tubercle [2].

A milder version of the disease is indicated by the urethral meatus being positioned distally to the shaft in around 70% of cases. The remaining thirty percent of

cases are closer in location, have higher complexity, and need more assessment [3].

TIP urethroplasty has gained widespread acceptance for repairing distal and proximal hypospadias. The technique is simple, versatile and produces a good cosmetic result; however, several technical issues, including the problem of meatal or neourethral complications and the need for regular urethral dilatation, have been pointed out. It may be expected that this problem would be potentially more significant in patients with a flat and narrow urethral plate than in patients with a deeply grooved and wide urethral plate [4].

Citation: Md Arifur Rahaman, Md. Hasan Ullah, Syeda Nafis Jubaida, Debashis Chakraborty, Rezwana Areefin, Md. Jahangir Alam. Outcome of Snodgraft (G-TIP) Urethroplasty for the Treatment of Primary Distal Hypospadias. SAS J Surg, 2024 Mar 10(3): 309-312.

The main idea of this stricture development is large denuded surface and its re-epithelialisation, followed by scar formation. Scar would be the leading factor for meatal and or neourethral stenosis. An inlay graft or Snodgraft modification is reduce the denuded surface, increase the area of healthy tissue and prevent the scar formation [5].

MATERIALS AND METHODS

This prospective observational study was conducted at division of Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka from January 2020 to March 2022 to evaluate the outcome of Snodgraft

urethroplasty technique in primary distal hypospadias. Total 40 patients admitted with distal penile hypospadias in the division of Pediatric surgery. Dressing removal was done on 5th POD, followed by local application of Mupirocin 2% ointment. Catheter was removed on 7th POD and checked for- Wound infection, U-C fistula, Patient was discharged on 7th POD. Statistical analysis was carried out using the Statistical Package for Social Sciences version 26.0 for Windows (SPSS Inc., Chicago, Illinois, USA). The quantitative observations were indicated by frequencies and percentages.

RESULTS

Table I: Age distribution of the study patients (n=40)

Age in months	Number	Percentage
18-24 months	08	20.0
25-60 months	27	67.5
> 60 months	05	12.5
Mean±(SD)	43.56 (±7.92)	Range 18-75 months

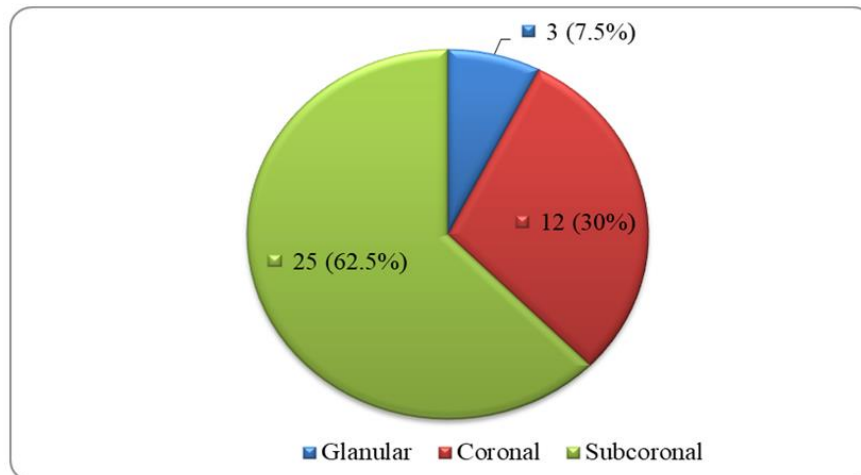


Figure 7: Pie chart showing types of hypospadias of the study patients (n=40)

Table II: U-C fistula, Meatal stenosis, Urethral stricture and Wound infection were in different follow up of the study patients (n=40)

U-C fistula	Number	14 th POD	1 month	2 months	3 months	6 months
Glanular	3 (7.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Coronal	12 (30.0%)	1 (8.3%)	1 (8.3%)	1 (8.3%)	1 (8.3%)	1 (8.3%)
Subcoronal	25 (62.5%)	3 (12.0%)	3 (12.0%)	3 (12.0%)	3 (12.0%)	3 (12.0%)
Meatal stenosis						
Glanular	3 (7.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Coronal	12 (30.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Subcoronal	25 (62.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Urethral stricture						
Glanular	3 (7.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Coronal	12 (30.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Subcoronal	25 (62.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Wound infection						
Glanular	3 (7.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Coronal	12 (30.0%)	1 (8.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Subcoronal	25 (62.5%)	1 (4.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Table shows that 12 patients had coronal, among them 1 patients were developed U-C fistula in 14th POD and it is continue at 6th months of follow up. Twenty five had subcoronal, among them 3 patient had developed U-C fistula in 14th POD and it is continue up to at 6th months of follow up. No meatal stenosis and urethral stricture were found in different follow up. Wound infection was discovered in two patients out of 40 on the 7th post-operative day, one coronal and one subcoronal.

DISCUSSION

In this study showed that more than two third (67.5%) patients belonged to age group 25-60 months with mean age was 43.56±7.92 months. El-Shamy [6] reported the mean age was 2.3 ± 0.5 (range 1–3) years over a median follow-up of 10 (6–12) months. Nerli *et al.*, [7] they also reported the mean age of 48.83 ± 8.29 (range 36-67) months.

