

Tubularised Incised Plate Hypospadias Urethroplasty In A Regional Setting

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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 prepuce 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 appearance¹. Warren T Snodgrass in 1994 described a tubularised incised plate (TIP) urethroplasty².

Since then there have been many reports of the use of this technique for distal hypospadias^{3, 4}, proximal hypospadias⁵ and repeat shaft hypospadias repairs^{6, 11, 12}.

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 Kenya and in some private hospitals, nearby.

The patients belonged to distal and mid hypospadias according to the Barcat classification⁷. 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 chordee²⁰. Residual penile curvature is corrected by dorsal tunica albuginea plication⁸.

- 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 skin 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.

Type	No.	Associated chordee	Dorsal plication Done
Coronal	7	2	
Subcoronal	3	2	1
Distal penile	1	-	
Mid penile	1	1	1
Total	12	5	2

Table 2. Complications

COMPLICATION	NO.
MEATAL STENOSIS	0
URETHRAL STRICTURE	0
FISTULA	0
BREAKDOWN	0
SUPERFICIAL SKIN NECROSIS OF TRANSPOSED FLAPS	3

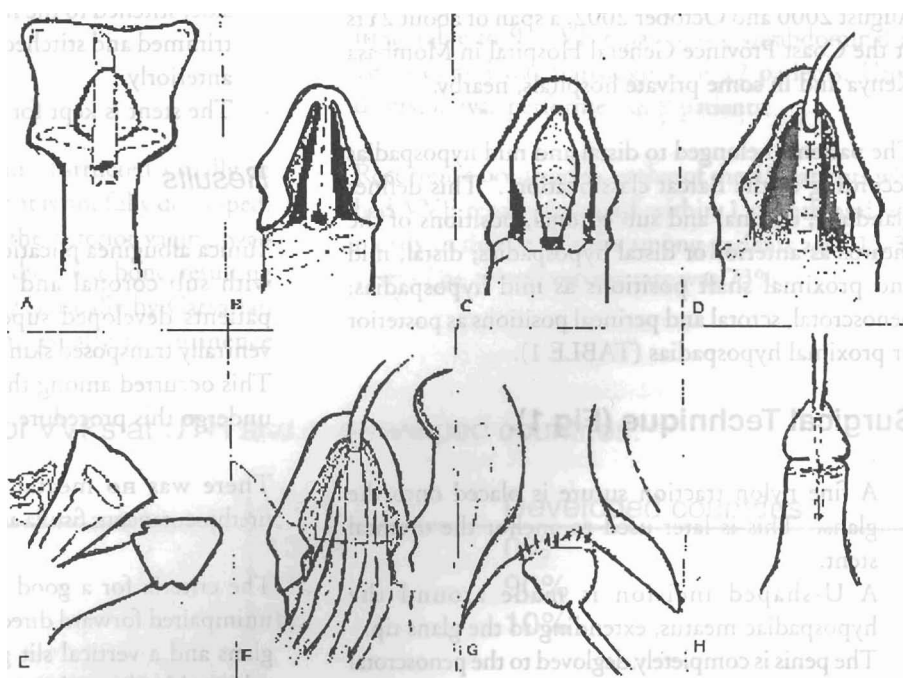


Fig 1

Fig 1. Surgical Outline

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. Dartos pedicle is mobilized from the dorsum of penis. F. Dartos pedicle covers the neourethra, and then glanuloplasty is done. G. Prepuccial skin is split and stitched to the mucosal collar. H. Ventral midline closure of the prepuccial skin.

Discussion

The TIP urethroplasty described by Snodgrass has gained much popularity⁹, not only for distal hypospadias but also for proximal and repeat hypospadias repairs^{10, 11, 12}.

The incision on the urethral plate is expected to re-epithelialise on account of good vascularity hence dispelling the fear of urethral stricture^{1, 13}.

Once the penis is degloved, the incidence of residual chordee declines dramatically¹⁴. Chordee not corrected by degloving the penis needs dorsal plication¹⁵ 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 agreed¹⁵ 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 study² patients with moderate chordee required dorsal plication.

The covering of the neourethra with a de-epithelialised inner prepuccial dartos flap was done in all cases and contributes to reduction in the incidence of complications. If the flap is buttonholed to bring it ventrally¹⁶, 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^{17, 18}.

The low complication rate encountered compares favourably with that reported by Snodgrass^{2, 19} and Sugarman⁹.

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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