

Hypospadias Repair: A Four Year Review

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Abstract

Background: Repairing a Hypospadias is one of troublesome issues in pediatric surgery. Surgery results in various complications, variety of techniques have been applied and latest procedures still persist to evolve. Surgeons are still skeptical concerning finest procedure for repair. We focussed in ascertaining the consequence of procedures and elements bestowing to adverse upshots in patients with hypospadias. **Materials and Methods:** The retrospective review was undertaken from January 2014 to December 2018. The research was conducted at Sri Guru Ram Das Institute of medical Sciences and Research, Amritsar, Punjab. All children who underwent repair of hypospadias and had regular follow-up were included in our study. **Results:** A total of 202 boys aged less than 14 years were assessed. Most surgeries (82%) were performed in children older than 24 months. Transverse incised plate urethroplasty (Snodgrass procedure) was procedure performed for distal and middle hypospadias (95.5%), while transverse preputial island flap technique (Duckett's procedure) was the most common procedure done for proximal hypospadias (4.5%).

Keywords: Hypospadias, Snodgrass Procedure, Duckett's Procedure.

Introduction

Hypospadias is one of the most common congenital anomalies which accounts second among human

birth defect in few studies [1,2]. It occurs 1 out of 250 male live births [3]. The main reason of repairing hypospadias is to enable urination in standing position, have a satisfactory cosmetic appearance and a functional insemination [4,5]. Since there are various complications after repair, more than 300 procedures were attempted and latest procedures continue to emerge. There is none defined procedure for repairing hypospadias. The surgery is polished over the past 2-3 decades. There are now reduced risk of complications as well as phases of surgery [1,4].

Present-day, trends are favoring one stage procedures for distal hypospadias. These surgeries include Snodgrass procedure, onlay island flap and mathiew's repair, out of which Snodgrass procedure is the most accepted as it has low complication rates. But for proximal hypospadias, one category prefers one-staged surgeries like transverse ventral preputal flap (TVPF) rest prefer two staged procedures [6,7].

The conclusion of the surgery is judged by early complications and short-term performance [8]. Frequent complications after hypospadias repair include urethrocutaneous fistula (UCF), meatal stenosis, failed glanuloplasty, failed urethroplasty, urethral strictures, infection and others rare [9].

The result of hypospadias repair depends on various factors, including the location of the meatus, severity of chordee, acceptability of dorsal preputal skin and genital anomalies. Factors also include age of the patient and expertise of the surgeon [10,11]. Scientific factors like of surgery, second layer usage, antibiotics span and stent period are also important [2,12].

We aimed to illustrate the results of hypospadias repair in our institution and to recognize the

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effects of factors on postoperative complications in this study.

Patients and Methods

A retrospective, cross sectional study was conducted on patients who have been subjected to hypospadias repair from January 2014 to December 2018. The study was conducted at Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar which is a tertiary hospital in Punjab.

At our institute various types of hypospadias repair were done at depending on variety of factors like the hypospadias site, the chordee, penis size, and presence of preputial skin. Sutures 6/0 or 5/0 PDS or Polyglycolate sutures were used for the repair in patients and all had stenting of the urethroplasty with Infant feeding tube without suprapubic diversion.

Patients on whom primary surgery (no previous attempts at hypospadias repair) was undertaken were incorporated in our study. Predesigned questionnaire was used for collecting information. The variables included were hypospadias variety, type of procedure and its result.

Results

Of 254 patients who underwent hypospadias repair in the mentioned time, 202 were incorporated in the study. Eighty two percent of our patients were operated on after the age of 24 months. Mean follow-up time was 12 + 12 months.

Anterior hypospadias was the most common type (62.8%) followed by middle (32.6%) and posterior (4.5%).

Table 1: Types of Hypospadias

Category	Specific type	Frequency (%)
Glandular		11 (5.4%)
Anterior	Coronal	84 (41.5%)
	Distal penile	32 (15.8%)
Middle	Mid penile	13 (6.4%)
	Proximal penile	15 (7.4%)
Penoscrotal		38(18.8%)
Proximal	Scrotal	5 (2.4%)
Perineal		4 (1.9%)

The frequently performed procedures for hypospadias were Snodgrass and Duckett’s procedure. Snodgrass procedure (95.5%) was frequently performed for distal and middle hypospadias, and Duckett’s procedure (4.5%) was the most common procedure done for proximal hypospadias.

Preoperatively, 63% of the patients took antibiotics (61% IV and 2% PO). Postoperatively, 93.6% took antibiotics (29% IV only, 18% PO only and 47% IV changed later to PO). Ceftriaxone alone was the antibiotic of choice in 93% of the cases and Amoxicillin and clavulanic acid in 7% of the cases, where as cefpodoxime was PO antibiotic.

In 90% of the patients antibiotic cream was applied after removal of dressing. Removal of catheter was done in a mean of 10 days (min 7 and max 16 days).

Families of children were satisfied with penile aesthetic appearance. Patients success rate for the first surgery was 84.6%. The major postoperative complications requiring further surgical intervention was 15.4% (Figure 1).

