

Outcome of Snodgrass Repair in Distal Hypospadias – An Institutional Experience

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Abstract

Introduction: Hypospadias is a common congenital anomaly in which the urethral opening is on the ventral surface of the penis, often associated with ventral curvature of penis (chordee). Many techniques have been described in the literature for the repair of hypospadias with variable results. This study aimed at outcome following Snodgrass repair in distal hypospadias by a single Urologist.

Methods: This was a retrospective study conducted at Department of Urology, Birat Medical College from December 2017 to January 2019 during which 16 patients with distal hypospadias underwent primary repair using Snodgrass technique.

Results: Mean age was 5.12 years and duration of operation was 136.25 minutes. About 56.25% of cases were subcoronal and 43.25% were coronal. Chordee of <30 degree was present in 25% of cases. Complications occurred in 25% cases of which half (12.5%) were urethrocutaneous fistula and rest were meatal stenosis (6.25%) and hematoma (6.25%).

Conclusion: The outcome of Snodgrass repair in distal hypospadias is satisfactory with acceptable complications and urethrocutaneous fistula is the commonest complication.

Keywords: Chordee; Hypospadias; Snodgrass repair.

Introduction

Hypospadias is one of the most common congenital anomalies of the male children affecting 1 in 300.¹ Urethral meatus lies on the ventral surface of penis proximal to its normal position, anywhere from below the tip of the glans to the perineum. Hypospadias is divided into three types - posterior (proximal), middle and anterior (distal), regarding the position of meatus. In anterior type, meatal orifice opens either on distal penile shaft, on corona, or below the tip of glans.² Distal hypospadias is the commonest type accounting for 50%-70%.³⁻⁴

Different techniques have been described for the repair of hypospadias which is a challenging job and there is a learning curve for every surgeon.⁵ The multiple surgical options available for hypospadias repair are a testament to the fact that no surgical procedure guarantees universal success by all surgeons. As is true for all reconstructive procedures, the best chance of a good outcome is with

the first operation.⁶ Certain factors like location of the meatus and the degree of proximal spongiosal hypoplasia, presence and degree of VC, quality (width and depth) of the urethral plate, size of the glans and the depth of the navicular fossa, degree of ventral skin deficiency, scrotal abnormalities, availability of foreskin and penile length are key factors for operative planning⁷⁻⁸ The surgical management of hypospadias aims to achieve: a straight penis with a slit-shaped and adequate caliber meatus at the apex of the glans, a conical reconfigured glans and an acceptable cosmetic outcome.⁹ Surgical intervention for hypospadias can be performed at any age, but, most researchers recommend operative intervention at 6–18 months to limit physiological and psychological stress of surgery.¹⁰

The Tubularized Incised Plate (TIP) procedure proposed by Snodgrass involves a midline incision of the UP to widen it and achieve a better caliber urethra, which is then tubularized.¹¹ The superior cosmetic results and the low

incidence of complications has led to wide consensus that the TIP urethroplasty is the most commonly used technique for distal hypospadias¹²The objective of this study is to assess the outcome of distal hypospadias repair using Snodgrass technique.

Methods

This was a retrospective study conducted at Department of Urology, Birat Medical College Nepal from December 2017 to January 2019. The inclusion criteria were children with distal hypospadias aged above one year without prior intervention. Children aged less than one year, proximal hypospadias and previous attempted repair were excluded. Patients characteristics and family history were traced. Local examination findings emphasizing position of the urethral meatus, urethral plate status, presence of prepuce and degree of chordee were documented. All children were evaluated preoperatively as per the institutional protocol. All patients received injections ceftriaxone(50mg/kg) and gentamycin (5mg/kg) as prophylactic antibiotics. The procedure was done under general anesthesia with 1:1 dilution of xylocaine plus adrenaline infiltration along incision lines. The key operative steps included (Fig.1):

- Circumcising incision
- Penile degloving and correction of chordee confirmed by artificial erection by corporal saline injection
- Urethral plate mobilization
- Urethral plate incision and tubularization by subepithelial running stiches over feeding tube as a stent
- Tubularization was reinforced by spongioplasty, dartos flap and Byar's flap respectively
- Glansoplasty

Polyglactin 5/0 was used for repair and circumcising incision was closed by 4/0 chromic cat gut . Wound was dressed with topical mupirocin ointment and dry cotton. Postoperatively all children received ceftriaxone and gentamycin injections during hospital stay in addition to analgesics and other supportive treatments. Dressing was removed on third postoperative day and thereafter normal saline cleaning and topical mupirocin ointment application was continued until the stent was removed which was usually done on 7th postoperative day and patient was discharged to follow up after one month and three months or whenever required. During each visit, voiding pattern was observed with postvoid residual urine whenever required.



