

# Mathieu Repair in Distal Penile Hypospadias with or without Stent

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**Objective:** To compare the outcome of two techniques for repair of distal penile hypospadias: Mathieu's repair with and without stent. **Study Design:** Prospective observational descriptive study. **Place and duration:** Department of Paediatric Surgery, Mayo Hospital, Lahore from September 2000 to September 2002. **Material and methods:** Sixty boys were randomly assigned the two groups of thirty boys each. Detailed scrutiny of procedure done and analyses of the clinical outcome made prospectively. **Results:** A total of sixty patients were treated in two separate groups. All the boys had Mathieu's repair done for distal hypospadias. In group A stent/ indwelling catheter was used for 7-8 days while in group B no stent was used. Stratification was done using Chi square test. Median age was 4 years and most of them belonged to low socioeconomic class (61.6%). A high percentage (48.3% were born to mothers of age ranging from 30-40 years. Sixteen (26.66%) patients had a family history of hypospadias. Only twelve mothers (20%) gave a positive history of drug intake in first trimester. Sixteen (26.66%) patients had associated anomalies of undescended testis / inguinal hernia. Twenty four (40%) patients were brought because of the abnormal appearance of the child's penis while their stream (21.66%) and dysuria (25%) were presenting complaints of two other major groups. Mathieu's repair was done in all cases with group A. Thirty boys (50%) having a stent post operatively and the group B thirty boys (50%) were without stent. Total complications rate is 46.66% with group A showing eight cases (26.66%) and group B having twenty (66.66%) cases with complic. Major complication in group B was urinary retention in eleven cases (36.66%) while no patient had retention in group A. overall twenty six (86.66%) in group A and twenty one (70%) in group B showed satisfactory results. **Conclusion:** Mathieu's repair without stent has been advantage of shorter hospital stay but a fair proportion of patients (36.66%) having urinary retention calls for further studies on a larger scale.

**Key words:** Distal penile hypospadias, stent Mathieu's repair.

Hypospadias is a commonly seen congenital anomaly of urologic system. Presentation has varying degree of severity. The patient can have a minimally displaced meatus still at the glans or it may open in the perineum. Distal penile shaft varieties occur more frequently than its proximal varieties. These cases usually exhibit minimal functional impairment. For many years reliable surgical techniques with acceptably low morbidity were not available for these cases. Out of fear of the complication that might leave the patients worse off than the anomaly itself most of these patients were left untreated.

Support for surgical correction of distal hypospadias in early childhood has been growing over the last ten years. At least 15 different operations for the repair of distal penile hypospadias are in common use today.

Improved techniques in preputial and meatal based vascularized flaps over the last 10-15 years have greatly improved the results of hypospadias surgery through the contribution of Mathieu, Barcat Mustarde, Hodgson, Horton, Devine and Duckett.

Availability of finer suture material, frequent usage of magnification loupes and improved techniques have revolutionized hypospadias surgery. Single stage repair of even the most severe form of hypospadias has now become possible. Innovation in hypospadias surgery are being made. Diversion of urinary stream in the repair of hypospadias has been a matter of controversy. The role of stents is now being challenged. We have come a long way from the days of suprapubic cystostomy as a means of urinary diversion in hypospadias surgery. Many surgeons

claim good results in distal hypospadias repair without the usage of stents. This has the added advantage of shorter hospital stay.

This observation becomes more relevant considering the over-crowded state of our hospitals. This study is an attempt to find ways to shorten the hospital stay of our hypospadias patients and thereby decrease the morbidity and cost of the procedure.

## Material and methods:

Sixty cases of distal penile hypospadias were treated during the period of 2 years from September 2000 to September 2002 and studied prospectively in the Department of Paediatric Surgery, Mayo Hospital, Lahore.

Children were admitted a day before surgery. Complete history was taken and physical examination was carried out. Complete blood and urine examination were done as routine investigations in all cases. Ultrasonography abdomen and urine culture and sensitivity tests were reserved for patients having associated urogenital anomaly or pyuria on urine examination. Hemoglobin level of more than 10gm/dl was a pre requisite for surgery. All the observations were recorded on a detailed proforma.

Children were selected by simple random sampling technique and 30 patients underwent Mathieu's repair with stent for urinary diversion (Group A) and in Group B 30 patients, Mathieu repair was performed without stent.

