



## Two Stages repair of proximal hypospadias: Review of 33 cases

Hatem A. Saafan

Department of Surgery, Pediatric surgery unit, Ain Shams University Hospital, Cairo, Egypt

**Background/Purpose:** Proximal hypospadias with chordee is the most challenging variant of hypospadias to reconstruct. During the last 10 years, the approach to sever hypospadias has been controversial.

**Materials & Methods:** During the period from June 2002 to December 2009, I performed 33 cases with proximal hypospadias, at Demerdash hospital; Ain Shams University; department of paediatric surgery. Data were collected retrospectively and included patient's age at operation, degree of the hypospadias, degree of associated chordee, the procedure performed complications and any repeated operation. All patients underwent 2 staged procedures with 9 to 12 month interval in-between.

**Results:** Thirty three patients with proximal hypospadias were operated upon in a period of 7 years. Byars's 2 staged operation was used in all 33 cases. All patients had 2 staged repairs. Neither complete disruption nor urethral diverticula occurred in the 33 patients. Twenty four patients had no complication. Single fistula was present in 6 patients . Two patients had 2 fistulas; one at the original site of the hypospadias and the other was sub-coronal. The last patient had moderate meatal stenosis, which was successfully treated by repeated dilatations.

**Conclusion:** Two Stages procedure using the principles of Byars's technique; is a versatile operation that can be used for the proximal hypospadias. It decreases the rate of fistula formation; disruption; stenosis and gives a satisfactory cosmetic appearance.

**Index Word:** proximal hypospadias, two stages repair.

### INTRODUCTION

Hypospadias is the third most common congenital deformity after clubfoot and hydrocele, with an incidence of 3-4 per 1000 live births. Rarely, it may be accompanied by undescended testis, kidney anomalies, hernias and other congenital anomalies. There have been many operations described for repair of hypospadias, which reflect the difficulty in getting optimum results from the surgery for this condition.<sup>1</sup>

Proximal hypospadias with chordae is the most challenging variant of hypospadias to reconstruct<sup>2</sup>. During the last 10 years, the approach to sever hypospadias has been controversial<sup>3</sup>. This controversy exists with regard to the best approach to proximal hypospadias. Although 1-stage repair have been shown to be successful for some forms of

proximal hypospadias , many still favor a more traditional staged approach when sever chordae is present to achieve adequate straightening and lengthening of the penis at the time of the first stage repair . This is achieved either by division of the urethral plate or Byars's flaps are created and mobilized ventrally to cover the ventral shaft of the penis<sup>4</sup>.

### PATIENTS AND METHODS

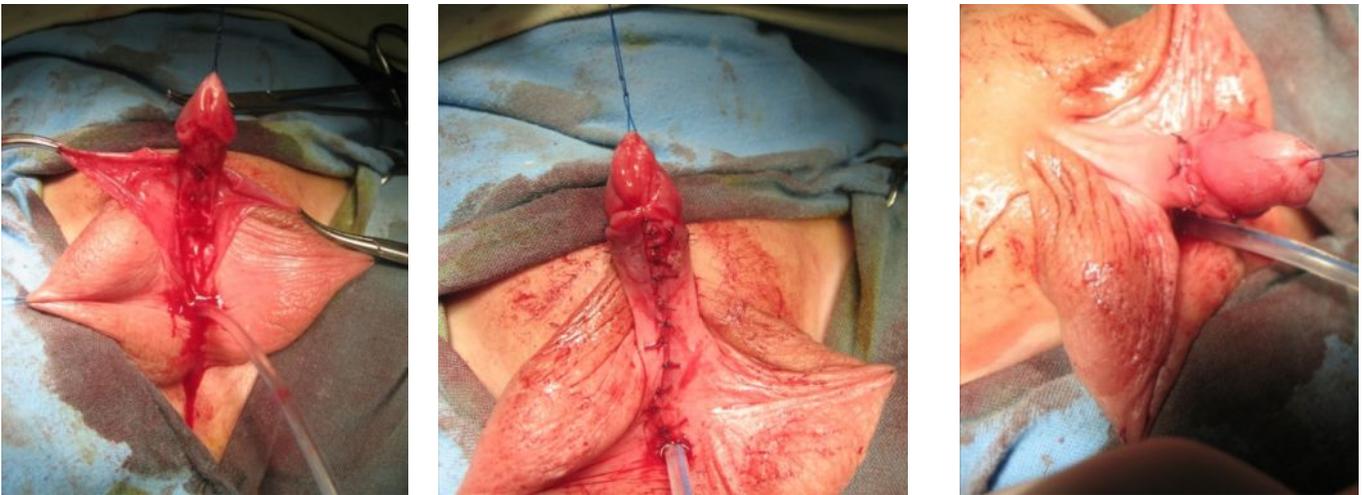
During the period from June 2002 to December 2009, I performed 33 cases with proximal hypospadias, at Demerdash hospital, Ain Shams University, department of paediatric surgery. Data were collected retrospectively and included patient's age at operation, degree of the hypospadias, degree of

