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REVIEW ARTICLE

# Modified double face onlay island preputial skin flap with augmented glanuloplasty for hypospadias repair



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## KEYWORDS

Hypospadias;  
Modified double face  
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DOPF;  
Augmented  
glanuloplasty;  
Flap hypospadias  
repair

**Abstract Objective:** To present and evaluate our initial results with a modified double face onlay preputial flap (DOPF) for repair of different degrees of hypospadias.

**Material and methods:** From April 2004 to April 2009, 182 patients with different degrees of hypospadias (distal penile hypospadias = 122, mid penile hypospadias = 38, proximal penile hypospadias = 22) were included in our study. All patients were treated with a modified DOPF. Their age ranged from 6 months to 10 years (mean 3.03 years). Selection criteria were those cases with urethral plate < 8 mm with either flat or conical glans, and non-circumcised patients. The technique of repair was to use the distally tapered inner preputial mucosa as onlay to augment the narrow urethral plate, while the outer face was tapered distally to augment the closed proximal part of the glanular wings and as skin cover. Suitable urethral catheter was inserted for 3–5 days. Follow-up duration was 27–30 months (mean 24 months).

**Results:** Functional and cosmetic success was reported in 176 patients (96.6%). Six patients (3.29%) had developed complications that affected the success rate: 1 (0.5%) glanular disruption, 2 (1.09%) fistula, 1 (0.5%) urethral diverticulum and 2 (1.09%) lateral penile torsion. Three (1.6%) patients had developed minor complications with no effect on functional and cosmetic success in form of superficial epidermal loss.

**Conclusion:** Modified DOPF is a suitable technique for repair of different types of hypospadias as it results in satisfactory functioning and an acceptable cosmetic appearance.

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## Introduction

Many techniques have been developed and reported for the repair of hypospadias but none of them are ideal for all degrees of hypospadias [1]. The aim of development of many modifications to an already established technique for hypospadias repair is to improve the functional and cosmetic results. Problems in hypospadias repair begin when the urethral plate is less than 8 mm, as reported by Holland and Smith that all fistulas occurred in those patients with a urethral plate less than 8 mm [2]. Another study concluded that adequate urethral plate width  $>8$  mm is essential for successful TIP [3]. Another modification to the repair of distal hypospadias using an inlay inner preputial graft with TIP was created to widen the small and narrow urethral plate [4]. Our modification of the double onlay preputial flap (DOPF) was created to avoid the complications of a narrow urethral plate ( $<8$  mm) with conical or flat glans, which had been reported in the literature.

## Material and methods

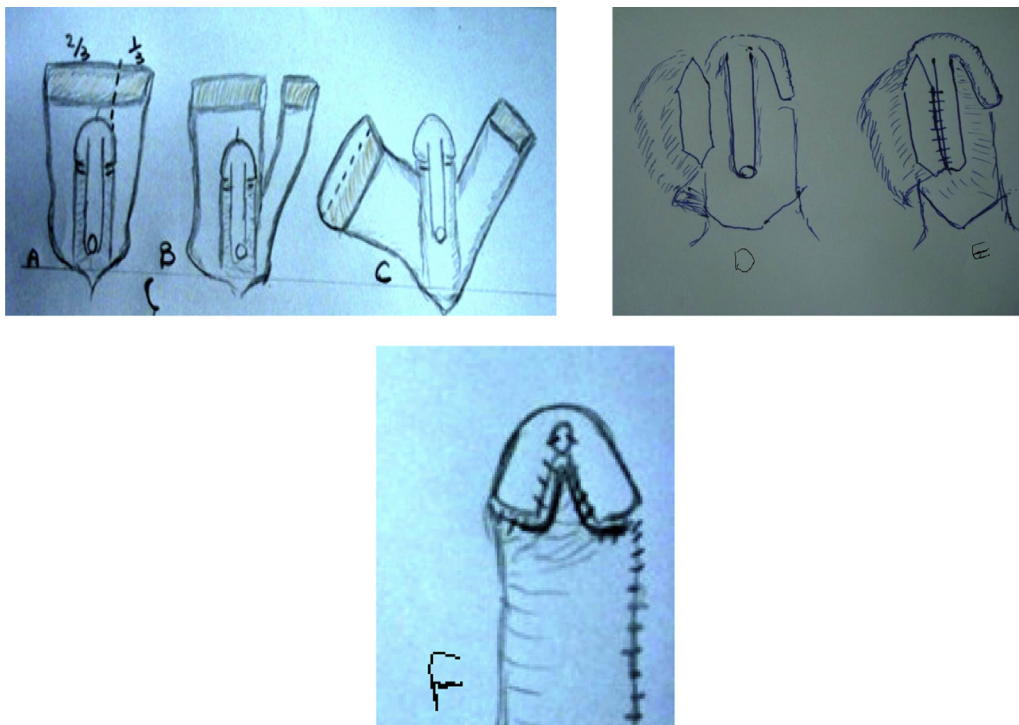
From April 2005 to April 2009, 182 patients with different degrees of anterior hypospadias (distal penile hypospadias = 122, mid penile hypospadias = 38, proximal penile hypospadias = 22) were treated using our modification. Their ages ranged from 6 months to 10 years (mean 3.03 years). Cases that had been selected were those with healthy penile skin, uncircumcised, with or without curvature, urethral plate (UP)  $<8$  mm,

conical or flat glans, and with no previous urethroplasty. Those with UP  $>8$  mm or those with grooved glans were excluded.

## Surgical technique

All patients had received prophylactic antibiotics in the form of 2nd generation cephalosporin (Cefuroxime 50–100 mg/kg). Anesthesia was by epidural anesthesia with sedation in all patients.

During surgery, traction suture with 4-0 Vicryl suture is placed at the glans dorsally. A U-shaped incision is created around the UP and meatus. Measurement of UP is done below the coronal sulcus with stretched UP edges. Circumcision incision is created 0.5 cm below the coronal sulcus. Penile degloving is created through a plane between the dartos fascia and superficial layer of Buck's fascia down to the penile root, leaving the UP attached to the glans. Correction of penile curvature was by degloving only in 133 patients and by degloving + modified Nesbit in 49 patients using 4-0 non-absorbable polypropylene suture. The prepuce is divided by a vertical incision into two transverse preputial segments with width ratio 2/3 and 1/3 (Fig. 1, A–C). The 2/3 of the prepuce is oriented vertically with its inner mucosal layer and outer skin layer; the inner mucosal layer is for augmentation of urethral plate while the outer skin layer is for penile skin covering. Width of UP is measured preoperatively & intraoperatively before and after creation of glanular wings with stretched penis. The inner preputial layer is marked and tailored according to the UP width and



**Figure 1** (A) dissection of the prepuce till the penile root, (B) vertical incision of the prepuce into 2/3 and 1/3 down to the penile root, (C) rotation of the 2/3 of the prepuce to the ventral penile aspect, (D) trimming of the inner preputial layer proximally and distally, (E) anastomosis of the inner face to urethral plate, (F) augmentation of the glanular wings with triangular skin from the outer face of the prepuce.

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