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Ldif for Single Stage Mid and Proximal Penile Hypospadias A Single Institution Experience

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A B S T R A C T

Aim: The aim of the present study was to review our experience with the use of longitudinal dorsal island flap (LDIF) for single-stage mid and proximal penile hypospadias repairs.

Methods:A retrospective study of 40 cases of hypospadias both mid and proximal penile variety of all children operated in Paediatric Surgery department of Medical College and Hospital, Kolkata from July 2022 to July 2023.

Results: The average age of the patients at surgery was 9.21±6.12 years. The position of the urethral meatus was proximal penile type in 22 patients and mid penile type in 18.There was no significant difference between the two groups in terms of age and type of hypospadias.

UC Fistulas and Complete dehiscence were noted in 2 cases each and torsion was noted in one case. 35 patients showed good follow-up.

Conclusion: Over a follow-up of 1 year we report that LDIF for single-stage mid and proximal penile hypospadias repair has good success rate and fewer complications.

KEYWORDS: Longitudinal Dorsal Island Flap (LDIF), Single-Stage Mid, Proximal Penile Hypospadias Repair.

INTRODUCTION

Hypospadias is a common congenital defect, and whenever possible, a single-stage repair is desirable. The Snodgrass (TIP) repair is widely used for distal hypospadias, but for more proximal hypospadias or hypospadias with poorly formed urethral plate, vascularized skin flaps are employed for substitution urethroplasty. A number of techniques for using vascularized prepucial and penile skin flaps are available. Transversely oriented island

flaps from the inner prepuce have certain disadvantages like penile torsion/rotation. Outer skin necrosis is a problem when the two prepucial layers are separated, while poor cosmetic appearance on the ventrum results when both inner and outer prepuce are transferred ventrally as one unit. To overcome these drawbacks, we have been employing the Longitudinal Dorsal Island Flap (LDIF), both as onlay and tubularized urethroplasty. This technique was previously described by Scuderi and popularized by others, with some modifications.[1-5]

Hypospadias is a relatively common congenital defect of the male external genitalia. It is present in approximately 1 in 250 male newborns. Hypospadias, in boys, is defined as an association of three anomalies of the penis: an abnormal ventral opening of the urethral meatus that may be located anywhere from the ventral aspect of the glans penis to the perineum, an abnormal ventral curvature of the penis (chordee), and an abnormal distribution of foreskin with a "hood" present dorsally and deficient foreskin ventrally.[6]

The management of hypospadias has greatly improved over the past two decades since the introduction of tubular incision plate urethroplasty. However, obtaining a favorable cosmetic outcome and functional straight penis is a major surgical challenge for such patients, and the ideal repair of proximal hypospadias remains the Holy Grail for hypospadias specialists. The surgical plan for proximal hypospadias can be divided into single and staged operations. Duckett repair is a classic single-stage procedure.[7]Single-stage procedures are often associated with high rates of complications and reoperations, which defeats the initial purpose of a single-stage procedure. Reportedly, complications occur in 20–50% of patients with proximal hypospadias undergoing a contemporary series of single stage repairs.[8]

The aim of the present study was to review our experience with the use of longitudinal dorsal island flap (LDIF) for single-stage mid and proximal penile hypospadias repairs.

MATERIALS AND METHODS

A retrospective study of 40 cases of hypospadias both mid and proximal penile variety of all children operated in Paediatric Surgery department of Medical College and Hospital, Kolkata from July 2022 to July 2023.

Inclusion Criteria

Patients with age 1 to 12 years having mid or Proximal Penile Hypospadias.

Exclusion Criteria

Patients having chordee more than 30 degree, small phallus, redo cases with scarring.

Technique

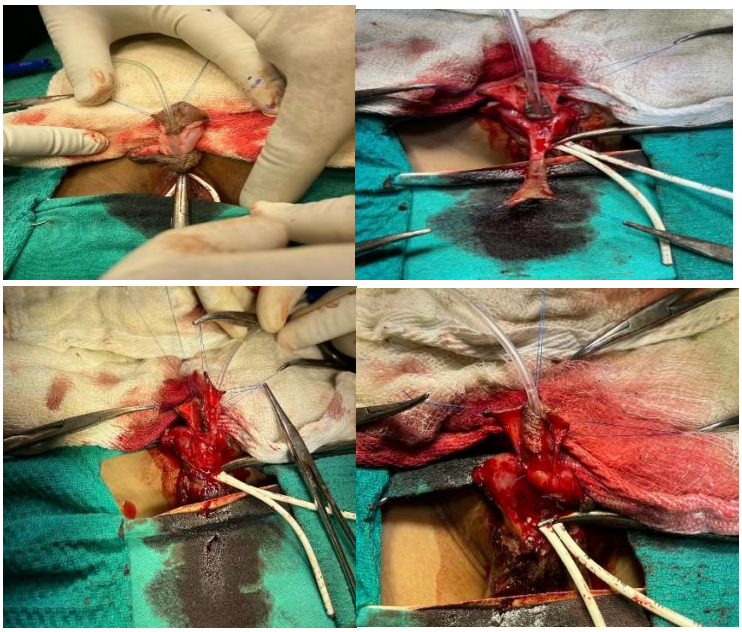
- A U-shaped incison including glans uptil just below the area with healthy spongiosum is made extending sub-coronally in the dorsal aspect.
- Complete degloving is done subsequently.
- Mild chordee if present is corrected in this stage.
- A dorsal preputial flap island flap which is around 4-5mm + the length of the tube to be created was raised and brought to the ventral aspect by creating a small window in the pedicle.
- The flap is then sutured with the meatus and along the urethral plate on both sides uptil the glans to create a long tube.
- The second layer is given with the pedicle of the flap.

