Abstract

Aim of the Study: To determine factors affecting the repair of the two stage repair for severe type of hypospadius

Patients and Methods: Forty male patients age between 2-12 with mean 5 years, operated for penoscrotal(20) patients, scrotal(12) patients and perineal(8) patients hypospadius in Hilla teaching Hospital between 2003-2008. All patients underwent two stage repair including correction chordee in the first stage and neourethra formation with meatal advancement in second stage.

Results: Twenty patients(50%) had penoscrotal, 12(30%) had scrotal and 8(20%) had perineal hypospadius. Twelve patients(30%) had undescended testis and 7(17.5%) had inguinal hernia. The chromosomal analysis was XY in 35(87.5%), 3 patients(7.5%) had XYlXX mosiasim and 2(5%) patients had XYlXO while UlS result, 2(5%) had female internal organ (uterus). Androgen in form of testoteron given in 15(37.5%) patients for lengthening the phallus in dose of 100 mg single dose in 7 patients, two doses in 5 patients and three doses in 3 patients. The most common complications were local edema occuring in all patients, local hematoma in 6(15%) patients, urethrocutaneous fistula in 18(45%), meatal stenosis in 8(20%) and local infection in 3(7.5%).

Conclusions: The main factors which help in getting optimal result of hypospadius repair include the preparation of the phallus with testosterone therapy in selected cases, use of water proof dressing, refined suture material and above all, tissue respect and meticulous surgical technique inspite of these precaution still the incidence of urethrocutaneous fistula carry high incidence in our patients because all our patients had severe type of hypospadius which expected to carry this incidence of fistula.

Introduction

Surgery for hypospadius repair has been refined over the past two decades initially the incidence of complications very high. The success of surgery after hypospadius repair can be attributed to the technique used and the level of hypospadius and whether associated chordee is present or not in case of severe chordee; one staged repair or tabularized flap gives better result but
the incidence of fistula is much higher as several repairs are performed at one time[1,2].

Other factors that play a significat role in the success of surgery are availability of fine suture material, use of dartos pedicle flap to cover repair and use of waterproof dressing. This has been proved by objective scoring system for evaluation of result of surgery as described by Holland et al [3], and by uroflowmetry evaluation as described by Hammoda et al [4].

Classifications of hypospadius: Most physicians use the classification proposed by Baracat and modified by Duckett, which described location of meatus after correction of any associated chordee[5].

Anterior (glandular, coronal) 50%
Middle (dista penile, midshaft and proximal penile) 20%
Posterior (penoscrotal, srotal and perineal) 30%

Associated anomalies: undescended testis and inguinal hernia are most common associated anomalies, in 1981 Khuri, areview of over 1000 patients with hypospadius reported that the incidence was 9% for each undescended testis and inguinal hernia with more severe forme of hypospadius the incidence of undescended testis is 30% and the incidence of inguinal hernia approach 20% (6).

Disorder of sexual (DSD) or intersex: In 1999 a study by Kaefer et al, DSD state were identified in approximately 30% of patients with unilateral or bilateral undescended testis and hypospadius and more proximal carried a higher association of DSD states than more distal meatal location, if any gonad was non palpable the incidence rose to 50%, if both gonads palpable the incidence was only 15%(7).

Patients and Methods

Forty male patients age 2-12 years with mean 5 years, operated for penoscrotal(20 patients), scrotal(12 patients) and perineal(8 patients) hypospadius in Hilla Teaching Hospital between 2003 -2008

Full maternal history, pregnancy and birth record, any drug taken during pregnancy or any other complication occur

Physical examination includes general examination and local examination (penis to see the size of the phallus, type of hypospadius, severity of chordee), bifid scrotum and look for undescended testis and inguinal hernia.

All patients was sent for Chromosomal analysis to determine sex of the patient especially patients with small phallus, undescended testis or impalpable testis and patients with female internal organ on ultrasound.

All patients sent for abdominal ultrasound to see internal genital organ especially for uterus and gonads were also to see other parts of urinary tract

Blood and urine examination done for all patients,other radiological tests sent according to the result of ultrasound.

