



Table 1: Selection criteria and patient grouping

Selection criteria	Parameters and according surgeries		
	A	B	C
Meatal position	Coronal, Subcoronal	Midpenile	Peno-scrotal, Perineal
Urethral plate	Good	Poor	Poor
Gross morphology of glans	Conical	Wide hood	Triangular, Poor
Groove in glans	Deep	Shallow	Shallow/ Absent
Chordee	Mild	Moderate	Moderate/ Severe
Surgery of choice	Snodgrass TIP urethroplasty	Duckett's urethroplasty	Staged urethroplasty

All the children strictly underwent our pre-operative preparations.

Pre-operative preparations:

- Screening investigations such as chest radiographs, ECG, blood investigations.
- Inj. HCG 100 I.U/kg i.m. once every 21 days, 3-5 doses for peno-scrotal and perineal hypospadias to improve vascularity & shaft development.
- Routine Anaesthesiology assessment, Paediatric evaluation when required.
- Thorough scrub bath one day prior to surgery.
- Blood grouping.

Just before surgery, betadine scrub painting was done before draping. Again repainted with Betadine scrub, followed by spirit paint with was air dried and parts painted with Betadine solution routinely. Endotracheal general anaesthesia was used for all cases supplemented with spinal anaesthesia in few cases. The part preparation was given utmost importance before commencing surgery. The operating time was around 90 to 120 minutes. Suture materials used were- 6-0 & 5-0 PDS(polydioxanone) for urethroplasty; 5-0 Vicryl(polyglactin) for glansplasty; 4-0 Vicryl for Byar's flap and dorsal inner preputial flaps, - all with round body needles. Infant feeding tube no. 8Fr was used in all cases and glove tourniquet was used for maintaining haemostasis during surgery which was released every 20 minutes. The Snodgrass(group A) surgeries were covered with Dynaplast flower type dressings and the Duckett's & Staged (group B & C) surgeries were completed with Sandwich dressings over the anterior abdominal wall. After surgery routine post-operative protocols were followed.

Post-operative protocols:

- I.V fluids for 6 hours
- I.V. antibiotics for 4-5 days then changed to oral antibiotics
- Oral laxatives, anti-spasmodics, anti-edema drugs were administered till catheter was in situ.
- Oral Paracetamol as analgesic and anti-inflammatory agent was used.
- Flushing of catheter with 2cc normal saline once daily.
- Dressings, if clean were changed on POD-6 and if soaked or in presence of urine leak, was changed immediately.
- Catheter removal was done on POD 12-14

#### 4. Results

A total of 22 children underwent surgeries for correction of hypospadias during this period. Age of subjects ranged from

2years to 9years and children of 2-3years were 40.9% of the study group (table 2, fig 1).

Table 1: Cases according to groups

Selection groups	Cases
A	13 (59%)
B	2 (9%)
C	7 (32%)

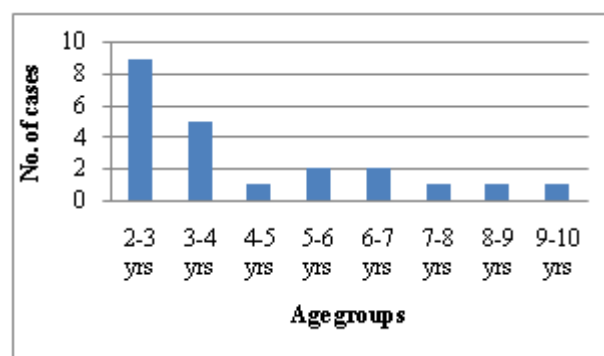


Figure 1: Age distribution

The position of meatal position in hypospadias were – subcoronal 37%, Penoscrotal 27%, coronal 18% and midshaft 18% (fig 2).

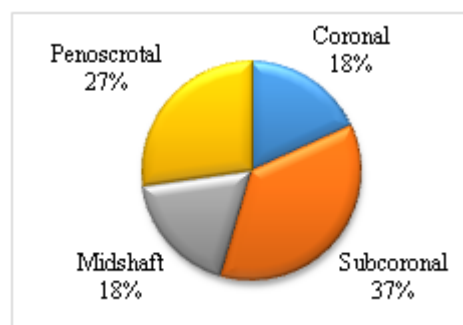


Figure 2: Meatal position in Hypospadias

According to the parameters described, they were categorised into 3 groups and were operated. Group A children(13; 59.09%) were treated with Snodgrass tubularised incised plate urethroplasty, Group B (2; 9.09%) were treated with Duckett's preputial flap urethroplasty and Group C (7; 31.81%) were treated with staged urethroplasties having around 6 months interval between the stages (table 2, fig 3).