associated chordee, the procedure performed, complications and any repeated operation.

The age of patients ranged from 2 to 6 years. The types of their hypospadias include proximal penile, penoscrotal, and scrotal hypospadias with bifid scrotum. Associated chordee was severe in 22 cases and moderate in the rest. All patients underwent 2 staged procedures with 9 to 12 month interval in-between. The first procedure was to release the chordee using Byars's technique with or without incising the urethral plate. The second procedure was the urethroplasty. Any other procedure for complications, like fistulas, was performed a year later.

### *The surgical Procedure:*

The patients were at least 2 years to have acceptable size structures. If the penis was relatively small, 3weeks local androgen cream was applied to enlarge its size and increase the vascularity .In the first procedure; the Byars's technique was performed. A 4 /0 Prolene stitch was placed on the glans for traction and a suitable urethral catheter was inserted. A circumferential dorsal incision was made about half cm from the base of the glans. This was advanced ventrally till 2mm from the urethral plate; then proximally along the plate till it passes along the proximal edge of the urethral meatus.



**Fig.1. First procedure: a) creation of Byars's Flaps, b) suturing of the flaps, c) end of the first procedure.**



**Fig.2. Second procedure: a) formation of the neo-urethra, b) skin closure, c) dressing**

Complete degloving of the penile shaft was performed till its base. Then artificial erection was

performed to demonstrate any residual chordee. If this persisted; transection of the urethral plate is done just proximal to the glans. The dorsal preputal skin was then incised in the middle and the two flaps were brought ventrally. These were sutured to the edges of the urethral plate or, if it was transected, to each other in the midline of the shaft .(Fig 1). The catheter was removed after 3 days.

**Urethroplasty:** nine to twelve month later was performed. Again a traction suture and a suitable urethral catheter were applied. The plate; if still present; or the rotated skin was tubularized around the catheter to make the new urethra using 6/0 Polyglactin continuous suture. This tube must be of a sufficient width to allow the catheter to be removed without tearing the neo-urethra. (Fig 2. A) A second layer from the penile adventitial tissues was raised and sutured over the neo-urethra making sure that the two suture lines are not directly over each other and the second layer was mobilized enough to reach the glans tip . At last, the penile skin is sutured as a third layer. The dressing was removed after 48 hours and the catheter after 7-10 days.

## RESULTS

Thirty three patients with proximal hypospadias were operated upon in a period of 7 years. Fourteen patients had proximal penile Hypospadias, 17 patients with penoscrotal hypospadias, only 2 patients with scrotal hypospadias with bifid scrotum .