Surgery was performed under general anaesthesia by one of the consultants. All cases were repaired in single

stage. Intermittent application of tourniquet and electrocautery were used to achieve hemostasis. During procedure chromic catgut No. 4/0 on round body was used for urethroplasty as well as for skin closure in all patients. Dorsal preputial skin was used to cover the ventral skin deficiency where needed. In group A patients feeding tube of appropriate size usually of 6 to 8 Fr was used as stent, which also worked as an indwelling catheter. Stent was removed after 7 days. A non-adherent sofratulle dressing was done on penile shaft after surgery which was changed after 24 to 48 hours in all patients.

Antibiotics were given for 5-7 days postoperatively. Intravenous ampicilline and gentamycine were given for initial 48-72 hours. Later on we switched over to oral antibiotics. Parenteral analgesia was used for first 24 hours, and then replaced by oral analgesia.

Group A (with stent) patients stayed in the hospital for 8 days, till the removal of stent and successful voiding.

Group B (without stent) patients stayed for 3-4 days. These were discharged after change of dressing and successful voiding. Operative findings and postoperative evaluation was also recorded on a proforma.

### Results:

The pre and postoperative observations are tabulated as follows.

Table 1: Age of presentation

Age of patients	=n	%age
Less than 01 year	06	10
01-02 years	19	31.66
02-04 years	15	25
04-06 years	07	11.66
More than 6 years	13	21.66

Median age: 4 years Total cases: 60

Table 2: Clinical presentation

Mode of presentation	=n	%age
Worry about cosmetic appearance	24	40
Thin stream	13	21.66
Dysuria	15	25
Splayed stream	06	10
Retention urine	02	3.33

Table 3: Associated anomalies

Anomaly	No. of Cases	%age
Undescended testis	03	5
Inguinal hernia	13	21.66

Table 4: History of hypospadias in family

Family member affected	=n	%age
Father	07	11.66
One brother	03	5
Two brothers	02	3.33
More brothers	0	0
One cousin	01	1.66
Two cousins	01	1.66
More cousins	01	1.66
Distant relatives	01	1.66

Table 5: Complications

Complication	Mathieu Repair		Total (n=60)
	With Stent (n=30)	Without Stent (n=30)	
Infection	2(6.66%)	01(3.33%)	3(5%)
Urethrocutaneous fistula	4(13.33%)	3(10%)	7(11.66%)
Meatal stenosis	01(3.33%)	3(10%)	04(6.66%)
Disruption	01(3.33%)	01(3.33%)	02(3.33%)
Retrusive meatus	0	01(3.33%)	01(1.66%)
Urinary retention	0	11(36.66%)	11(18.33%)
Total complication	8(26.66%)	20(66.66%)	28(46.66%)

Table 6: Hospital stay

	No. of Days	=n
Mathieu with stent without any complication	07	24
Mathieu with stent with some complications	11-14	06
Mathieu without stent without any complication	03	26
Mathieu without stent with some complications	7-10	04

Table 7: Results

Technique	=n	Satisfactory	Unsatisfactory
Mathieu with stent	30	26(86.66%)	4(13.33%)
Mathieu without stent	30	21(70.0%)	9(30.0%)
Total	60	47(78.33%)	13(21.66%)

### Discussion:

The reported incidence of hypospadias is 8.2/1000 live male births<sup>1</sup>. Distal penile shaft varieties comprise about 65-70% of total cases of hypospadias<sup>2</sup>. Chordee is a less common accompaniment of distal as compared to proximal hypospadias. The primary goals of surgery for hypospadias are correction of the cosmetic deformity and preservation of normal function. Attempts have been made to evolve a single technique of repair applicable to all types of hypospadias but variability in anatomical defects of patients having even same variety of hypospadias has made it impossible<sup>3</sup>. At least fifteen procedures for the repair of distal penile hypospadias are in common use today<sup>5</sup>.

At present one stage repair for distal penile hypospadias is universally acceptable and multistage procedures have been abandoned<sup>6,7</sup>. Mathieu, MAGPI and Mustarde are the procedures which give consistently good results in distal penile hypospadias. Especially commonly used procedure is Mathieu repair<sup>8,9</sup>. Improved surgical techniques, finer suture material use of tourniquet and adrenaline for hemostasis and magnification loupes have all contributed towards steady improvement in the results. Recently more and more emphasis is being placed on shorter hospital stay for any procedure. Samberg DE et al

have documented that hypoandrogenization associated with etiology of hypospadias or the severity of hypospadias does not interfere with the development of gender-atypical masculine behaviour. But it has been proved that prolonged hospital stay and/or repeated admission to hospital for hypospadias surgery and its complications increase the incidence of gender atypical behaviour in boys with hypospadias at a later age<sup>10</sup>. One hindrance in the goal of shorter hospital stay is the stent used for urinary diversion. Many studies done without stents have proved this observation. The unstented group show comparable results to stented group. In addition shorter hospital stay makes it more appealing<sup>11,12</sup>.

