



## OUTCOME AND MANAGEMENT OF HYPOSPADIAS IN A RURAL REFERRAL CENTRE

### KEYWORDS

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### ABSTRACT

**Background:** Hypospadias is the commonest congenital anomaly affecting the male urethra. There is no definite etiological factor attributed to its occurrence. Surgery is the mainstay of treatment and has a long learning curve. Single stage repair is better due to its lower complication rate. **Aims and Objectives:** To document the presentation, evaluate the management, outcome and analyze the factors influencing the post-operative complications in a rural referral Centre. **Patients and Methods:** This retrospective case note review was a study of patients who come to the Department of Paediatric Surgery, MMIMSR, Mullana with different types of hypospadias from August 2014 to April 2016. There were altogether 28 children who underwent different types of urethroplasties at our Centre. **Results:** 28 cases of hypospadias underwent different types of urethroplasty. Their ages ranged between 1 and 18 years (average age 8.1). mid-penile hypospadias were the most common (53.6%) followed by anterior hypospadias (28.6%) and posterior hypospadias (17.9%). MAGPI was done for glanular hypospadias, Mathieu's perimeatal based flap technique for Subcoronal hypospadias and Snodgrassurethroplasty for mid penile hypospadias. Single stage urethroplasty was the preferred choice of surgery except in posterior hypospadias where chordee correction was done as first stage followed by urethroplasty at a later date. The post operative complications included UCF in 4 patients (14.3%), meatal stenosis in 2 patients (7.1%) and partial flap dehiscence in 1 patient (3.6%). All operations were performed by a single paediatric surgeon trained from a premier institute. **Conclusion:** Hypospadias surgery is technically demanding and is fraught with high failure rates. It requires fine surgical instruments and usage of magnification. To reduce the incidence of post operative complications, it is better to perform single stage urethroplasty when ever possible.

### INTRODUCTION:

An abnormal location of the urethral opening on the ventral aspect of penis is termed as hypospadias. It is associated with the aborted development of urethral spongiosum. The cardinal features include a ventrally placed urethral meatus anywhere from the corona as far down as the perineum, dorsal hooding of prepuce and different degrees of chordee [1,2]. The reported incidence of hypospadias is 1 in every 300 live male births world wide. There is no specific etiological factor for hypospadias although genetic, endocrine, environmental and maternal risk factors have been implicated [3,4]. In USA, there has been a doubling of rates since 1970's and this was reported by the BDMP (Birth Defects Monitoring Programme) in 1993[5].

Hypospadias is diagnosed after a thorough clinical examination of the newborn. A prenatal diagnosis is also possible with ultrasonography. Based on the meatal location, hypospadias is classified as Anterior (glanular, Subcoronal), Mid Penile (distal, mid shaft and proximal penile) and Posterior (penoscrotal, scrotal and perineal). Their reported incidences are 50%, 30% and 20% respectively [6]. Distal hypospadias is more commonly seen in the western world as against the more proximal forms seen in Asia [7,8].

Cryptorchidism and Inguinal hernias are the two most frequently encountered anomalies with hypospadias [9]. Ureteropelvic junction obstruction, Vesicoureteric Reflux and Renal agenesis are the other reported urogenital tract anomalies [10,11]. Disorders of sexual differentiation have

been found to be more commonly associated with posterior hypospadias. No associated anomalies were seen in our study population. All patients were subjected to a thorough physical examination and a preoperative ultrasound examination of the whole abdomen was also done as per our protocol.

Surgical treatment of hypospadias is aimed at achieving a good cosmetic result, adequate length of penis and a functionally normal urethra. It is of utmost importance to ensure that following a successful repair, the patient has the ability to stand and urinate in stream from the tip of neourethra.

There is a paucity of literature regarding the effects of sexual function following correction of hypospadias. A decreased sexual function is attributed primarily to the small penile size and its appearance [12]. There is no clear cut evidence of impaired fertility in these patients. A study done by Aho and Tammela [13] showed no statistically significant difference in the fertility rates for those operated for hypospadias and phimosis in their childhood (0.8 vs 1.1). It was concluded that men who underwent hypospadias surgery in their childhood fathered fewer children as they could not maintain a long term relationship with their partners. There are also reports of sexual humiliation in these patients. To avoid this psychosocial trauma, it is very important for the surgeon to counsel the parents and patients appropriately.

