

East African Medical Journal Vol. 78 No. 6 June 2001

TUBULARISED, INCISED PLATE URETHROPLASTY FOR DISTAL HYPOSPADIAS

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## TUBULARISED, INCISED PLATE URETHROPLASTY FOR DISTAL HYPOSPADIAS

S. M. BARRACK and S. H. HAMDUN

### ABSTRACT

**Background:** Over the years our results of urethroplasty for hypospadias were dissatisfactory. We have used different surgical methods for repair of hypospadias and we had had about 76% fistula formation, urethroplasty break-down. For this reason, we are looking for surgical procedures which can improve our results such as less complications and good cosmetic appearance of the glans. The tubularised, incised plate urethroplasty for distal hypospadias described in the literature is a very attractive procedure with few reported complications and good cosmetic results.

**Objective:** To describe the distal urethroplasty and glanuloplasty procedure, a modification of the Thiersh-Dupley method to determine indications, outcome and complications.

**Design:** Prospective clinical study.

**Setting:** Paediatric Surgical Unit, Kenyatta National Hospital, Nairobi, Kenya.

**Subjects:** Twenty patients aged one and a half to seven years with coronal, subcoronal and midshaft penile hypospadias variant underwent Thiersh-Duplay procedure with Snodgrass modification.

**Results:** Meatal stenosis occurred in two boys. In one patient, meatal stenosis responded to one dilatation. In the second patient a meatotomy was performed. Fistulae developed in four patients. In one patient the fistula closed spontaneously after one month on its own.

**Conclusion:** The advantages of distal hypospadias repair using a tubularised, incised urethral plate are: it gives an excellent cosmetic and functional result and a decreased risk of urethroplasty breakdown, fistula formation and meatal stenosis.

### INTRODUCTION

Hypospadias is a fairly common anomaly. Many surgical techniques for the repair of hypospadias have been developed and described over the past 20 years. All methods reported from various centres offer good results and low complication rates. Recent methods have attempted to improve further the cosmetic appearance. Thiersh-Duplay technique modified by Snodgrass gives desirable functional and cosmetic results for distal hypospadias; a conical shape of the glans and a slit-like meatus. Recent experience shows that incising the entire urethral plate in the midline from hypospadiac meatus to the glanular tip provides generous mobility for tubularisation without the use of supplemental flap. This technique is presented as an alternative to meatal-based onlay island flap procedure for distal hypospadias with minimal chordee.

### MATERIALS AND METHODS

From March- August 1999, twenty boys were seen in outpatient clinic with distal penile hypospadias. Haemogram, urea and electrolytes, and urinalysis were done as outpatient and the children admitted to ward one day prior to surgery. Ages of

children at the time of surgery ranged from one and a half to seven years (mean age 3 years 3 months). All the 20 boys underwent urethroplasty using the Thiersh-Duplay technique modified by Snodgrass.

**Surgical technique:** Key steps of the tubularised, incised plate urethroplasty are as follows:

- (i) Glans was retracted with stay suture 4-0 or 5-0 nylon.
- (ii) Urethral catheter, usually, a feeding or suction tube 8-10F, was passed from the hypospadiac meatus to the bladder.
- (iii) Parallel longitudinal skin incision was carried 1-2 mm proximal to the hypospadiac meatus.
- (iv) A circumferential incision made 2-3 mm below the coronal sulcus dorsally and up to the urethral plate ventrally.
- (v) The tourniquet was then applied at the penoscrotal junction.
- (vi) The penile shaft was degloved to the penoscrotal junction.
- (vii) Glanular wings were dissected laterally to facilitate subsequent glans closure.
- (viii) The edges of the urethral plate were gently elevated and retracted laterally with fine stay sutures. The plate was then incised in the midline from the meatus to the tip of glans. The incision was carried deep enough so the urethral plate can be tubularised with a diameter exceeding 10-12F catheter. A 5-0 round body vicryl was then used to close the plate over a 6F or 8F catheter depending on the age of child. (unfortunately at the present time we do not have finer sutures). The catheter provides urinary drainage for 10 days.

- (ix) Vascularised subcutaneous tissue was dissected from the dorsal preputial skin and then rotated ventrally to cover the neourethra.
- (x) Glanular wings were approximated in the midline, with mattress sutures and skin closed over the shaft.

To prevent fistula formation, a transverse island of dorsal subcutaneous tissue was used in some patients to cover the repair. Care was taken not to compromise the blood supply to the skin that was used in the skin closure and not to have a penile torsion. All 20 patients at the end of the urethroplasty had a stent for 10 - 14 days

**RESULTS**

Follow up ranged between four to six months. All 20 children had a conical shape of glans and a terminal meatus with a vertical slit-like configuration.

