



## Perineal hypospadias; The Bilateral Based (BILAB) Skin Flap Technique

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### ABSTRACT

**Purpose:** The purpose of this study was to present the "bilateral based skin flap (BILAB) technique" for patients with perineal hypospadias associated with severe deep chordee and report the follow up.

**Operative Principle:** The short urethral plate is incised, the hypoplastic corpus spongiosum excised, the glans split in the midline, and a healthy urethral plate is reconstructed from the lateral penile skin and foreskin to the tip of the glans.

**Patients and Methods:** Between January 2005 and December 2011, the BILAB technique was performed in 68 patients with perineal hypospadias associated with severe chordee as a one or two stage repair. The records of 63 patients who maintained regular follow up were reviewed. The new urethra was reconstructed from the new urethral plate during the same setting in 26 patients. The remaining 37 patients had the urethroplasty performed 3–6 months later as a two stage repair. Patient age ranged from 8 months and 2 years (mean 10 months). Follow-up period ranged from 18 months to 8 years (mean 43 months).

**Results:** Satisfactory results were obtained in 54 patients (85%). Two children developed diverticula, two patients developed glans dehiscence, one child developed fistula, and one child had complete wound dehiscence, and urethroplasty was successfully reconstructed 6 months later. Three patients developed scar contraction 6–12 months after surgery. This was corrected by excision of the scarred intermediate layer.

**Conclusions:** The BILAB technique is a reliable technique for patients with perineal hypospadias. It produces slit like meatus at the tip of the glans. The surgeon may decide intra-operatively whether to complete the urethroplasty in one or two stages. Long term follow up until puberty is being carried out.

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Perineal hypospadias remains a major challenge for the hypospadias surgeon. The lateral based flap [1], Koyanagi technique [2], Duckett Island flap [3] and Bracka two stage repair [4], are the current techniques used for perineal hypospadias [5].

Experience with the Bilateral based flap (BILAB) in patients with perineal hypospadias is reported. The principle is to incise the short urethral plate, excise the hypoplastic corpus spongiosum, split the glans and reconstruct a healthy urethral plate from the lateral penile skin and foreskin to the tip of the glans. This lateral skin is fixed to the tunica albuginea in the midline to provide stability and blood supply. The new urethra is reconstructed from the new urethral plate to the tip of the glans as a one or two stage procedure.

For the purpose of the study, perineal hypospadias (or Grade IV) is a severe form of hypospadias defined when the urethral opening lies proximal to the peno-scrotal junction, associated with severe deep chordee that requires division of the urethral plate (curvature is 45° or more during erection) and usually associated with bifid scrotum and occasionally with penoscrotal transposition.

