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# Eccentric circummeatal based flap with limited urethral mobilization: An easy technique for distal hypospadias repair

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## Keywords

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## Summary

### Background

Hypospadias is a common congenital anomaly. Over 300 techniques have been described for repairing hypospadias.

### Objective

Eccentric circummeatal based flap with combined limited urethral mobilization technique (ECMB-LUM) is a simple procedure to repair distal hypospadias with minimal complication rate. This study presents results of this technique, highlighting surgical pitfalls to achieve the best result.

### Study design

Medical records of patients with distal hypospadias operated on using the same technique between 1998 and 2011 were reviewed retrospectively. Age at surgery, position of meatus preoperatively and postoperatively, duration of urethral catheterization and hospitalization, early and late complications, previous hypospadias repairs, and secondary surgical interventions were evaluated. In the surgical technique an eccentric circummeatal based flap is outlined. The proximal part of the flap is dissected from the underlying urethra and Buck's fascia. If the flap is not long enough, the distal urethra is mobilized a few millimeters (Figure). The eccentric flap is sutured to the tip of the glans. The glans wings are approximated in the midline. A urethral catheter of 6 Fr or 8 Fr is passed and left in the bulbous urethra

or the urinary bladder. Diverged limbs of corpus spongiosum are approximated on the urethra, then, the glans and skin of the penile shaft are sutured.

### Results

Of the 171 consecutive patients operated on using the ECMB-LUM technique; 115 had coronal, 47 had subcoronal, and nine had glanular meatus. The mean age at surgery was 4.5 (1–17) years. Patients were hospitalized for  $2.2 \pm 0.7$  days. Mean duration of urethral catheterization was  $2.3 \pm 0.5$  days. All but eight patients had ECMB-LUM as primary repair. There were no early complications such as bleeding, hematoma, and wound infection. All patients voided spontaneously after catheter removal. Late complications were meatal stenosis, urethrocutaneous fistula, meatal regression, and glandular dehiscence (Table). These patients were treated using dilatation, fistula repair, meatoplasty, and secondary repair with the same technique, respectively. Eventually all patients had a vertical slit-like meatus on the tip of a natural looking glans.

### Discussion

The most commonly used distal hypospadias repair techniques are glanular approximation, meatal advancement and glanuloplasty, Koff, Mathieu, Thiersch–Duplay procedure, tubularized incised plate repairs, and modifications of these techniques. Cosmetic and functional results and complication rates of ECMB-LUM technique are comparable with those of the commonly used techniques.

**Table** Complications of ECMB-LUM repair.

| Complication        | Number |
|---------------------|--------|
| Meatal stenosis     | 4 (2%) |
| Fistula             | 4 (2%) |
| Meatal regression   | 4 (2%) |
| Glanular dehiscence | 4 (2%) |



**Figure** Eccentric circummeatal based flap and minimally mobilized urethra.

## Introduction

Hypospadias is one of the most common congenital anomalies, affecting 0.3–0.7% of male births. The urethral meatus is located on the glans or distal shaft of penis in 70–80% of patients [1–5]. Over 300 techniques have been described for repairing hypospadias. Most of these techniques are being continuously revised and modified to achieve an excellent outcome [1]. Nevertheless, there is no clear agreement on the ideal method of repair.

The aim of the surgeon is to use the optimum operation to accomplish the perfect functional and cosmetic result with lowest complication rate. The best functional result may be defined clearly as an adequately forward directed stream when standing and normal coitus. On the other hand, definition of perfect cosmetic appearance may differ among patients, parents, surgeons, and culture. A vertical slit-like meatus on the tip of a normal looking glans with a mucosal collar around, a straight penis in the absence of unpleasant scar tissue is considered to be successful and satisfactory in Turkey. As circumcision is a religious and traditional requirement, foreskin reconstruction is not favored in Turkey.

A surgeon's ingenuity and experience is an important determinant of the surgical outcome in hypospadias surgery. However, an easily applicable simple technique meeting the criteria of an optimum operation for distal hypospadias could be used by young surgeons. Türken et al. reported the use of eccentric circummeatal based flap with

combined limited urethral mobilization (ECBF-LUM) technique for distal hypospadias repair, which is a simple procedure with minimal complication rate [6,7]. Herein the authors present the results of this technique with special emphasis on surgical pitfalls and complications to achieve the best result.

## Material and methods

After approval by the human research ethic committee, medical records of patients operated on using the ECBF-LUM technique for distal hypospadias between 1998 and 2011 were reviewed retrospectively. Age at surgery, position of meatus preoperatively and postoperatively, duration of urethral catheterization and hospitalization, early and late complications such as bleeding, hematoma, surgical site infection, urethrocutaneous fistula, meatal stenosis, meatal regression, and glanular dehiscence, previous hypospadias repairs, and secondary surgical interventions were evaluated. All patients were examined on postoperative first week, and at 1 and 6 months.

Meatal stenosis was defined as inability to pass an 8 Fr catheter through the meatus in a patient with a complaint of low urinary stream. Patients with coronal fistula below a thin skin bridge were labeled as glans dehiscence. Meatal regression was considered when the patient had partial dehiscence of the distal part of glans wings.

## Surgical technique

A traction suture is placed on the prepuce close to the dorsal coronal sulcus. Prepuce is preferred to glans for traction to avoid any scar tissue on glans. An eccentric circummeatal based flap is outlined. The proximal part of the flap constructed on the skin of the penile shaft should be twice the length of the distal part, which is constructed on urethral epithelium of the glans (Fig. 1A). The proximal part of the flap is dissected from the underlying urethra and Buck's fascia. The distal part of the urethra, which may be extremely thin walled because of the bifurcated corpus spongiosum should not be injured to prevent fistula formation. If the flap is not long enough, the distal urethra is mobilized a few millimeters to allow the urethra to reach the new meatus (Fig. 1B), then the glanular bed is examined for any fibrous tissue. If present, any dysplastic fibrous elements are removed to prevent postoperative ventral flexion of the glans. The residual small triangular urethral plate epithelium is excised (Fig. 1C).

It is important to achieve a glanular groove deep enough to allow pressure-free embedding of urethra. Thus in the presence of a flattened glans or a shallow glanular groove, glanular wings should be separated in the midline until the groove is deep enough (Fig. 1D). The eccentric flap is sutured to the tip of the glans with interrupted polydioxanone monofilament stitches (Fig. 1E). Wide eccentric flap sutured to a relatively wide orifice formed on glans with minimal tapering during meatoplasty allows a slit-shaped meatus rather than a round one and prevents meatal stenosis. Neourethral orifice fashioned using wide eccentric flap simulates fossa navicularis, which is anteriorly dilated glanular part of normal male urethra.

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