Out of 202 cases, the overall urethrocutaneous fistula rate was 11 (5.4%). The rates for catheter slip, glans breakdown, major breakdown, wound infection, UCF, urethral stricture, meatal stenosis, recurrent persistent chordee, UTI, diverticulum, others

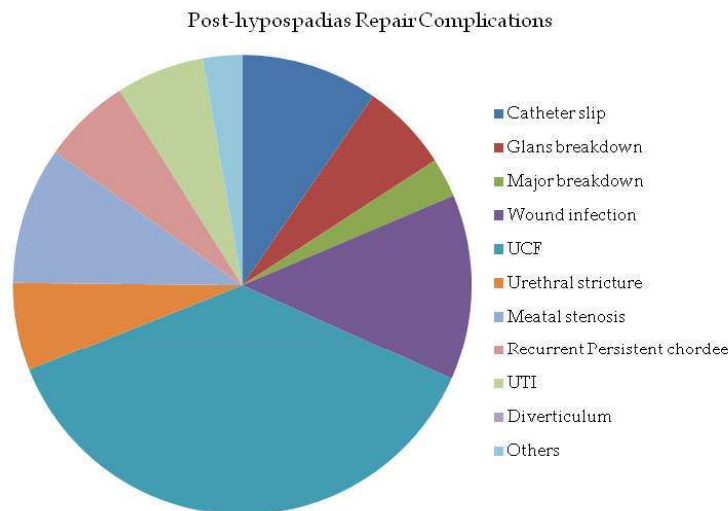


Fig. 1:

infection, urethral stricture, meatal stenosis, recurrent persistent chordee and UTI were 3 (1.4%), 2 (0.9%), 1 (0.4%), 4 (1.9%), 2 (0.9%), 3 (1.4%), 2 (0.9%), and 2 (0.9%) respectively. All patients with urethral stricture and almost all of the patients with meatal stenosis 2 (0.9%), regular urethral dilatation revealed a reasonable response. In only 1 (0.4%) case meatoplasty was performed. A single straight urinary stream in a forward direction was unveiled while voiding in all children and have a rounded glans with vertical slit-like terminal glanular meatus. 5.5 days was the mean hospital stay of patients.

Discussion

The Snodgrass technique has revolutionised surgery for hypospadias repair. Rich et al., incorporated an urethral plate incision to obtain a cosmetically acceptable vertical slit-like meatus for the Mathieu repair [13].

In 2001, Borer et al., with usage of second layer to cover the suture line it was found that the risk of fistula was decreased, and advocated this maneuver after Snodgrass Procedure [14]. In 2003, Samuel and Wilcox, a vascularized pedicle subcutaneous tissue harvested from the dorsal hooded prepuce was used as a second layer which was utilised as a cover for urethroplasty to reduce urethrocutaneous fistula incidence [15]. In 2003, Snodgrass and Sozubir described that neourethra can be covered with dartos pedicle flap obtained from the dorsal prepuce and shaft skin. Before the dartos flap was applied in proximal hypospadias, in few patients, the corpus spongiosum was sutured together over the neourethra with the "Y to I" technique [16,17]. In our study, continuous subepithelial 6/0 PDS sutures were used to tubularize the incised urethral plate over a catheter of an appropriate size (6 Fr, 8 Fr). Later, the corpus spongiosum was sutured jointly over the neourethra with the "Y to I" technique. A 2nd layer of dartos pedicle flap which has vascularisation was taken from the penile shaft skin or dorsal prepuce in children to cover the suture line after Snodgrass procedure. We think this combined technique have resulted in satisfactory functional and aesthetic outcome.

Elbakry in 2002, illustrated that regular urethral calibration done postoperatively should be considered as an essential element of Snodgrass procedure to prevent the meatal and/or neourethral stenosis [18]. In 2002, Snodgrass and Lorenzo deduced that dilatation of the neourethra is not useful after Snodgrass procedure, after 6 months

of procedure dilatation and uroflowmetry might be helpful in detecting subclinical obstruction [19].

In our study, meatal stenosis was elucidated in 3 (1.4%) of patients. 2 (0.9%) patients had short neourethral stricture, inspite of the deep incision and tubularisation of urethral plate satisfactorily and patients were kept under regular calibration on follow up.

The credit for making popular preputial island flap goes to Duckett [20]. Penis is degloved and chordee correction is done, the inner prepuce is lifted as a pedicle flap and then transposed anteriorly to cover the urethral plate as an onlay graft. The urethral plate forms roof of the neo-urethra. The circular anastomosis is avoided in onlay which prevents stricture formation [20].

Conclusion

In conclusion, our surgical experience over the last four years have emphasized that Snodgrass Procedure using a vascularized dartos pedicle flap of subcutaneous tissue for neourethral coverage is adaptable, one-stage, and simple procedure in management of various types of hypospadias. It has satisfactory functional and aesthetic results. Both gathered surgical expertise and refinements in Snodgrass Procedure using 2nd layer of vascularized pedicle dartos flap, superior quality suture material, and use of tools which enhance vision in field of work have contributed to improve the results.

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