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

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Abstract

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 urethrocutaneous 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.

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 prepuccial 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 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.

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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 hypospadias. 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].
The main idea of this stricture development is the large denuded surface and its re-epithelialisation, followed by scar formation. Scar would be the leading factor for meatal and or neourethal 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>
<thead>
<tr>
<th>U-C fistula</th>
<th>Number</th>
<th>14th POD</th>
<th>1 month</th>
<th>2 months</th>
<th>3 months</th>
<th>6 months</th>
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</thead>
<tbody>
<tr>
<td>Glanular</td>
<td>3 (7.5%)</td>
<td>0 (0.0%)</td>
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<tr>
<td>Coronal</td>
<td>12 (30.0%)</td>
<td>1 (8.3%)</td>
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<td>1 (8.3%)</td>
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<tr>
<td>Subcoronal</td>
<td>25 (62.5%)</td>
<td>3 (12.0%)</td>
<td>3 (12.0%)</td>
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<tr>
<th>Meatal stenosis</th>
<th>Number</th>
<th>14th POD</th>
<th>1 month</th>
<th>2 months</th>
<th>3 months</th>
<th>6 months</th>
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<tbody>
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<tr>
<th>Urethral stricture</th>
<th>Number</th>
<th>14th POD</th>
<th>1 month</th>
<th>2 months</th>
<th>3 months</th>
<th>6 months</th>
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<tbody>
<tr>
<td>Glanular</td>
<td>3 (7.5%)</td>
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<tr>
<th>Wound infection</th>
<th>Number</th>
<th>14th POD</th>
<th>1 month</th>
<th>2 months</th>
<th>3 months</th>
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<tbody>
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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. Kishik 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**


