Objective: To prospectively evaluate an increasingly popular method of hypospadias repair.

Patients and methods: Twelve patients with coronal, sub coronal and midpenile hypospadias were subjected to tubularised incised plate (TIP) urethroplasty as the primary procedure in Mombasa, Kenya. Their ages ranged from two years to eight and a half years.

Results: Three patients developed superficial skin necrosis of the ventrally transposed prepucial flaps. There was no breakdown, meatal stenosis, and stricture or fistula formation. The cosmetic results were good.

Conclusion: The tubularised incised plate hypospadias repair produced good cosmetic results with no breakdown, stricture, meatal stenosis or fistula.

Introduction

Modern hypospadias repair techniques strive to achieve a good functional result and a normal appearance. Warren T Snodgrass in 1994 described a tubularised incised plate (TIP) urethroplasty.

Since then there have been many reports of the use of this technique for distal hypospadias, proximal hypospadias and repeat shaft hypospadias. A prospective application of this technique was made in a regional setting.

Patients And Methods

Twelve boys aged between 2 and 8.5 years (mean 4 years) were subjected to TIP urethroplasty between August 2000 and October 2002, a span of about 2Yrs at the Coast Province General Hospital in Mombasa and in some private hospitals, nearby.

The patients belonged to distal and mid hypospadias according to the Barcat classification. This defines glandular, coronal and sub coronal, positions of the meatus as anterior or distal hypospadias; distal, mid and proximal shaft positions as mid hypospadias; penoscrotal, scrotal and perineal positions as posterior or proximal hypospadias (TABLE 1).

Surgical Technique (Fig 1).

A fine nylon traction suture is placed onto the glans. This is later used to anchor the urethral stent.

A U-shaped incision is made around the hypospadiac meatus, extending to the glans tip. The penis is completely degloved to the penoscrotal junction. Artificial erection test is done to check for residual chordee. Residual penile curvature is corrected by dorsal tunica albuginea plication.

- The glans wings are mobilized laterally.
- A midline relaxing incision is made from within the meatus to the distal extent of the plate and deepened to the corpora cavernosa. A 6 or 8 Fr stent is passed into the bladder.
- Tubularisation of the plate is done with interrupted 6/0 polyglactin.
- A dartos pedicle is mobilized from the dorsal prepuce and shaft skins, button holed and transposed ventrally to cover the entire neourethra.
- Glansplasty is done by approximation of the glanular wings.
- The dorsal prepuce is split in the middle and the two flaps transposed ventrally on either side, stitched to the mucosal collar, and ultimately trimmed and stitched to each other in the midline anteriorly.
- The stent is kept for 7 - 10 days.

Results

Tunica albuginea plication was required in 2 patients with sub coronal and midpenile hypospadias. 3 patients developed superficial skin necrosis of the ventrally transposed skin. This did not alter outcome. This occurred among the initial group of patients to undergo this procedure.

There was no meatal stenosis, no stricture, no urethrocutaneous fistula and no breakdown (TABLE 2).

The criteria for a good result were a straight penis, unimpaired forward directed urinary stream, a conical glans and a vertical slit glandular meatus. This was achieved in the patients studied.
Table 1. Types Of Hypospadias.

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Associated chordee</th>
<th>Dorsal plication Done</th>
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<tbody>
<tr>
<td>Coronal</td>
<td>7</td>
<td>2</td>
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</tr>
<tr>
<td>Subcoronal</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Distal penile</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Mid penile</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>5</td>
<td>2</td>
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</table>

Table 2. Complications

<table>
<thead>
<tr>
<th>COMPLICATION</th>
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</tr>
</thead>
<tbody>
<tr>
<td>MEATAL STENOSIS</td>
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</tr>
<tr>
<td>URETHRAL STRURET</td>
<td>0</td>
</tr>
<tr>
<td>FISTULA</td>
<td>0</td>
</tr>
<tr>
<td>BREAKDOWN</td>
<td>0</td>
</tr>
<tr>
<td>SUPERFICIAL SKIN NECROSIS OF TRANSPOSED FLAPS</td>
<td>3</td>
</tr>
</tbody>
</table>

Fig 1
A. Initial skin incisions.  B. Urethral plate is released from the glans.  C. Midline relaxing incision of the urethral plate.  D. Urethral plate tubularised over urethral stent.  E. Darts pedicle is mobilized from the dorsum of penis.  F. Darts pedicle covers the neourethra, and then glanuloplasty is done.  G. Prepuce skin is split and stitched to the mucosal collar.  H. Ventral midline closure of the prepucial skin.

Discussion

The TIP urethroplasty described by Snodgrass has gained much popularity, not only for distal hypospadias but also for proximal and repeat hypospadias repairs.

The incision on the urethral plate is expected to re-epithelialise on account of good vascularity hence dispelling the fear of urethral stricture.

Once the penis is degloved, the incidence of residual chordee declines dramatically. Chordee not corrected by degloving the penis needs dorsal plication to straighten the penis, hence preserving the urethral plate.

Many authors believe that even in severe hypospadias, the urethral plate may not require division to produce a straight penis. It is agreed that there is no fibrotic tissue beneath the urethral plate that must be excised; therefore this is not done to avoid jeopardizing its blood supply. In my study patients with moderate chordee required dorsal plication.

The covering of the neourethra with a de-epithelialised inner prepuce dartos flap was done in all cases and contributes to reduction in the incidence of complications. If the flap is buttonholed to bring it ventrally, then there is no lateral bulk, which is seen when the flap is rotated around the penis.

Cosmesis was good, contrasting with other types of repair, which are functional, but with questionable appearance.

The low complication rate encountered compares favourably with that reported by Snodgrass and Sugarman.

Conclusions

Tubularised incised plate hypospadias urethroplasty is a versatile method of hypospadias repair. It has few complications and besides constructing a functional neourethra, it produces good cosmesis.

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REFERENCES