Surgical timing depends on anesthetic risk, penile size and psychosocial development of the child. There is considerable

evidence in the literature to say that surgery performed between 6-18 months is ideal as it avoids emotional and psychological complications. The next best age group is between 3-4 years when the child is more understanding and cooperative [14].

Advances in the surgical techniques have considerably decreased the complication rates and improved outcomes. Preserving and incising the urethral plate, dorsal midline plication, de-epithelialized dartos flap urethroplasty and where required a two stage technique are the important principles to be adhered to [15]. Usage of fine surgical instruments and magnification further enhance surgical outcomes. Advances in paediatric anaesthesia like safe general anaesthesia, penile block and caudal analgesia have also contributed immensely to the surgical success [16].

#### PATIENTS AND METHODS:

This is a retrospective study of all patients of hypospadias who came to the department of Paediatric Surgery, MMIMSR, Mullana for treatment from August 2014 to April 2016. A total of 28 patients have been included in the study aged between 1 and 18 years. Medical records of all these patients were reviewed and data was analyzed for clinical presentation, surgical repair and post-operative complications. Children who presented with failed repairs for surgeries performed outside our hospital and those undergoing testosterone therapy and awaiting definitive surgery because of associated medical problems have been excluded from the present study.

All children were investigated on out patient basis. Routine blood tests, urine analysis, blood grouping and ultrasound examination of the whole abdomen to rule out associated urogenital anomalies were done. A pre-anaesthetic check up for assessing surgical fitness and a paediatric medical evaluation when required were also done. All children were operated under general anaesthesia along with a caudal block. An antibiotic dose was given at the time of induction of anaesthesia. Sutures routinely used were 6-0 PDS and 5-0 vicryl for urethroplasty, 4-0 vicryl and 3-0 vicryl for glansplasty. Infant feeding tubes of sizes 6 and 7 were used as indwelling stents that were anchored in place by a stitch on the glans. The total operative time ranged from 60 minutes to 180 minutes. A dynaplast flower dressing was applied which was changed on 5th post op day and the children were discharged from the hospital. All children received IV antibiotics, antispasmodics and laxatives. The dressing and the stent were removed on the 10th post op day in the OPD.

#### RESULTS:

A total of 28 patients were operated at our institute for correction of hypospadias from August 2014 to April 2016. Ages of the patients ranged from 1 year to 18 years (average 8.1 years). All patients were from rural background and poor socioeconomic strata of the society. There was no positive family history of hypospadias.

Mid penile hypospadias was the most common type of hypospadias accounting for 53.6% (n=15) cases followed by anterior hypospadias in 28.6% (n=8) cases and the rest were posterior hypospadias in 17.9% (n=5) cases. Mild chordee was present in 6 cases of mid penile hypospadias (40%) while severe chordee was present in 100% of all cases of posterior hypospadias necessitating a two stage corrective repair. No chordee was found in patients of anterior hypospadias. Meatal abnormalities like pinhole meatus was observed in 26.7% (n=4) patients of mid penile hypospadias and 60% (n=3) patients of posterior hypospadias. No patients had associated other congenital anomalies like cryptorchidism, inguinal hernia and

renal tract anomalies.

MAGPI operation was performed in three patients of glanular hypospadias (10.7%), Mathieu's perimeatal based urethroplasty in 5 patients of Subcoronal hypospadias (17.9%) and a single stage TIP urethroplasty was done for 15 cases of mid penile hypospadias (53.6%). A two stage repair was done in all five patients of posterior hypospadias (17.9%). In the first stage of repair patients had chordee correction with Byars flaps. In the second stage the flaps were tubularized to form a neourethra.