Our study was undertaken to verify this observation. Mathieu repair was done in all cases: Group A with and group B without stent. The age of the patients ranged from 6 months to 12 years. About 70% of patients fell in the range of 1-4 years of age. In one study carried out by Allen B Retik more than 95% patients were younger than 2 years of age. The study by Samuel and Hakim shows the median age of 19.9 months<sup>13,14</sup>. Our study has median age of 4 years. The reason for this age difference is late presentation of our patients. Lack of awareness about the minor congenital defect, lower socioeconomic status, delayed referral by attending physicians and fear of treatment expenses are the contributing factors for the delay. Thirty seven (61.66%) patients belonged to low socioeconomic group. Thirty nine (64.99%) children were born to mothers having age more than thirty years. This can be explained on the basis of the fact that congenital anomalies affect more commonly the children of mothers becoming pregnant in late age, especially if it is their first pregnancy.

The incidence of cryptorchidism (21.66%) and inguinal hernia (5%) in our study is similar to that reported by other. Upper urinary tract anomalies, spina bifida and macrocephaly as reported in literature were not seen in our cases<sup>15</sup>.

A family history of hypospadias was found in 26.66% of our patients with father being the most commonly affected member of the family (11.66%).

As regards our surgical procedure, following variations from and similarities with other studies have been found. A group A, two cases (6.66%) developed infection after early haemorrhage while in group B one case (3.33%) got infected. This is almost same as reported by other<sup>8,10</sup>.

Group A has four cases (13.33%) who developed urethrocutaneous fistula while in group B three cases (10%) developed this complication ( $P > 0.05$ ). Our percentage of fistula formation (11.6%) is variable from other series. It is slightly less as compared to Samuel et al and more as compared to studies by McCormack et al and Hakim et al<sup>8,12,14</sup>.

We re-operated three cases from group A and two from group B. Two patients, one from each group have very tiny fistulae which closed spontaneously.

We reported four cases (6.66%) of meatal stenosis (group A 3 and group B 1 case). All cases responded nicely to regular meatal dilatation. This is similar to Gospel et al series which has 6% incidence of meatal stenosis and retraction<sup>17</sup>.

Two patients (3.33%) from each group had complete disruption of repair. They underwent repeat surgery after 6 months with both showing acceptable results.

Eleven (36.66%) of our patients in group B developed urinary retention within first twenty four hours of surgery for which diversion was done. This is much higher an incidence as compared to Helio Buson et al series<sup>11</sup>. Pain and meatal occlusion were the two most important factors for retention urine in our series.

The use of stents and urinary diversion in repair of distal hypospadias is now being challenged. Some series show comparable results with or without stents while others claim significant reduction in complication rate with the use of stent. They claim 4.6% complication rate with stents as compared to 18.9% in unstented group<sup>11,18</sup>.

Group A in our series had 26.66% complication rate while group B showed a rate of 66.66% with overall complication rate of 46.66%. Goepel et al series had a complication of 35.5% with Mathieu repair. Retik AB et al have reduced the fistula rate in Mathieu repair by using a dorsal dartos flap to cover the neourethra same technique which we have applied to our cases<sup>19</sup>.

Average hospital stay in group A was 07 days while it was 02 days in group B ( $P < 0.05$ ). McCormack et al have reduced hospital stay with Mathieu repair by concluding that urinary diversion and urethral stents have no effect on surgical results except to prolong hospital stay<sup>12</sup>.

Overall 86.66% cases in group A and 83.33% in group B showed good cosmesis and no functional disability.

#### Conclusion:

Mathieu's repair without stent shortens hospital stay and consequent economic burden for the patient. Due to a large proportion of patients (36.66%) having urinary retention in early post operative period, we cannot recommend Mathieu's repair without stent definitely in our set up. A study on a larger scale is required to obtain some definitive conclusion.

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