**Table 1. Types of hypospadias and the number of patients in each type**

Type of hypospadias	Number of patients
proximal penile Hypospadias	14
penoscrotal hypospadias	17
scrotal hypospadias	2

The follow up period ranged from 2m to 8 years

All patients had 2 staged repairs. Byars's technique was used as the first stage. At least 6 month later, the urethroplasty was done in the second stage to create the neo-urethra from the rotated skin of the first stage. None of my patients needed neither skin nor bladder mucosal grafts.

Neither complete disruption nor urethral diverticula occurred in the 33 patients. Twenty four patients had no complication. Single fistula was present in 6 patients at the original site of the hypospadias and was re-closed 6-9 month later in 5 cases. The last one is still waiting for closure of the fistula. Two patients had 2 fistula; one at the original site of the hypospadias and the other was sub coronal. The two fistulae were closed a year later from the second procedure. No recurrence occurred in the 7 cases operated upon for closure of fistulae. The last patient had moderate meatal stenosis, which was successfully treated by repeated dilatations. No recurrence of chordee occurred in any patient in the series. (Table 2).

**Table 2: incidence of complications:**

Complication	% of patients
complete disruption	0
Single fistula	18
double fistula	6
meatal stenosis	3
urethral diverticulae	0
recurrence of chordae	0
Total %	27

## DISCUSSION

Surgery for hypospadias, especially the more proximal types, has always been a tricky and difficult operation. This is shown by the number of operations described in the literature on the surgical treatment of this congenital deformity. Over the years, many techniques have evolved ranging from one stage procedure, where correction of chordee and simultaneously creation of the new urethra, to two stages procedure; where creation of the new urethra is done in a separate operation <sup>5</sup>.

Horton et al reported that only 10 % of all hypospadias cases are in the proximal shaft of the penis , penoscrotal or perineal <sup>6</sup>. This group of hypospadias patients represent a major challenge to the paediatric urologist, with a higher incidence of recurrence and complication than the more proximal cases .

In this series, Pyar's 2 staged operation was used in all 33 cases with proximal hypospadias .This operation is

very versatile because it can be used to treat any type of hypospadias whether proximal or distal. Being a vascularized skin flap, it is very reliable when used in the first stage, providing a vascularized skin available to resurface the raw area that has been created as a result of chordee correction. This need for a large vascularized flap to cover this raw area is especially needed after release of chordee in the more proximal hypospadias. The other advantage of Pyar's operation is that on completion of the procedure, there is no need to do circumcision<sup>7</sup> which is a big advantage to our patients.

The size of the neo-urethra is of utmost importance; it must be adequate enough to prevent tearing of the urethra when the catheter is removed. I think if we put a very small catheter (4 or 5 Fr) at the end of the second stage operation, we may abolish the need for a supra-pubic catheter; making the wound dry if cautiously kept patent all the time<sup>5</sup>. Tears in an already fragile tissue often lead to fistula formation. The second layer is also important in providing an extra layer to prevent fistula formation.

Complication of surgery for hypospadias are complete disruption, fistula formation, stenosis, post operative bleeding, recurrence of chordee or excess skin at the glans. The most common complication is fistula formation. Various factors have been implicated in fistula formation such as infection, trauma and poor healing. Other factors may include back pressure, turbulence, narrowing, skin bridges or crests on irregular surface of the new urethra. The incidence of fistula formation is reported to be from 3% to 50% and it is higher in the more proximal hypospadias<sup>8</sup>. In this series, the fistula rate was 24.2% (8 out of 33 patients). These fistulae were small and easily closed without any further complication.

A single case with meatal stenosis (3%) was successfully managed by repeated dilatation without general anesthesia. This low rate of meatal stenosis could be attributed to the size of the neo-urethra which was made wide enough. There was no complete disruption in any of the cases in this series nor recurrence of chordee. Satisfactory cosmetic

results were achieved in all cases.

## CONCLUSION

Two Stages procedure using the principles of Pyar's technique is a versatile operation that can be used for the proximal hypospadias. It decreases the rate of fistula formation, disruption and stenosis, and give a satisfactory cosmetic appearance.

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