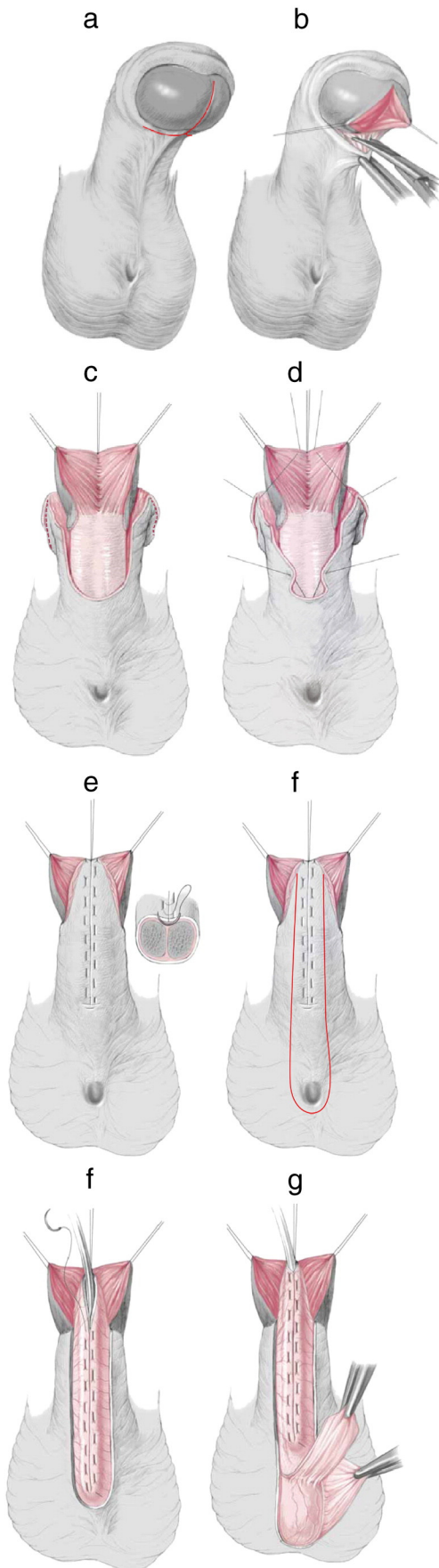
### 1. Patients and methods

The BILAB technique was performed in 68 patients from January 2005 to December 2011. Approval for the procedure was obtained from the hospital ethics committee. Five patients were lost for follow up and the remaining 63 patients constitute the present cohort for this report. Patient age ranged from 8 months to 2 years (mean 10 months). All the patients had perineal hypospadias with severe deep chordee. The new urethra was reconstructed during the same setting in 26 patients. The remaining 37 patients had urethroplasty performed 3–6 months later as a two stage repair. Ten patients had associated unilateral undescended testis and twelve patients had associated bilateral undescended but palpable testes. Bifid scrotum was noted in 45 of the 63 patients. Patients with bilateral undescended testes [12] underwent a standard protocol for disorders of sexual development (DSD) including chromosomal analysis, ultrasound of the abdomen, laparoscopy (3 patients), gonadal biopsy (2 patients) and cystoscopy (2 patients).

The indications to perform BILAB as a two stage procedure included; undescended testis (22 patients), narrow skin bridge and flail vascularity after excision of extensive chordee (9 patients), small glans (5 patients) and associated medical conditions that favor short anaesthesia (1 child). In those patients, orchidopexy was performed (when indicated), chordee excision and splitting the glans were

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performed during the first stage operation. The resultant defect on the glans and penis was covered from the lateral penile skin and foreskin and urethroplasty was performed 3–6 months later.

One child had bilateral Wilms' tumour necessitating bilateral nephrectomy. The first stage was performed while the child was on peritoneal dialysis and urethroplasty was performed 6 months later after successful living related (the mother) kidney transplantation.

A transurethral Silastic catheter was used for 7 days in all patients. An additional suprapubic catheter was kept in place for 13 days in the 26 patients who had one stage BILAB repair. Follow-up period ranged from 14 months to 8 years (mean 43 months).

### 1.1. Surgical Technique (Figs. 1, 2)

Under general anesthesia and caudal block, a traction suture of 4/0 Prolene is placed through the tip of the glans. A tourniquet is applied at the base of the penis and an artificial erection test is performed. Careful assessment of the penis and both testes is performed. If the child has undescended testis, little foreskin or more than 40% curvature, the urethroplasty is performed as a second stage procedure (37 patients).

#### 1.1.1. Chordee excision (Fig. 1a)

A sub-coronal skin incision is made 3–5 mm proximal to the coronal sulcus. The incision is deepened to reach the tunica albuginea and the corpora cavernosa is freed off the short urethral plate and hypoplastic corpus spongiosum using a sharp scissor. There is usually a gritty sensation as if one is cutting through hard fibrous tissue or cartilage. Without excision of any skin, the urethral meatus usually retracts about 2 cm. As the chordee in hypospadias involves the ventral aspect of the penis only, degloving is limited to the ventral aspect of the penis. This is important to preserve the dartos fascia and blood supply to the BILAB flaps.

#### 1.1.2. Glans split (Fig. 1b)

The glans is split in the midline from the subcoronal sulcus to the tip. The incision is deepened to allow for two large and freely mobile glanular wings and to prepare adequate space for the new urethra.

#### 1.1.3. Incision & mobilization of the foreskin (Fig. 2c)

A transverse incision is made laterally at the muco-cutaneous junction of the foreskin on both sides. This simple step provides adequate outer foreskin to cover the glans to the tip without tension. This is different than the Koyanagi technique where the inner mucosal collar is used to form the new urethra.

#### 1.1.4. New urethral plate (Fig. 1d, Fig. 1e)

The penile skin and foreskin are mobilized from both sides, preserving dartos fascia and sutured together in the midline with tunica albuginea (inset). Thus a healthy new type of "urethral plate" is formed that is fixed to the tunica albuginea in the midline. Additional "blanket" sutures are taken to fix the new skin to the glans and penis as required. If the surgeon decides to perform urethroplasty at a

**Fig. 1.** BILAB operative technique. (a) A transverse subcoronal incision is made and all the hypoplastic tissues are removed down to the tunica albuginea. (b) The glans is split in the midline like an open book to provide adequate space for the new urethra. (c) The proximal skin edge usually retracts to the proximal penis and a transverse lateral skin incision is made in the prepuce at the junction between the outer skin and inner mucosa in both sides. (d) Both medial edges are fixed together in the midline to the tip of the glans creating a new urethral plate that is well fixed to the tunica albuginea in the midline (inset) as well as laterally. (e) A U-shaped incision is made around a catheter size F12. (f) Urethroplasty is completed with continuous subcuticular sutures, in two layers. (g) A second protective layer is mobilised from the scrotal dartos/tunica vaginalis and the remaining penile and foreskin are tailored to cover the penis and glans (from Hadidi AT with permission).

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