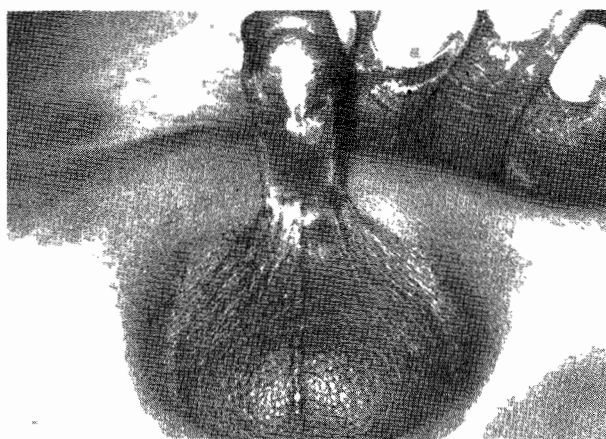
**Table 1**

*Variant types of the distal hypospadias*

Variant	No.
Glans	1
Coronal	5
Subcoronal	7
Midshaft	7
Total	20

**Figure 1**

*Sub-coronal hypospadias before surgery*



**Table 2**

*Results of the urethroplasty for the distal hypospadias*

	No.
Passing urine as per tip	15
Meatal stenosis	2
Urethral stenosis	0
Fistula	3
Urethroplasty breakdown	0
Total	20

**Figure 2**

*Penile shaft hypospadias before surgery*



**Figure 3**

*Urethroplasty outcome: conical shape of the glans*



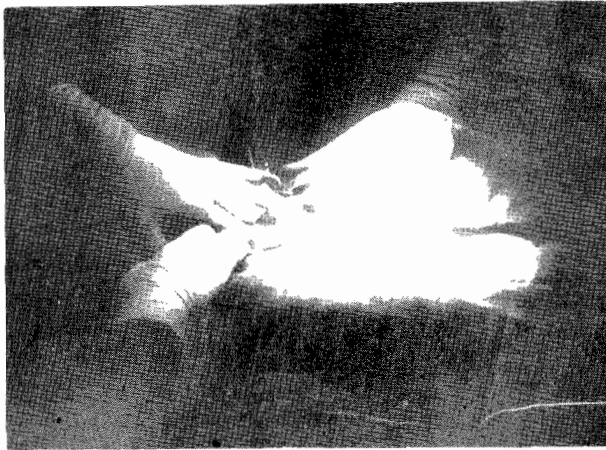
**Figure 4**

*Urethroplasty outcome: slit-like meatus*



Figure 5

*Urethroplasty outcome: passing urine per tip, good urine stream*



Meatal stenosis was seen in two boys. One patient had a good urine stream after one meatal dilatation and in the second patient a meatotomy was performed after which he was passing urine without strain. A fistula developed in four patients. In one patient a small fistula closed after one month on its own.

## DISCUSSION

A number of surgical procedures have been developed for different variants of hypospadias (1). MAGPI procedure was developed to correct a meatus which otherwise deflects the urine stream downwards (2,3). Mathieu, onlay and island pedicle flap has been used for repair of distal and proximal hypospadias with a few recorded complications, although the glans appearance of a fish-mouth like is not uncommon.

Bladder mucosa graft had a period of popularity but overall results were disappointing. Where a free graft was required for repair of hypospadias, a buccal mucosa graft gives better results (4-7). Our experience with most of these procedures had been disappointing. Retrospective study showed that urethroplasty breakdown and fistula formation was 76%. Partly, it could be attributed to the experience of the surgeon in performing urethroplasty, which has been done by various surgeons sporadically. Concepts of hypospadias repair have been changing in the years. Most urethroplasties are now done in one stage, and the urethral plate preserved for reconstruction of the neourethra, so that neourethra has an intact blood supply which provides faster healing and fewer complications (6-8).

The refinements of hypospadias technique, developed over the last 20 years, have provided better cosmetic and functional outcome. A vertical oriented slit-like meatus is most consistently achieved with a Snodgrass modification of the Thiersh-Duplay repair. Deep incision of the urethral plate does not compromise its viability. The dorsal (incised) surface usually re-epithelises rapidly within 10-14 days (9-12).

Our experience with this method of urethroplasty repair is encouraging and promising. In twenty cases of performed urethroplasties our rate of complications such as

fistula formation, urethral and meatal stenosis decreased. No urethroplasty breakdown has so far developed. At the same time the cosmetic appearance of the glans, is excellent. It has a conical shape and slit-like meatus. Although Steckler and Zaontz have reported stent-free Thiersh-Duplay hypospadias repair with the Snodgrass modification, we have followed the original Snodgrass modification and a stent was placed in all our urethroplasties (9,10). Infact, we had one fistula when the stent got blocked and came off on the second day after urethroplasty. On follow up, 20 children had good cosmetic and functional results.

In conclusion, in this series the Thiersh-Duplay urethroplasty with Snodgrass modification of distal hypospadias with no or minimal chordee is a procedure which allows to preserve the urethral plate and provides a good blood supply for the neourethra. The advantages of this procedure include a reduced risk of urethroplasty breakdown, fistula formation, meatal and urethral stenosis. It also gives good cosmetic and functional results.

## ACKNOWLEDGEMENTS

I wish to express my gratitude to Lucy Nduru for her secretarial assistance and the surgical team of Kenyatta National Hospital for their support in this study.

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