Surgical technique: All operation done were under general anesthesia in two stages, first stage include complete correction of chordee by excision of all fibrous tissue followed by mobilization of dorsal skin and the prepuce to cover ventral aspect with straightening of penis. The type of suture material used were 04 cat gut, bladder drainage by Folys catheter (8-10) French for 5 days.

second stage repair by neourethra formation using Snodgrass technique the suture material used were 04 catgut in first 12 patients and polyglycolate 04 suture in other patients this is because not all the time any suture
material available. (the type of suturing used were continuous subcuticular for first layer using magnification by ophthalmological loop, second layer covered by interrupted dartus flap the third layer by interrupted suturing of the skin).

Dressing used were guaze socked with povidon iodine covered with plaster for 2 days then change the dressing to open method using softratule for seven days. catheter drainage used 8-10 F Folys catheter for bladder drainage and suprapubic catheter used 10F catheter. The urethral catheter left for 7 days and suprapubic catheter removed after 10 days. The antibiotic cover by cefotaxime 50 mg/kg for three days then change to oral cephalexin fo 2 weeks.

Follow up for both stages were after first week, 2 weeks, one month and 3 months until complete healing occur and satisfactory result obtained.

Results

Forty patients with hypospadius their age 2-12 years mean 5 years had severe type hypospadius 20(50%) peno scrotal, 12(30%) scrotal and 8(20%) perineal) underwent repair in two stages first stage correction chordee with straightening of penis and second stage neourethera formation.

Twelve patients(30%) had undescended testis and 7(17.5%) had inguinal hernia. The testes were palpable in two cases bilaterally, one patient had only right palpable testis other 9 patients had undescended testis in inguinal area in 4 in the right side and 2 in the left side and remaining 3 had bilateral testes.

The chromosomal analyses were xy in 35(87.5%) patients other 3(7.5%) patients had xylxx mosiasim and 2(5%) patients had xylox.

Ultrasound result, two (5%) patients had female internal organ (uterus).

Androgen in a form of testosterone given in 15(37.5%) patients for lengthening of phallus in dose 100mg single dose in 7 patients, two doses in 5 patients and three doses in 3 patients.

Complications of first stage: local edema in all cases and treated conservatively. local hematoma occurs in 6(15%) patients also treated conservatively. the result of chordee correction were excellent in all cases with complete excision of all fibrous tissue and straightening of the penis and no residual chordee left.

Complications of second stage: early complications of local edema occur in all cases and hematoma in 3 patients treated conservatively. late complications, the most important one is urethrocutaneous fistula occur in 18(45%) patients treated after 6 months by excision of the fistula tract with suturing in 2 layers using polyglycolate 04 with catheter drainage for 14 days all did well except one patient who need second operation for fistula repair.

Meatal stenosis occurred in 8(20%) patients treated by serial dilatation of the meatus. Infection of the wound occur in 3(7.5%) patients 2 end in fistula formation and one end in complete disruption of the wound need reoperation. One patient developed diverticulum needed revision and did well post operatively. No urethral stricture was reported in our patients.

Table 1

<table>
<thead>
<tr>
<th>Type of hypospadius</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penoscrotal</td>
<td>20</td>
</tr>
<tr>
<td>scrotal</td>
<td>12</td>
</tr>
<tr>
<td>perineal</td>
<td>8</td>
</tr>
</tbody>
</table>
Table 2 Associated anomalies with hypospadius

<table>
<thead>
<tr>
<th>Type of anomaly</th>
<th>Number of patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undescended testis</td>
<td>15</td>
</tr>
<tr>
<td>Indirect inguinal testis</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 3 Chromosomal analysis

<table>
<thead>
<tr>
<th>Type of chromosome</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>XY</td>
<td>35</td>
</tr>
<tr>
<td>XYIIXX</td>
<td>3</td>
</tr>
<tr>
<td>XYIIXO</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4 Complications of second stage

