Glanular Hypospadias Management with Modified Circumcision and Firlit Procedure

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ABSTRACT

Objective: To document the results of using simple technique of Firlit procedure with modified circumcision for treatment of glanular hypospadias.

Study Design: Descriptive case series.

Place and Duration of Study: Department of Urology, Shifa International Hospital, Islamabad, from January 2011 till May 2017.

Methodology: The subjects included pediatric patients who underwent repair of glanular hypospadias by using modified circumcision and Firlit procedure. Patients were analyzed for operative time, age, hospital stay, and peroperative and postoperative complications. Chart review was done for collection of data on specified proforma.

Results: There were 73 patients with mean age of 1.81 ±0.92 years. Children were discharged on the same day. None of them needed catheterization and dressing. Temporary dressing was used for mild bleeding immediate post op in 13 (17.80%) cases only. Postoperative complication such as urinary retention, fever, severe pain, or urinary tract infection were not seen in children. Meatal stenosis was not seen on a 2-24 months' follow-up. Satisfactory urine stream and good cosmesis was noted by the parents.

Conclusion: The Firlit technique for the repair of glanular hypospadias was simple and satisfactory in terms of urine stream and cosmesis with minimal complications.


INTRODUCTION

Hypospadias is a common childhood anomaly resulting from incomplete tubularization of the urethral plate, which leads to abnormally located meatal opening on ventral aspect of the penile shaft.1 It has an incidence of approximately 3.2 per 1000 live male births; the etiology is unknown.2,3 Distal hypospadias comprises of almost approximately 75% to 80% of these cases.1,4 Surgical treatment of hypospadias include reconstructing urethral passage and bringing penile curvature to near normal.5 Surgical interventions to repair hypospadias are technically intricate and demanding. The innovative quest for operative procedures with much better results is still going on and hundreds of procedures have been introduced and tried for the repairing of hypospadias till date.3,6

Historically, glanular hypospadias repair was mostly avoided due to its high complication rate and below optimal outcomes in terms of cosmesis.7 In the past few decades, some new and improved surgical techniques have been introduced to get better outcome and cosmesis for repairing glanular hypospadias.7,8

Firlit in 1987 used the mucosal collar technique, in which he transposed the inner mucosal lining surface of the prepuce to the ventral side of the shaft of penis to make it look like a normally circumcised penis with acceptable cosmesis.9 This technique is simple and can be easily learnt and reproduced with good results, according to past literature.10 Before the introduction of inner mucosal leaf of prepuce, surgeons simply used to approximate penile skin to the margin of corona.11

The aim of this study was to document the results of using the technique of Firlit procedure with modified circumcision for treatment of glanular hypospadias and determine its efficacy in terms of satisfactory repair, urine stream, cosmesis and complication rate.

METHODOLOGY

Cases of glanular hypospadias were operated since January 2011 till May 2017. Children included had glanular hypospadias on thorough physical examination. Children with severe chordee, buried penis and other types of hypospadias were excluded from the study.

Before surgery, laboratory investigations included complete blood picture, serum electrolytes, PT, APTT, bleeding time, urine routine exam, urine culture, and ultrasound KUB (kidney, ureter and bladder). On table
examination (Figure 1) under anesthesia was also done before each procedure to reconfirm the exact site of the hypospadias. Stay suture was applied at glans. A circumcision incision was applied leaving at least 5 mm tissue of inner mucosal collar. After this, penile skin was degloved down to the penoscrotal junction which results in correction of minor degree of chordee. A 6 Fr feeding tube was introduced in the urethra that added to identify the distal urethra which was just underneath the skin in these cases. It was removed after ending the procedure. In glanular hypospadias cases, mucosa is deficient ventrally and this is replaced by a triangular patch of skin. The skin patch was excised and mucosal edges were approximated ventrally in the midline (Figure 2 and 3). This simple maneuver resulted in an upward tilt of the glans penis and meatus appeared to be almost on the tip of glans. Catheter is removed after the procedure.

All cases were operated by using simple technique of Firlit procedure along with modified circumcision by a single pediatric urologist at Shifa International Hospital, Islamabad. Parents of the patients were counselled about the possible outcomes of the repair by this technique and consent was taken from them for the procedure under general anesthesia. Caudal block was used at the end of the surgery to reduce pain in operated cases.

Photographs were taken of the procedures for follow-up record and preoperative and postoperative comparisons of the aesthetic outcome of the procedure. Data regarding the variables such as age, site of hypospadias, operative time, and duration of hospital stay was collected from the records of patients chart review on specified proforma. SPSS 16 was used for analyzing the data. Mean ±SD was calculated for quantitative variables like age, operative time, and hospital stay. Qualitative variables like immediate and delayed postoperative complications were presented as frequencies and percentages.

RESULTS

A total of 73 children with glanular hypospadias were operated, with mean age of 1.81 ±0.92 years. Mean operative time was 44.05 ±3 minutes (Table I). All patients were discharged on the same day. Postoperative catheterization and dressing was not needed. Only temporary dressing was used for controlling mild bleeding immediate post op in 13 (17.80%) cases, which were removed after bleeding was stopped in the recovery room (Table II). No immediate postoperative complication was noted in our study such as severe pain, urinary retention, fever or urinary tract infection. Mild penile edema occurred in 8 (10.95%) patients.