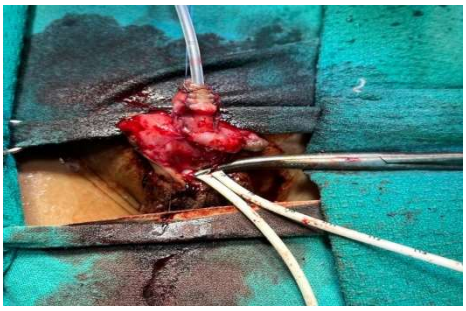
- In cases where the glans does not approximate, we infold the extra length of the preputial flap to augment the glans.
- Dermoplasty is then done.

Follow-Up and Statistical Analysis

Patients were advised to visit our urology clinic for outpatient follow-up examinations at 1 week, 1 month, 3 months, 6 months, 12 months, and once a year after the operation. Complications, including meatal stenosis, fistula formation, diverticula formation, stricture, and partial glans dehiscence, were found in both groups. If obstruction-related symptoms such as dysuria, straining, or repeated urinary tract infection were observed, immediate hospitalization was required.

Dichotomous variables were analyzed using the Chisquare test and continuous variables were analyzed using the t-test. Penis length, curvature, and urethral defect length were analyzed using one-way analysis of variance (ANOVA). All analyses were conducted using SPSS version 22.0 (IBM Corp., Armonk, NY, USA), with statistical significance set at $P<0.05$.





RESULTS

Table 1: Basic Characteristics of Patients

Variables	
Age (years)	9.21±6.12
Type of hypospadias	
Proximal penile	22
Mid penile	18
Others	0

The average age of the patients at surgery was 9.21±6.12 years. The position of the urethral meatus was proximal penile type in 22 patients and mid penile type in 18.There was no significant difference between the two groups in terms of age and type of hypospadias.

Table 2: Outcomes

Outcomes	**N**
Good follow-up	35
UC Fistula	2
Complete dehiscence	2
Torsion	1

UC Fistulas and Complete dehiscence were noted in 2 cases each and torsion was noted in one case. 35 patients showed good follow-up.

DISCUSSION

Hypospadias is a common congenital defect of the male external genitalia that occurs in approximately 1 in 250 live male newborns. Proximal hypospadias (penoscrotal, scrotal, and perineal types) account for approximately 20% of all cases.[9]

The average age of the patients at surgery was 9.21±6.12 years. The position of the urethral meatus was proximal penile type in 22 patients and mid penile type in 18. There was no significant difference between the two groups in terms of age and type of hypospadias. UC Fistulas and Complete dehiscence were noted in 2 cases each and torsion was noted in one case. 35 patients showed good follow-up. However, in children with severe chordee requiring division of urethral plate, considering that most of them would have required a 2-stage repair, a 75% success with single stage tubularized LDIF repair may be still acceptable.[10, 11]

A case study by Nuinga et al[12] has concluded that success of Hypospadias repair cannot be judged in a short duration and hence the follow up protocol of this study was continued as long as 20 years to rule out long term complications. Elhalaby EA[13] has recommended that a single staged repair can be safely and effectively performed even in patients with the most severe penoscrotal hypospadias. The modified Koyanagi technique has relatively lower complication rate than original Koyanagi repair. The original Koyanagi parameatal prepuital flap technique was found to have a higher incidence of fistula (29%). Chandrasekharam has reported

the use of LDIF (longitudinal dorsal island flap) for single-stage mid and proximal hypospadias repair with good success and an acceptable complication rate.[14]

The outcomes of single- and multistage repairs of proximal hypospadias are comparable; no technique can be considered better than any other. Thus, it is more judicious for a hypospadiologist to master a few of these procedures to achieve the best results, regardless of the technique used.[15] Risk factors as severe chordee, middle and posterior localized hypospadias, and use of a pedicle island flap may increase the postoperative complication rate. There is no gold-standard technique for hypospadias repair; the procedure of choice should depend on the individual anatomy of the penis.[16]

CONCLUSION

Over a follow-up of 1 year we report that LDIF for single-stage mid and proximal penile hypospadias repair has good success rate and fewer complications.

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