Journal of Pediatric Urology (2005) 1, 89—94

Journal of Pediatric Urology

The transverse outer preputial (TOP) island flap: an easy method to cover urethroplasties and skin defects in hypospadias repair

R.-B. Galifer*, N. Kalfa

Department of Visceral and Urological Pediatric Surgery, Lapeyronie Hospital, Montpellier, 371, Doyen Gaston Giraud Avenue, 34295 Montpellier Cédex 5, France

Received 16 November 2004; accepted 23 November 2004

KEYWORDS
Hypospadias;
Epispadias;
Urethroplasty;
Surgical flap

Abstract **Objective** The transverse outer preputial (TOP) island flap, a simple procedure inspired by the double-faced island flap, is proposed as a substitute for the Byars repair to provide skin coverage for most of the current reconstructive techniques for hypospadias.
Patients and methods From 1996 to 2003, 108 consecutive children (aged 1—8 years) had a primary repair of various forms of hypospadias with different degrees of chordee; the TOP island flap was used in 66. The surgical technique is based on the use of a dorsal transverse skin flap mobilized with its own vascular pedicle from the outer foreskin, then ventrally rotated longitudinally after removing the inner part of the prepuce.
Results Partial necrosis of the lateral border of the flap was infrequent (<2%) and did not induce urethral complications. There was no total necrosis in the series. The rate of fistula was comparable with children operated using other techniques (8%). The cosmesis was good, with no ventral bulkiness or hypertrophic scarring.
Conclusions The TOP island flap is a safe method for covering a new urethra and penile skin defects, with good cosmetic results.

Abbreviations: TOP, transverse outer preputial.

* Corresponding author. Tel.: +33 4 67 33 87 84; fax: +33 4 67 33 95 12.
E-mail address: rb-galifer@chu-montpellier.fr (R.-B. Galifer).

1477-5131/$30
doi:10.1016/j.jpurol.2004.11.010

Introduction

In all surgical procedures for hypospadias repair, skin coverage of the urethroplasty is the last, but not the least important, stage. Whatever be the technique the goal is to bring well-vascularized tissue to the ventral surface of the penis, if possible with no overlapping suture lines, to obtain good healing with minimal risk of fistula formation and the best cosmetic result. One of the most widely used techniques is the Byars repair [1], which vertically splits the dorsal surface of the foreskin into two flaps and brings them around the ventrum to resurface the ventral skin defect with a midline or Z-shaped suture.

According to the changing concepts of hypospadias curvature [2,3], the urethral plate is no longer recognized as the cause of penile chordee and its preservation has become an important principle in treating the increasing spectrum of hypospadias. Surgeons can perform most urethroplasties using the usually well developed and healthy urethral plate without dissecting beneath it, as doing so may jeopardize its blood supply. If a residual curvature persists after a correct orthoplasty, a Nesbit [4] procedure is done by dorsal tunica albuginea plication rather than excising the elliptical segments. The technical choices have thus changed over the last decade. We abandoned the Duckett island tube [5] for the onlay island patch and its double-faced variant, both of which have the major advantage of avoiding the creation of a circular anastomosis between the native and the new urethra. However, it soon became apparent that tubularization of the urethral plate according to Thiersch-Duplay is a simpler procedure and almost always possible, thanks possibly to the Snodgrass [6] artifice, so that in our experience, the foreskin is most often unused and still the best material for covering the new urethra and the ventral skin defect. It is from this viewpoint that we adapted the modified Asopa repair [7], as described later. We herein report a new procedure we have used for 8 years and which results in a more satisfactory repair.

Patients and methods

Between 1996 and 2003, 46 consecutive children were treated for middle and proximal hypospadias with various degrees of chordee, and 62 for more distal forms. All were operated on by the same surgeon (R.B.G.). The mean (range) age of the patients at operation was 1.9 (0.10—8) years. The techniques of urethroplasty were: Thiersch-Duplay in 40, the double-faced onlay island flap in six, a Mathieu repair in 55, and the meatoplasty and glanuloplasty incorporated in seven (but none after 1998). The transverse outer preputial (TOP) island flap was used in 66 patients, mostly for those with proximal hypospadias (70%). All patients were examined at least 1 month after surgery and 40 were followed for more than a year.

Surgical technique

At the beginning of the procedure, a circumferential incision (except in the ventral area of urethroplasty) is made proximal to the corona, with care taken to preserve a generous cuff of mucosal glanular tissue 6—8 mm wide. The whole shaft with the attached prepuce is then de-gloved from the corpora cavernosa in the avascular plane between the Buck's and dartos fasciae down to the penoscrotal junction, in a cylindrical fashion, respecting the parallel incisions that delineate the urethral plate (Fig. 1). When orthoplasty and urethroplasty have been completed, with the glans reconstructed in two planes and the ventral mucosal cuff sutured according to Firlit [8], the whole mucosa of the inner part of the foreskin is removed, taking care not to compromise the vascularization of the rest of the prepuce

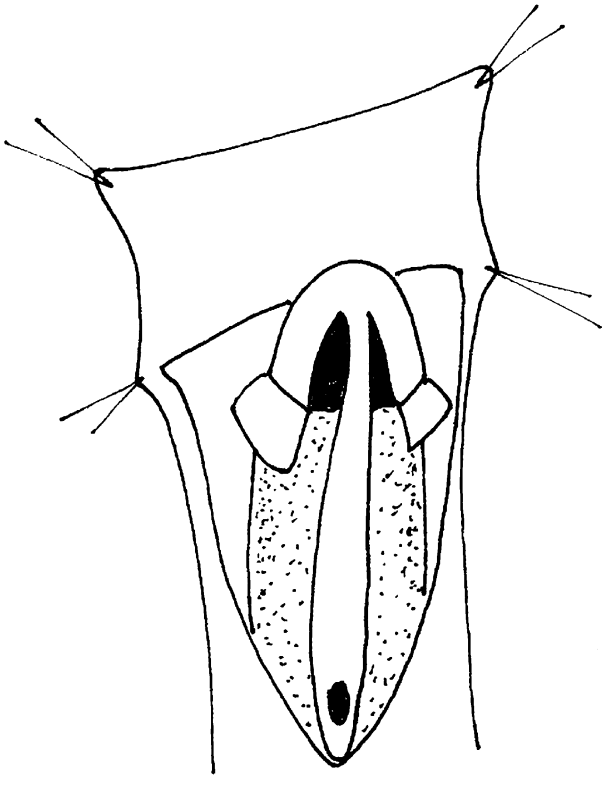

Figure 1 Preliminary situation.