The overall complication rate was 25% (n=7) cases with urethrocutaneous fistula (UCF) accounting for 14.3% (n=4) patients, meatal stenosis in 7.1% (n=2) patients and partial flap dehiscence in 3.6% (n=1) patient. The UCF closed spontaneously in 3 to 4 months and did not require any further intervention. Patients with meatal stenosis improved on daily calibration with infant feeding tubes. The single patient of scrotal hypospadias who had partial flap dehiscence underwent a secondary repair after 8 months.

We analyzed the high complication rate in our Centre and found the causes to be as:

- 1) Lack of magnification during surgery.
- 2) Non-availability of fine surgical instruments.
- 3) Smaller size of phallus in older age patients.
- 4) Lack of cleanliness and hygiene in our patients due to rural background.
- 5) Poor nutritional status of patient.

**Table 1- Age at presentatio**

Age at presentation	Number	Percentage
1 year	2	7.1%
2 years	2	7.1%
3 years	2	7.1%
4 years	1	3.6%
5 years	3	10.7%
6 years	1	3.6%
7 years	2	7.1%
9 years	3	10.7%
10 years	1	3.6%
11 years	4	14.4%
12 years	3	10.7%
13 years	1	3.6%
14 years	2	7.1%
18 years	1	3.6%

**Table 2 - Location of Meatal Opening**

Types of hypospadias	Number	Percentage
(A) Anterior hypospadias		
Glanular	3	10.7%
Sub-Coronal	5	17.8%
(B) Mid Penile hypospadias	15	53.6%
(C) Posterior hypospadias		
Penoscrotal	4	14.3%
Scrotal	1	3.6%

**Table 3 – Types of Surgery Performed**

Surgery	Number	Percentage
MAGPI	3	10.7%
Mathieu	5	17.9%
Snodgrass	15	53.6%
Byars flap and TDU	5	17.8%

**Table 4 – Post Op Complications**

Types of Complications	Number	Percentage
UCF	4	14.3%
Meatal Stenosis	2	7.1%
Partial Flap Dehiscence	1	3.3%

**DISCUSSION:**

Hypospadias is the commonest penile urethral anomaly in male children. More than 200 surgeries have been described for correcting hypospadias. This clearly shows that the functional and cosmetic results are suboptimal. The refashioning of the urethra is an art by itself and this field is aptly called "hypospadiology".

In the present study, only four children were operated by 1-2 years of age (14.3%) and six children by 3-5 years of age (21.4%). The remaining children were operated over the age of 6 years. This is primarily due to lack of awareness as well as financial constraints. Many parents are unable to afford the cost of surgery and waste valuable time visiting different hospitals.

Mid penile hypospadias was the commonest type in our study followed by anterior hypospadias. Studies conducted by Abdelrehman et al [17] showed anterior hypospadias to be more common in Sudan while WU et al [18] found proximal hypospadias commoner in China.

Single stage urethroplasty is the currently recommended type of surgery as it yields the best results. For a long time the TIP procedure was exclusively used to treat distal hypospadias. Later on it has been used successfully to correct proximal hypospadias as well [19]. Multistage techniques for correcting posterior hypospadias have excellent results if done judiciously. Surgeons should be well trained in these procedures. Those who advocate this technique have ample evidence to say that by doing these procedures, the chordee gets corrected and the urethral plate can be designed better. The penis becomes straight and the graft will be well taken up on a good vascularized bed [20,21,22].

UCF was the most common complication in our study (14.3%). A review of literature revealed UCF being the commonest complication of hypospadias surgery followed by edema [23]. Snodgrass and Yucel [24] observed UCF of 33% and 10% in patients undergoing TIP repair with chromic catgut and polyglactin sub-epithelial 2-layer closure respectively.

The follow up period of our study ranged between 3 -24 months which was sufficient to identify the urethroplasty related complications, satisfaction of the parents with regard to the appearance of the penis and the urinary stream.

**CONCLUSION:**

Surgery for hypospadias was always considered as non-rewarding with a high complication rate. Public awareness is important to catch the children young. Trained specialists with a good temperament and patience should be dedicated solely for the treatment of hypospadias. Surgery should be tailored as per the patients needs. Snodgrass tubularized incised plate is a good single stage surgery with minimal post operative

complications and good outcomes.

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