Figure 1: Urethral plate ready for tubularization

Statistical Analysis

Data were analyzed using SPSS 20. Statistical averages were calculated.

Results

Sixteen children met the inclusion criteria and they were included in the study. Mean age was 5.12 ± 1.40 years . About 56.25% (9/16) of cases were subcoronal and 43.75% (7/16) were coronal. Chordee of <30 degree measured intraoperatively , was present in 25% (4/16) of cases. Mean duration of operation was 136.25 ± 11.18 minutes and duration of hospital stay was 7.43 ± 1.03 days . Complications occurred in 25% (4/16) cases. Two of the cases (12.5%) developed urethrocutaneous fistula on 5th postoperative day (Fig 2) . One case (6.25%) had proximal penile shaft hematoma which resolved with conservative management and another case(6.25%)developed meatal stenosis during follow up at one month. It was managed by meatal dilatation and his voiding was satisfactory at the third follow up month.



Figure 2: Urethrocutaneous fistula

Discussion

Hypospadias is one of the most common congenital anomalies of the male children affecting 1 in 300.¹ Distal hypospadias is the commonest type accounting for 50%-70%.³⁻⁴ Different techniques have been described for the repair of hypospadias and there is a learning curve for every surgeon.⁵ There is no one standard procedure for all hypospadias repair. A technique must be adapted for each individual patient. MAGPI (Meatal Advancement and Glansoplasty), Mathieu and Snodgrass are the most commonly used techniques. The superior cosmetic results and the low incidence of complications has led to wide consensus that the TIP urethroplasty is the most commonly used technique for distal hypospadias.¹² This study also aimed at observing the outcome of distal hypospadias repair using Snodgrass technique.

The mean age of repair was 5.12 years here. In another study involving 31 children, the median age of repair was 5.8 years comparable with present study.¹³ This is above the recommended age of intervention by the most authors which is 6-18 months of age to limit the psychological stress and subsequent behavioural problems.¹⁰ But the reports are conflicting regarding whether increasing age at surgery increases complications.¹⁴⁻¹⁵

Subcoronal location of the meatus was the most common variant of distal hypospadias accounting for 56.25% and incidence of chordee was 25% in this study. This is comparable with 51.6% and 19.4% respectively in another study.¹³ Contrary to this, Barcat reported 15% incidence of chordee in distal hypospadias.¹⁶ This difference may be attributable to geography.

Polyglactin suture of 5/0 was used for repair here. This is in accordance with the others suggesting fine polyglactin sutures for repair.^{13,17}

Complication rate of distal hypospadias repair is variable and also depends on multiple factors as stated above. Most studies report complication of 5%-10% after distal hypospadias repair⁹ which is lower than 25% complication rate in this study. This higher complication rate can be due to the learning curve of the urologist. The most common complications are urethrocutaneous fistula and meatal stenosis. In a study involving 31 cases of distal hypospadias using Snodgrass technique, fistula and meatal stenosis was reported in 16.1% and 6.5% of cases respectively.¹³ Another study with 59 children and 9 months of follow up reported fistula in 10% of cases and meatal stenosis in 5% of cases.¹⁸ In the current study, fistula was seen in two cases (12.5%) and meatal stenosis in one case (6.25%). The child with meatal stenosis is doing fine after meatal dilatation and

the children with fistula are planned for reassessment and further intervention after 6 months of surgery.

Conclusion

The outcome of Snodgrass repair in distal hypospadias is satisfactory with acceptable complications and urethrocutaneous fistula is the commonest complication.

Limitation

The study is limited by its retrospective nature. Less number of patients and inclusion of only distal hypospadias are other limitations to project outcome of the procedure in hypospadias.

Conflict of Interest

None. Declared.

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