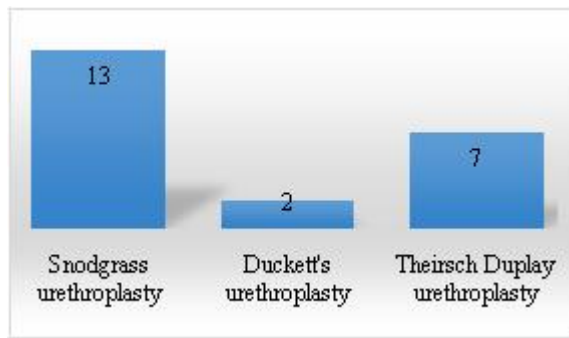


Figure 3: Types of surgeries

The part preparation was given utmost importance before commencing surgery. The operating time was around 90 to 120 minutes. With the routine postoperative protocols and discharge, patients were followed up on the outpatient basis at 2 weeks, 1 month and 6 months interval and in between whenever necessary. We observed 2 fistulas (9%) and 3 minor skin dehiscence (13%) as post-operative complications which were conservatively managed. On interviewing the parents of the patients during the follow-ups, 90.9% parents were satisfied with the results and 9% were worried or not satisfied, parameters being postoperative appearance, urinary stream. Based on surgeries we had 100% parent's satisfaction and least complications with Snodgrass & staged urethroplasties and not so satisfying results with children who underwent Duckett's urethroplasties (chi square p-value <0.001) (fig 4).

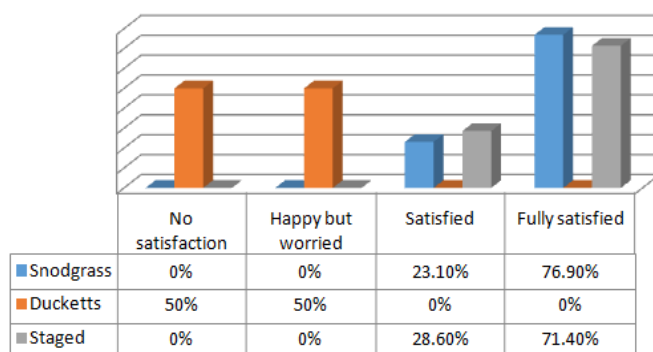


Figure 4: Surgery-wise postoperative satisfaction

We also looked for post-operative complications in comparison with adequacy of weight for age (table 3).

Table 3: Patient satisfaction w.r.t. weight for age

	No satisfaction	Happy but worried	Satisfied	Fully satisfied	Total
Below avg. Wt. for age	1(5.9%)	1(5.9%)	2(11.8%)	13(76.5%)	17
Adequate wt. for age	0	0	3(60%)	2(40%)	5

Though below average weight for age children had few post-operative complications, it was not found to be statistically significant (p-value=0.402)

## 5. Discussion

There are more than 200 surgeries described for correction of hypospadias. In spite of having so many options, there is no single accurate surgical option as there are variety of presentation of the condition. Several well-established techniques exist for the repair of all hypospadias defects, but there is no single, universally applicable technique for hypospadias repair. Command of a technically straightforward repair with few complications and proven success and versatility in a reasonable range of hypospadias defects are desired goals. The Snodgrass tubularised incised plate urethroplasty, a recent contribution with exemplary early results, has become a popular technique for primary and preoperative repair of middle and distal hypospadias, Duckett's tube repair and staged urethroplasties are commonly considered for proximal and few mid-penile varieties. Other innovative modifications, and technical advances, such as the use of laser and tissue solder, continue to emerge[17-20]. We grouped our patients as described so that hypospadias receives tailored approach for individual cases. We have not used laser or soldering techniques for any of our cases. Preservation of the foreskin or Preputioplasty is also tried and studied for its outcome in combination with various hypospadias repairs[21-23]. The majority of urethroplasty complications are diagnosed with in first year of post-operative follow-up especially in the first follow-up visit[24]. We had 2(9%) fistulae and 3(13%) minor skin dehiscence post-operatively, which were managed conservatively and we didn't had do any re-do surgeries in our study. The follow-up in our study ranges between 4-36months which is adequate to identify urethroplasty related complications. All the children were carefully examined for the post-operative complications in their follow-up, along with the satisfaction of the parents in respect to the urinary stream and appearance of penis.

## 6. Conclusion:

Hypospadias, though congenital, the time of presentation to the hospital is variable. The surgical techniques are best when tailored according to the patient's condition, in terms of good postoperative outcome. Snodgrass tubularised incised plate urethroplasty is a good single staged surgical technique with minimal post-operative complications and can be practised widely.

## 7. Limitations of the Study

The study group is small to draw significant conclusions on a single technique. The current study is based on our hospital protocols and is non-randomised. All the available surgical techniques were not studied.

## 8. Conflict of interest: None

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