

The Clinical Outcome of Snodgrass Repair in Distal Hypospadias - A Tertiary Care Hospital Experience

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Abstract:

Hypospadias stands as one of the most prevalent congenital abnormalities in male children, impacting approximately 1 in 300 individuals [1]. This condition manifests with the urethral meatus positioned on the ventral surface of the penis, deviating from its usual location, ranging from below the glans tip to the perineum. The classification of hypospadias comprises three types based on meatal position: posterior (proximal), middle, and anterior (distal) [2]. In the anterior type, the meatus opens on the distal penile shaft, the corona, or the glans tip [2]. Distal hypospadias represents the most prevalent type, accounting for 50%-70% of cases [3-4]. Addressing hypospadias poses a challenge to surgeons, with a learning curve associated with various repair techniques [5]. The diversity of surgical options underscores the absence of a universally successful procedure, emphasizing that the initial operation offers the best chance of success [6].

keywords: new children's Sydney; coronal; sub-coronal & distal penile

Introduction

Hypospadias stands as one of the most prevalent congenital abnormalities in male children, impacting approximately 1 in 300 individuals [1]. This condition manifests with the urethral meatus positioned on the ventral surface of the penis, deviating from its usual location, ranging from below the glans tip to the perineum. The classification of hypospadias comprises three types based on meatal position: posterior (proximal), middle, and anterior (distal) [2]. In the anterior type, the meatus opens on the distal penile shaft, the corona, or the glans tip [2]. Distal hypospadias represents the most prevalent type, accounting for 50%-70% of cases [3-4]. Addressing hypospadias poses a challenge to surgeons, with a learning curve associated with various repair techniques [5]. The diversity of surgical options underscores the absence of a universally successful procedure, emphasizing that the initial operation offers the best chance of success [6]. Key factors influencing operative planning encompass meatal location, degree of proximal spongiosis hypoplasia, presence and extent of VC, urethral plate quality (width and depth), glans size, navicular fossa depth, ventral skin deficiency, scrotal abnormalities, foreskin availability, and penile length [7-8]. The surgical objective in hypospadias management is to attain a straight penis with a properly positioned and appropriately sized meatus at the glans apex, a reshaped conical glans, and a satisfactory cosmetic outcome [9]. While surgical intervention is feasible at any age, the consensus among researchers suggests operating between 6 and 18 months to minimize physiological and psychological stress [10]. The Tubularized Incised Plate (TIP) procedure, introduced by Snodgrass, involves a midline incision of the urethral plate to widen and

tubularize, resulting in an improved caliber urethra [11]. Due to its superior cosmetic outcomes and a low incidence of complications, TIP urethroplasty has gained widespread acceptance as the primary technique for distal hypospadias repair [12]. This study aims to evaluate the outcomes of distal hypospadias repair utilizing the Snodgrass technique.

Methodology & Materials

This retrospective investigation took place at the Urology Surgery Department of the Prime Hospital Spanning from 2014 to 2023, the study focused on 15 patients diagnosed with distal penile hypospadias who were admitted from the outpatient department. Selection criteria were applied to identify patients who met the inclusion criteria after admission. Vital data for the study was gathered from the attendants, and written informed consents were obtained from the guardians before they participated in the study.

- Inclusion criteria:
- All the cases were randomly selected.
- Patients with distal hypospadias (Coronal, sub-coronal & distal penile), were admitted to the Department of Pediatric Surgery.
- Age: 6 months to 12 years.
- No history of a previous operation on the external genital organ.
- Exclusion criteria:
- Age below 6 months to 12 years.

- Patients having a history of previous operations on the external genital organ.
- Hypospadias with ambiguous genitalia.
- Patient having hypospadias with other major surgical problem for which he is admitted but hypospadias with local anomaly

was included i.e., Associated ARM, Myelomeningocele, Bilateral Wilms' Tumor etc.

- Patients in whom surgery could not be done due to other medical problems such as Bleeding disorder, Diabetes Mellitus (DM), Malignant diseases etc.

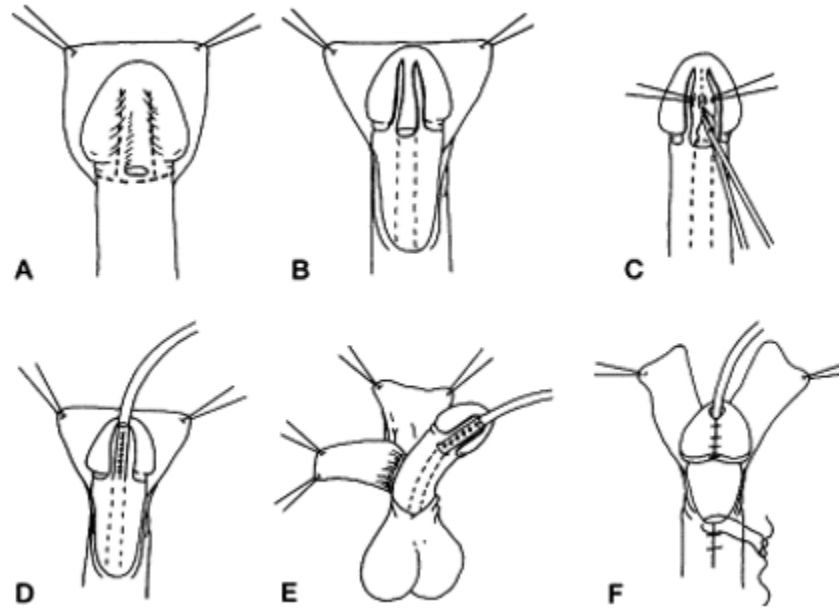


Figure 1: Steps of Snodgrass Urethroplasty.