<table>
<thead>
<tr>
<th>Type of complications</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local edema</td>
<td>40</td>
</tr>
<tr>
<td>local hematoma</td>
<td>6</td>
</tr>
<tr>
<td>Urethrocutaneous fistula</td>
<td>18</td>
</tr>
<tr>
<td>Meatal stenosis</td>
<td>8</td>
</tr>
<tr>
<td>local infection</td>
<td>3</td>
</tr>
</tbody>
</table>

Discussion

The repair of penoscrotal transposition is often performed as one stage procedure but excessive chordee especially if transection of urethral plate is required poor skin availability and small phallic size may be better approach in astaged manner; the chordee is repaired; the skin is mobilized to ventral penile shaft during first stage, and urethroplasty and gladuloplasty are repaired after first stage has completely healed; in addition some authors have been disappointed by the result of repair for the severe form of hypospadius and have turned back to the two stage repair Bayars or Durham Smith technique [8], this is our approach to the patients due to severe degree of hypospadius in all our patients, small size phallus, severe chordee need complete excision and one stage repair were difficult in our patients so we prefer the two stage procedure although in this approach the complications of fistula was high. The preparation of phallus for surgery with androgen increases the size of the phallus and its vascularity which helps in better flaps construction and wound healing we use testosterone i.m in 15 patients preoperatively which help in lengthening of the phallus and easier repair of hypospadius.

Khuri and coworker 1981 found 32% incidence of undescended testis with third degree hypospadius while inguinal hernia associated hernia in 17%[6] in our study the incidence of undescended testis was 12 patients, in 2 patients the testes were impalpable bilaterally, one patient had only right impalpable testis, in 4 patients had right testis in the inguinal area and 2 patients had left inguinal testes remaining 3 had bilateral inguinal testes .the incidence of inguinal heria in 7 patients all had right side hernia.

The presence of severe hypospadius is thought by some to be a form of itersex and the diagnosis of intersex must be role out in more severe type of hypospadius especially in those with cryptorchidism[7]. In the present study 3 patients had bilateral cryptorchidism, perineal hypospadius and chromosomal analysis showed xylxx while two patients had impalpable testis, uterus
and chromosomal analysis showed xylxoxo the gonad was ovitests in one side and testistis in other side. These patients treated by hysterectomy and removal of the mixed gonad and biopsy from the testis.

Urethrocutaneous fistula is a major concern in hypospadias repair the rate of fistula formation is 10-40% depending on the severity of hypospadias [9,11], surgical technique, suture material, and type of dressing. In our patients the incidence of fistula was 18(45%) this high incidence was because our patients had severe type hypospadias with severe degree chordee need full correction which can not be done in one stage, second factor the first cases the type of suture material used was catgut 04 because the only available suture at that time in addition the anastomosis not cover by dartus flap, but with the time and growing experience and use polyglycolate suture with subcuticular watertight suturing using ophthalmological loop for magnification gave better result and the incidence of fistula much reduced.. other factors like the way of dressing and drainage of the bladder by urethral catheter and suprapubic catheter also play role in the repair.

Meatal stenosis is a complication due to technical error by over enthusiastic closure of the meatus this can easily treated by serial graduation of new urethra or dilatation [12]. Meatal stenosis occur in8(20%) of our patients due to over closure of the meatus simply treated by serial dilatation.

**Conclusion**
The main factors which help in getting optimal result of hypospadias repair include, preparation of phallus with testosterone therapy in selected cases, use of waterproof dressing, refined fine suture material and above all, tissue respect and meticulous surgical technique. Inspite of these precautions still the incidence of fistula is high and this may be due be due to the selected cases had severe type of hypospadius and the incidence of fistula is expected to be high.

**Prognosis**
With modern anesthetic instrument, suture material, dressing material and antibiotic, hypospadias repair has become quite successful. Long term studies on the outcomes of hypospadius using current practice are limited although some earlier studies have been discouraging. These reflect an era with poorer technical outcomes, increased number of operations, and a lack of appreciation for the psychological morbidity associated with intervention at an older age[13].

**References**
6- Khuri FJ, Hardy BE, Churchill BM. Urologic anomalies associated with
13-Snodgrass WT. The learning curve in hypospadius surgery. BJU Int. Jul 2007; 100-104.