In this study showed the majority of the patients had subcoronal hypospadias 25(62.5%), followed by coronal hypospadias 12(30.0%), and glanular hypospadias 3(7.5%). Similar observation was found El-Shamy [6] study they reported that the native meatus was glanular in 8(8%), coronal in 56(56%), subcoronal in 30(30%), and distal penile 6(6%) patients. Seleim *et al.*, [8] also reported subcoronal was found in 37(35.6%), distal penile 60(57.7%) and mid-penile 7(6.7%).

In this study observed that 12 patients had coronal, among them 1 patients were developed U-C fistula in 14th POD and it is continue at 6th months of follow up. Twenty five had subcoronal, among them 3 patient had developed U-C fistula in 14th POD and it is continue up to at 6th months of follow up. No meatal stenosis and urethral stricture were found in different follow up. Wound infection was discovered in two patients out of 40 on the 7th post-operative day, one coronal and one subcoronal. Shamy [6] study reported four patients developed urethro-cutaneous fistula, three of which closed spontaneously, while one required surgical repair 6 months later in the presence of a wide apical neomeatus. Asanuma *et al.*, [9] reported during the follow-up period, a urethra-cutaneous fistula developed in only one patient with proximal hypospadias (3.6%), requiring surgical repair 6 months after urethroplasty. In this study the rate of fistula was higher due to tubularization with narrow urethral plate may causes increase tension over the suture line. Asanuma *et al.*, [9] reported no meatal stenosis and urethral diverticulum patient with inlay graft. Pan [10] reported the stricture, diverticulum and penile torsion were not seen. Kishk *et al.*, [11] reported 16 children underwent primary dorsal inlay preputial graft urethroplasty, among them one (6.2%) child had partial wound dehiscence. Eldeeb *et al.*, [12] included 60 cases among them there was two cases developed complication a case of wound infection. Lack of hygiene may be a cause of wound infection; this

patient had to stay in hospital for 3-5 days more. Broad spectrum antibiotics were used for long time.

CONCLUSION

Snograft (G-TIP) modification reduces the denuded surface, increase the area of healthy tissue and prevent the scar formation as well reduces the post-operative complications and this technique is more applicable for narrow urethral plate. However, multicenter data are needed for undertaking comparative analysis and to assess the universal applicability of this technique in primary hypospadias.

Acknowledgement

I am very grateful and deeply indebted to my respected teacher and guide, Dr. Md. Aminur Rashid, Professor and Head, Division of Pediatric surgery, Bangladesh Shishu Hospital and Institute.

REFERENCE

1. Samir, M., Mahmoud, M.A., Azazy, S. & Tawfick, A. (2021). Does the suturing technique (continuous versus interrupted) have an impact on the outcome of tubularized incised plate in hypospadias repair with adequate urethral plate? A prospective randomized study. *Journal of Pediatric Urology*. 17(4):519-e1.
2. S, M, Mahmud., Ummey, Hany, Tashfika., Kazi, Md, Noor-ul, Ferdous. & Kazi, Salma, Binte, Faruky. (2023). Comparison of the Outcome of Interrupted Suture and Continuous Suture in Tabularized Incised-Plate (TIP) Urethroplasty Hypospadias Repair. *Sch J App Med Sci*, 11(1): 55-59.
3. Halaseh, S.A., Halaseh, S., Ashour, M. & Ashour, M.E. (2022). Hypospadias: A Comprehensive Review Including Its Embryology, Etiology and Surgical Techniques. *Cureus*.31;14(7).
4. Eldeeb, M., Nagla, S., Abou-Farha, M. & Hassan, A. (2020). Snodgrass vs Snodgraft operation to repair the distal hypospadias in the narrow urethral plate. *Journal of Pediatric Urology*. 16(2):165-e1.
5. Silay, M.S., Sirin, H., Tepeler, A., Karatag, T., Armagan, A., Horasanli, K. & Miroglu, C.. "Snodgraft" technique for the treatment of primary distal hypospadias: pushing the envelope. *The Journal of urology*. 188(3):938-42.
6. El-Shamy, A., 2017. Evaluation of Snodgraft Technique in Primary Distal Hypospadias. *J Am Sci* 13(5), pp.116-125
7. Nerli, R.B., Guntaka, A.K., Patil, R.A. & Patne, P.B., (2014). Dorsal inlay inner preputial graft for primary hypospadias repair. *African Journal of Paediatric Surgery*, 11(2), p.105.
8. Seleim, H.M., ElSheemy, M.S., Abdalazeem, Y., Abdullateef, K.S., Arafa, M.A., Shouman, A.M., Elsaket, H., Kaddah, S.N. & Elbarbary, M.M., (2019). Comprehensive evaluation of grafting the preservable narrow plates with consideration of native plate width at primary hypospadias surgery. *Journal of pediatric urology*, 15(4), pp.345-e1

9. Asanuma, H., Satoh, H. & Shishido, S., (2007). Dorsal inlay graft urethroplasty for primary hypospadiac repair. *International journal of urology*, 14(1), pp.43-47
10. Pan, P., (2017). Grafted tubularised incised plate urethroplasty: an excellent option in primary hypospadias with poor urethral plate. *International Surgery Journal*, 4(7), pp.2270-2275.
11. Kishk, T.F., Elsheikh, Y.M., Elkashty, S.M. & Mansour, M.R., (2018). Comparative study between tubularized incised plate urethroplasty with and without dorsal inlay graft. *Menoufia Medical Journal*, 31(1), p.212
12. Eldeeb, M., Nagla, S., Abou-Farha, M. & Hassan, A., (2020). Snodgrass vs Snodgraft operation to repair the distal hypospadias in the narrow urethral plate. *Journal of pediatric urology*, 16(2), pp.165-e1.