All data were presented in a suitable table or graph according to their affinity. A description of each table and graph was given to understand them clearly. All statistical analysis was performed using the statistical package for social science (SPSS) program, and Windows. Continuous parameters were expressed as mean±SD and categorical parameters as frequency and percentage.

Result

This study, conducted retrospectively, involved the enrollment and analysis of a total of 15 patients. Examining the age distribution revealed that over 25% of the patients were below 4-5 years old, with only 1 (6.67%) falling below 8-10 years (refer to Table 1). The socio-economic

conditions of the participants are presented in Table 2, indicating that 8 (53.33%) patients led impoverished lives, 6 (40%) lived an average lifestyle, and only one patient belonged to a wealthier category. Among the patients, 10 (66.67%) had chordee, and 8 (53.33%) had meatal stenosis (see Table 3). The types of hypospadias are detailed in the corresponding table, with more than 50% of patients having distal shaft, 3 (20.00%) having coronal, and 2 (13.33%) having subcorneal and midshaft conditions. The surgical procedure's duration averaged 132.25±11.18 minutes, while the hospital stay lasted 7.43±1.03 days (Table 5). Postoperative complications are outlined in Table 6, indicating that 2 (13.33%) patients experienced urethrocutaneous fistula, 1 (6.67%) had a wound infection, and one patient exhibited both glandular dehiscence and meatal stenosis.

Age group (Years)	Frequency	Percentage
<2	2	13.33
2-4	5	33.33
4-6	4	26.67
6-8	3	20.00
8-10	1	6.67

Table 1: Age distribution of the study population (N=15).

Condition	Frequency	Percentage
Poor	8	53.33
Average	6	40.00
Rich	1	6.67

Table 2: Socioeconomic conditions of the study population (N=15).

Variables	Frequency	Percentage
Chordee	10	66.67
Meatal Stenosis	8	53.33

Table 3: Presence of chordee and meatal stenosis in the study (N=15).

Position of meatus	Frequency	Percentage
Coronal	3	20.00
Subcoronal	2	13.33
Distal shaft	8	53.33
Midshaft	2	13.33

Table 4: Types of hypospadias in the study population.

Variables	Mean±SD
Duration of operation	136.25±11.18
Duration of hospital stay	7.43±1.03

Table 5: Duration of operation and hospital stay.

Complication	Frequency	Percentage
Wound infection	1	6.67
Urethrocuteaneous fistula	2	13.33
Sloughed flaps/complete dehiscence	0	0.00
Glanular dehiscence	1	6.67
Meatal stenosis	1	6.67

Table 6: Post-operative complication of the study.

Discussion

Hypospadias is a prevalent congenital anomaly in male children, affecting approximately 1 in 300 individuals [1]. Distal hypospadias is the most common among the various types, constituting 50%-70% of cases [3-4]. Numerous techniques exist for hypospadias repair, and each surgeon experiences a learning curve [5]. There is no universal approach for all cases; the technique must be tailored to each patient. Commonly employed methods include MAGPI (Meatal et al.), Mathieu, and Snodgrass, with the latter gaining popularity due to its superior cosmetic outcomes and a low incidence of complications. TIP urethroplasty is widely recognized as the preferred technique for distal hypospadias [12]. This study specifically investigates the outcomes of distal hypospadias repair using the Snodgrass technique, with an average age of repair recorded at 5.12 years. A comparison with another study reveals a median repair age of 5.8 years [13], surpassing the recommended intervention age range of 6-18 months to minimize the psychological stress and subsequent behavioural issues [10]. However, conflicting reports exist on whether increased age at surgery correlates with higher complications [14-15]. The most common variant observed in distal hypospadias cases was a subcoronal meatal location (13.33%), and chordee was present in 66.67% of cases. These figures are comparable to a different study reporting 19.4% and 51.6%, respectively [13]. Discrepancies, such as a lower reported incidence of chordee by Barkat (15%) [16], may be attributed to geographical variations. The repair technique involved using 5/0 polyglactin sutures, aligning with recommendations favouring fine polyglactin sutures for such repairs [13, 17]. Complication rates in distal hypospadias repair vary due to multiple factors. While most studies report a 5%-10% complication rate, the current study records a higher rate of

25%, possibly attributable to the urologist's learning curve. Urethrocuteaneous fistula and meatal stenosis are the most common complications. In this study, fistula occurred in 13.33% of cases and meatal stenosis in 6.67%. A comparable study using the Snodgrass technique reported fistula and meatal stenosis in 16.1% and 6.5% of cases, respectively [13]. Another study with 59 children indicated fistula in 10% and meatal stenosis in 5% of cases [18]. The child with meatal stenosis exhibited successful outcomes post-mentoplasty, while those with fistula are scheduled for reassessment and potential intervention six months post-surgery.

Limitations of the study:

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

Conclusion And Recommendations

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

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