

## Buccal mucosal graft for hypospadias cripples: experience at our center

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### Objective

To present our experience with buccal mucosa on-lay graft for the treatment of anterior urethral stricture and recurrent urethra-cutaneous fistula after hypospadias repair in children.

### Patients and Methods

From October 2004 to March 2007, we operated upon eleven male patients with age range from 3-12 years. Free buccal mucosal on-lay grafts from the internal part of the lower lip were taken for three cases of complicated anterior urethral stricture and for eight cases of recurrent urethra-cutaneous fistula after earlier numerous penile hypospadias repairs. Eleven on-lay free grafts were ventrally positioned on the penile urethra. The grafts extent ranged from 0.5 to 6 centimeters. The follow ranged from 2 to 5 years.

### Results

The achievement was perfect in 8 out of 11(73%) patients. Urethral complications occurred in three

cases which were apparent by one and three months postoperatively. The first one had severe proximal and distal urethral strictures which ultimately required a proximal urethrostomy. The second one had a mild stenosis which required two meatal dilatations and at last a meatoplasty. The third one had a small fistula which was simply closed later. One patient developed a hypertrophied scar at the harvest site which resolved over a period of three months.

### Conclusion

Complex hypospadias surgery is taxing and should be done by at experienced pediatric centers. Utilizing the buccal mucosa in case of deficient genital skin is an efficient, handy and secure skill of managing the crippled cases that need redo surgery. (Rawal Med J 2012;37:282-284).

### Keywords

Hypospadias, buccal, on-lay graft.

## INTRODUCTION

Hypospadias is defined as partial virilization of the genital tubercle resulting in an incomplete advance of the tissues forming the ventral urethra.<sup>1</sup> The three main constituents in hypospadias are: an ectopic location of the urethral meatus, a ventral bend of the penis (chordee), and a blemish of the ventral prepuce (hooded skin). A hypospadiac penis presents, from the tip to the base: a ventrally opened glans penis, a missing frenular artery and a lost segment of urethral tube which is replaced by a urethral shield extending from the abnormal opening up to the glans top. The tubular urethra proximal to the ectopic meatus is hypoplastic, not bounded by any corpus spongiosal tissue and enclosed by a thin layer of skin securely stuck on it.<sup>2</sup> In crippled or complex hypospadias there are no identical methods for redo procedures.

The resolution depends on the experience of the surgeon to adjust the most appropriate technique to each case separately. A period of at least six months

should be considered between surgical interventions to permit the local tissues to get mature. Buccal mucosa is frequently used for redo urethroplasties and buccal mucosal graft is a good option when Mathieu or Duckett trials failed.<sup>3,4</sup> Tubularized Incised Plate (TIP) urethroplasties have successful results in some cases with a persistently supple urethral plate after previously failed procedures. On the other hand, it should be avoided if the urethral plate is noticeably scarred.<sup>5</sup> We report our practice of buccal mucosal on-lay graft urethroplasty in eleven patients with crippled hypospadias.

## PATIENTS AND METHODS

Between October 2004 and March 2007, we operated upon eleven male patients. Their age ranged from 3-12 years. Free buccal mucosal on-lay grafts from the inner aspect of the lower lip were taken for three cases of complicated anterior urethral stricture and for eight cases of recurrent

urethra-cutaneous fistula after previous multiple penile hypospadias repairs. Grafts were marked according to length and width, then harvested cautiously using pointed dissection, after that they were applied ventrally to alternate the deficient urethra.

Eleven on-lay free grafts were ventrally placed on the penile urethra. The grafts length ranged from 0.5 to 6 centimeters. All these operations were performed in one stage. The donor sites of the grafts were compressed by an adrenaline-soaked diluted adrenaline (1/100.000) to facilitate hemostasis. The application of the graft was supported by a silastic urethra stint size 8-10, accordingly for two weeks. A firm antibiotic dressing was applied at the end of the procedure for three days. Patients were kept in the hospital from 2-3 days under antibiotic cover. The follow up period was from 2 to 5 years.

## RESULTS

Eight patients out of 11(73%) were subjected to urethroplasty utilizing a buccal mucosa graft and showed a complete resolution of their condition. Mild urethral complications occurred in three cases (27%), which were apparent after one to three months postoperatively.

The earliest one had severe proximal and distal urethral strictures which eventually required a proximal urethrostomy as a first stage. The second one had a mild stenosis which required two meatal dilatations, and ultimately a meatoplasty. The third one had a small fistula which was simply closed later as any other urethrocuteaneous fistula with a perfect result at the end. One patient developed a hypertrophied scar at the harvest site (at the inner aspect of the lower lip) which resolved spontaneously over a period of three months.

## DISCUSSION

The most significant indications for switch urethroplasty, using local skin flaps are persistent or long urethral strictures.<sup>6</sup> Ventral onlay graft urethroplasty has been infrequently used for decades, but is liable for shrinkage, leading to recurrent stricture or diverticulum formation.<sup>7</sup> Some advantages of the dorsal onlay graft procedure for bulbar urethral strictures were proved to be superior

to conventional ventral onlay graft urethroplasty.<sup>4</sup> The graft is predetermined to the under surface of the corporeal bodies, which has a rich blood supply and good mechanical tissue hold. The distribution of the graft and tensile strength in the corporeal bodies reduces the jeopardy of graft contracture and penile curvature (chordee), while the dorsal graft base avoids the complication of ventral sacculation and urethral diverticulum formation.<sup>4</sup>

This technique is also useful for previously operated urethral strictures since this permits repair on the contralateral side of the urethra and avoids the previously scarred part from stenosis.<sup>8,9</sup> Venn and Mundy published their series of 39 cases of first stage urethroplasty via buccal mucosa. They reported that harvesting of buccal mucosa was faster and easier, and aborted the possible morbidity of raising the penile skin flap, i.e., torsion deformity from penile tissue scarring which is commonly unacceptable by patients.<sup>10</sup> Preputial and penile skin flaps had been abandoned in favor of buccal mucosal free grafts as the method of choice.<sup>9,10</sup>

We used on-lay buccal mucosal grafts in the 11 cases and observed that children and their families were worried about the cosmetic aspects of the lip in the early postoperative period but at the end, they were satisfied, as shown by others.<sup>11</sup> In our study, the success rate of ventral on-lay graft urethroplasty using buccal mucosa was 73% at a follow-up of 2-5 years, which is considered very satisfactory.<sup>12,13</sup>

## CONCLUSION

We conclude that the innovation of replacement urethroplasty with on-lay buccal mucosal free grafts may prove to be a useful advance in ensuring successful results in the treatment of crippled (complicated) hypospadias. Meanwhile the scope and hope of tissue engineering will add more solutions in this aspect.

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