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Review

Dorsal onlay graft bulbar urethroplasty using buccal mucosa



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KEYWORDS

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Abstract

In 1996, Barbagli described the use of the free graft from Devine's technique with the dorsal urethral opening from Monseur's technique. Such technique was termed new dorsal onlay graft urethroplasty or Barbagli's procedure. It can be used for penile urethral stricture repair and different types of dorsal onlay graft urethroplasty for bulbar urethral stricture repair. The current paper describes, step by step, Barbagli technique of dorsal onlay graft bulbar urethroplasty using buccal mucosa. The preoperative patient evaluation and postoperative course and follow-up are finally showed.

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Introduction

In 1953, Presman and Greenfield first described the use of preputial skin as free graft in the treatment of bulbar urethral strictures [1]. In 1963, Devine et al., after having successfully used a full thickness skin graft in a one-stage reconstruction of hypospadias, extended its use to bulbar urethral stricture repair in a preliminary series of 6 patients [2]. In 1979, Devine et al. widely popularized the use of free skin grafts in the reconstructive urethral surgery [3,4]. In

1980, the French urologist Monseur reported the results of 219 urethral strictures (197 cases from Zaire and 22 cases from Normandy) treated using a new urethroplasty described by the same author in 1968 [5,6]. The urethra is longitudinally opened along its dorsal surface and fixed over the albuginea of corpora cavernosa, so as to promote the transformation of the urethral mucosa plate into a tube, according to the Duplay's and Denis Browne's "buried skin strip principle" [6–8].

In 1996, we combined the use of the free graft from Devine's technique with the dorsal urethral opening from Monseur's technique, and first described a one new dorsal onlay graft urethroplasty for penile urethral stricture repair and different types of dorsal onlay graft urethroplasty for bulbar urethral stricture repair [9,10]. In our

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techniques, the free graft (skin or buccal mucosa) is sutured over the albuginea of the corpora cavernosa and the urethra, fully opened along its dorsal surface, is rotated to cover the graft which serves as an epithelial buried roof-strip facilitating the regeneration of urethral mucosa thus considerably reducing the time for urethral regeneration. According to experimental and clinical studies by Weaver and Schulte and Moore, the dorsal buried epithelial strip facilitates urethral regeneration without the formation of the scar tissue [11–13]. Over time, our original technique (also named “Barbagli’s procedure”) was better defined and many changes were suggested by various authors [14–17].

We here describe, step by step, our current technique of dorsal onlay graft bulbar urethroplasty using buccal mucosa including the preoperative patient evaluation and postoperative course and follow-up. The aim of this study is to make these safe techniques easily reproducible in the hands of any surgeon.

Subjects and methods

Pre-operative evaluation of patient

Pre-operative evaluation includes clinical history, physical examination, urine culture, residual urine measurement, uroflowmetry, retrograde and voiding cystourethrography, and urethral ultrasound. Ideal candidates for this type of urethroplasty are those presenting long (ranging from 3 to 8 cm) bulbar strictures in the distal part of the bulbar urethra, also involving the proximal part of the penile tract. The stricture etiology and length do not influence the choice of the surgical technique. In more proximal bulbar strictures we prefer a ventral onlay urethroplasty according to our technique and results [18]. In obese patients with fat perineum the dorsal approach to the urethra may presents some difficulties. This technique may also be used in patients with previously failed bulbar urethroplasty or repeated urethrotomy. With some modifications, this technique may be used also for panurethral stricture repair. Patient age it is not a factor which influenced the success rate, and this technique should not be withheld from patients on the basis of age.

Preparation of patient for surgery

Three days prior to surgery, the patient should begin using chlorhexidine bidet for genitalia cleansing twice a day. The day before surgery the patient receives intravenous prophylactic antibiotics.



Figure 1 The patient is placed in the simple lithotomy position with Allen stirrups and sequential inflatable compression sleeves.

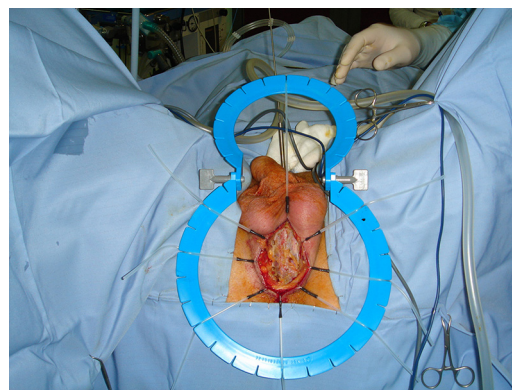


Figure 2 The plastic ring retractor with plastic hooks in place.

Instruments for dorsal onlay graft bulbar urethroplasty using buccal mucosa

The following instruments are suggested:

- Allen stirrups (Fig. 1).
- Sequential inflatable compression sleeves (Fig. 1).
- Kilner-Doughty mouth retractor.
- Plastic ring retractor with plastic hooks (Fig. 2).
- Nasal speculum with modified tip (Fig. 3).
- Bipolar electrocautery.
- 5-zero polyglactin sutures (or similar).

Preparation of patient for surgery

The patient is placed in the simple lithotomy position (Fig. 1). The patient’s calves are placed in Allen stirrups with sequential inflatable compression sleeves and the lower extremities are then suspended by placement of the patient’s feet within the stirrup boots (Fig. 1). Proper positioning ensures that there is no pressure on any aspect of the calf muscles and no inward boot rotation, so as to avoid peroneal nerve injury. The suprapubic area, scrotum and perineum are shaved and draped appropriately. The patient is draped in two separated parts so that two surgical teams can work simultaneously. Each team has its own set of surgical instruments. One team harvests and prepares the oral graft, while the second team exposes the urethra. Pre-operative urethroscopy is performed using a 7F rigid ureteroscope to evaluate the stricture and to insert a sensor 3F guide wire into the urethra until reaching the bladder (Fig. 4A and B).

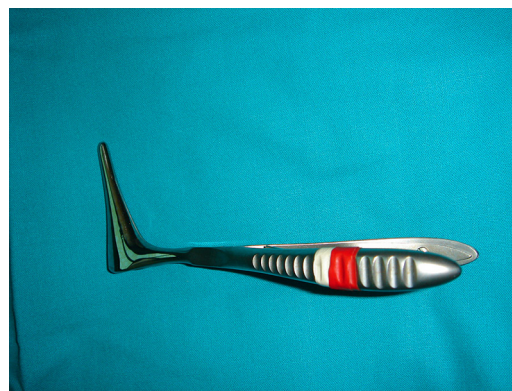


Figure 3 Nasal speculum with modified tip.

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