None of the children had any complication of meatal stenosis on 2-24 months follow-up. The urine stream was good in the operated children and cosmesis was satisfactory to their parents.

DISCUSSION

Hypospadias is the most common congenital anomalies, with incidence of approximately 1 in 300 in the newborn male babies worldwide.12 Hypospadias is a congenital anomaly in which there is an incomplete tubularization of the urethral plate. This leads to abnormally located
meatus anywhere on the ventral aspect of the shaft of penis.¹ In majority of the cases, the meatus is located distal to the midshaft.¹

Various techniques have been tried in the past for distal hypospadias subtypes such as coronal and glanular hypospadias repair by different authors.¹³,¹⁴ The choice and the subsequent results of these procedures depend mostly upon the surgeons' experience and comfort level.¹³ Mathieu's perimeatal-based flap was one of these procedures which has been often applied for coronal and subcoronal hypospadias repair.¹³

It was noted by surgeons for many years that surgical repairs done for glanular hypospadias only resulted in an unacceptable morbidity. That was the reason for reluctance of many surgeons as they thought that leaving glanular hypospadias untreated will not render the patient having worse functional impairment as compared to when they were surgically operated.⁷

There was a technique of glans approximation well described in the 1980s, which was suitable for application in children with deep and wide glanular groove. But it too had a risk of fistula formation due to suturing of urethra in this technique.¹⁵

In a technique described by Seibold et al.,⁴ meatal mobilization was done for coronal and subcoronal hypospadias. It was applied by them in a mobile meatus. A transverse incision was made just proximal to the meatus in this technique, degloving the penis and then mobilizing the glanular wings in a way that they were sutured proximal to the position of urethral meatus opening.¹⁶

Adorisio et al. introduced a modification in a technique in which a circumcision incision is given distal to the hypospadias meatus. Then both the penile skin and the urethra is mobilized upto penoscroatal junction. An incision is made on the distal portion of the glans and then the urethra is placed inside the glans.¹⁷ Its results were good in the six patients operated for glanular hypospadias. In another study, a technique including urethral advancement and glanuloplasty (UAGP) was used, employing a V flap of the glans for glanuloplasty for distal hypospadias (including glanular hypospadias) with satisfactory outcome.¹⁸

In one study, children underwent double Y-type of glanuloplasty technique for correction of glanular site hypospadias. In this method of repair, the apex of the meatus is sutured to the tip of glans. Then glanular wings are mobilized and wrapped around the urethra and are then approximated in the midline ventrally.⁷

In this series, the authors used the technique in which modified circumcision was done with Firlit procedure. According to Firlit, they created mucosal collar from inner preputial surface (Figure 2) which can be used in any repair of any hypospadias. The two wings of mucosal-like tissue are mobilized; and on ventral rotation, they give better cosmesis results in which penis of the child looks just like a normal circumcised boy.¹⁰ It should be noted that the present authors did not mobilize the urethral meatus, approximated the glanular wings as described in recent literature for glanular hypospadias repair. Only the inner mucosal collar of prepuce was mobilized and made urethra by approximating them in ventral position. It gave a look of near normal meatus and glans were not used for any final shape of the meatus opening. This is a simple, easy and short time day-case procedure. It is also easy to learn and reproduce.

The anatomy of preputial tissue is similar to eyelids, labia minora and lips in which the outer layer is like the skin on the shaft of the penis and inner layer is mucosal-like and it is devoid of lanugo hair follicles, sebaceous and sweat glands.¹⁹,²⁰ The procedure of modified circumcision and Firlit procedure is good for repairing glanular hypospadias in a day-case surgery. It should be noted that none of the children in this series needed catheterization or dressing. Only temporary compression dressing was used for mild bleeding in the immediate postoperative period in 13 (17.80%) cases, which were then removed in the recovery room after surgery. Immediate postoperative complications such as severe pain, urinary retention, fever or urinary tract infection did not occur in this series. Mild penile edema was seen in 8 (10.95%) patients. All cases were day-cases.

Mean operative time in our case was similar to those of other similar procedures for glanular hypospadias. It was 44.05±3 minutes in this series; while in a technique described by Hadidi, it was 45 minutes.⁷ They had longer hospital stay of 2 to 3 days.⁷ None of the child had the complication of meatal stenosis. Two patients had this complication as described by Hadidi.⁷

In another technique for distal hypospadias repair by Somoza et al., there was no complication like meatal stenosis or retraction in 9 cases of glanular hypospadias.¹⁴ Zaontz described glans approximation for repair of 24 children with coronal and glanular hypospadias but there was no case of urethral or meatal stenosis.¹⁵ Adorisio et al. used technique of urethral advancement with a V incision given on the tip of the glans for treating distal hypospadias including glanular hypospadias in six patients. Their results were satisfactory. Only one case of fistula was seen in their patients.¹⁷ In another technique of eccentric circummeatal-based flap applied on 7 patients, the results were good cosmetically.²²

CONCLUSION

The technique of modified circumcision and Firlit procedure had good results with minimal complications. There was no case of meatal stenosis because we did not mobilize the urethral meatus but just added length...
and new slit-like opening of urethra by mere mobilization and approximation of the inner mucosal collars on both sides. This procedure results in a glans penis with an upward tilt and meatal opening appears almost at the tip of the glans. The patients will need a longer follow-up later on to see long term success of repairing glanular site hypospadias by this simple and easy technique.

REFERENCES