ORIGINAL RESEARCH PAPER

Medical Science

MODIFIED DURHAM SMITH TWO STAGE URETHROPLASTY FOR SEVERE HYPOSPADIAS (OUR EXPERIENCE)

KEY WORDS: Hypospadias, Two stage repair, Durham Smith

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ABSTRACT

OBJECTIVES: Hypospadias repair especially the proximal variety continues to be a surgical challenge. Two stages repairs have regained popularity of late. A single institution initial experience with two stage Durham Smith urethroplasty is presented.
METHODS: Between May 2016 and February 2017, 25 patients underwent stage 1 repair whereas in 6 patients both stages were completed. Age range of the patients was between 1 - 11 years.
RESULTS: There were no major complications. No fistula in those who underwent both stages. No case of skin dehiscence. Two patients (stage 1) had local edema persisting beyond POD 10 which resolved with conservative treatment. Cosmetic result was excellent.
CONCLUSION: Durham smith staged urethroplasty with slight modification is a good alternative in patients requiring a staged repair. Cosmetic results are good with meatus at the tip of glans. It has a relatively shorter learning curve .

INTRODUCTION

Hypospadias is one of the most common congenital anomalies defined by abortive development of the urethral spongiosum, the ventral prepuce and in more severe cases penile chordee.[1] Despite a large number of techniques described, the history of hypospadias surgery seems to be a continuous revision of few themes with very few milestone innovations down the way.[2] One such recurring theme is the dispute between single vs. two-stage repairs. Now-a-days, there is a renewed interest in the two-stage repair, as it seems to be able to both reduce morbidity and improve cosmesis in the correction of the most severe forms of hypospadias.[3] We present our initial experience with two stage Durham Smith de-epithelialised technique in the repair of hypospadias with slight modification.

MATERIAL AND METHODS

Between May 2016 and February 2017, 25 patients underwent stage 1 repair whereas in 6 patients both stages were completed.

Operative technique:

Stage 1: After penile degloving, the prepuce is split longitudinally on the dorsal surface as far as the coronal groove to create two lateral flaps. On the ventral surface the inner layer of preputial skin is excised up to the coronal groove leaving 2-3 mm of everted mucosa in the groove. The epithelium of the glans is similarly excised in continuity with that of the prepuce, from the coronal groove to beyond the tip of the glans. The central blind groove on the glans is preserved. Any central chordee bands are divided by transverse incisions. The denuded surface of the lateral flap is then applied to that of the glans, carrying preputial skin beyond the tip of the glans, and sutured with 6/o vicryl. The meatus is enlarged and the remaining edge of the lateral preputial flap sutured around the lateral and dorsal edge of the coronal groove. A catheter is left in place for 5 days.

Apart from adequate chordee correction the main purpose of this preliminary stage is to advance to the margins of the ventral groove sufficient preputial skin not only for the formation of a sound urethral tube right to the tip of the penis but for second layer cover. The blind ventral groove is preserved to ensure a smooth floor to the skin tube when buried deeply in the glans.

After 1st stage patients were followed up regularly. First follow up after 1 month to look for scaring at urethral plate and second follow up after 5 months to look for growth of phallus i.e. penile length, girth, glans volume etc. Second stage urethroplasty is planned after 6 months. See figure 1-3.

Second Stage. An incision is made from proximal to the urethral meatus, through the mobilised ventral prepuce to beyond the glandular tip. The lateral cuts are about 10 mm. A complete inner skin tube is fashioned by inverting the medial edges of the incised skin right to the tip of the glans over a 6-7 F infant feeding tube. The lateral skin edges are undermined keeping close to the corpora to preserve blood supply to the skin. At the glans this undermining is extended well into the cavernous tissue by a longitudinal cut to a depth of about 3 mm on either side; this results in the skin tube being buried into the substance of the glans when the lateral edges of the incision are brought together. This completed skin tube obviates the redundancy, sacculation or stricture which may result from irregular healing of a buried skin strip. A second layer covering is provided by tunica vaginalis flap and a third layer cover by Dartos. Dressing is removed on 4th day and catheter on 10th day. See figure 4-5.

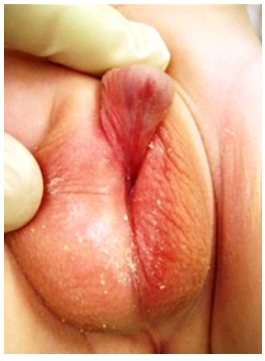

Figure 1 penoscrotal hyposdadias

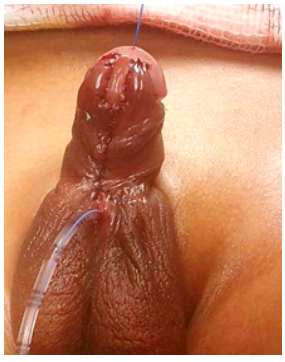

Figure 2 stage 1 repair

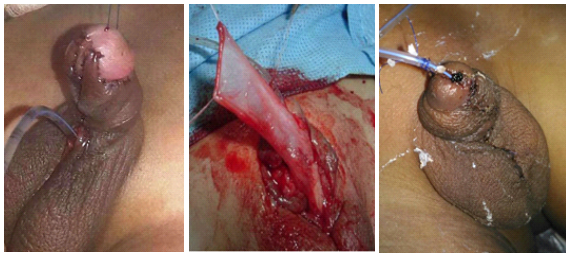

Figure 3- Stage 1 repair
Figure 4- Tunica Vaginalis flap
Figure 5- after stage2 repair

RESULTS

- Twenty five patients underwent stage 1 repair while in 6 patients both stages were completed.
- Age range of the patients was between 1 - 11 years.

- These included patients with severe chordee, proximal hypospadias and those with poor anatomy.
- There were no major complications.
- No fistula in those undergone both stages.
- No case of skin dehiscence.
- Two patients(8%) after stage 1 had local edema persisting beyond POD 10, which resolved after Sitz bath.
- Wide meatus at the tip of the glans.
- Cosmetic result was very good.

DISCUSSION

There have been great strides in the management of hypospadias in last few decades. A variety of innovative surgical techniques have been described, however the management of the most severe forms of hypospadias still remains a challenge**.** Recently there has been a resurgence of the two-stage correction of these severe primary cases.[4] The proponents of a single stage operation claim that it results in less morbidity. Unfortunately, the results of single-stage procedures for these difficult cases often mean that many of these patients will require more than one stage. So a planned two stage operation will probably be a safer alternative in these cases. Many studies have shown advantage of two stage repair in severe proximal hypospadias.[5]

Durham Smith described a de-epithelialised overlap flap technique in the repair of hypospadias.[6] Application of this technique with slight modification resulted in several advantages. Correction of chordee and glanular tilt. Good procedure to tackle narrow navicular fossa and small glans (those with poor anatomy). Glans volume (ventral aspect) is increased. Minimal midline scarring at urethral plate, supple non-hair bearing skin for making urethral plate. Minimal expertise for doing the procedure and can be tried in redo cases. Making urethral tube is not difficult. Full width of glans wing flaps can be used in patients having narrow navicular fossa with or without incision of plate. Four layer urethroplasty, so chance of fistula very less. Meatus at tip with good cosmesis and good uroflowmetry.

The major limitation of our study is was small sample size and short follow. Long term follow up with a large study group will further validate these results.

CONCLUSION

Our initial experience with this technique shows that Durham smith staged urethroplasty with slight modification is a good alternative in patients requiring a staged repair. It gives good cosmetic results with meatus at the tip of glans and has relatively shorter learning curve.

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