# Dorsal Buccal Mucosa Graft Urethroplasty for Female Urethral Strictures

**Roberto Migliari,* Pierluigi Leone, Elisa Berdondini, M. De Angelis, Guido Barbagli and Enzo Palminteri**

*From the Department of Urology, Ospedale Santa Maria alla Gruccia, Montevarchi and Center for Urethral Reconstructive Surgery (EB, GB, EP), Arezzo, Italy*

**Purpose:** We describe the feasibility and complications of dorsal buccal mucosa graft urethroplasty in female patients with urethral stenosis.

**Materials and Methods:** From April 2005 to July 2005, 3 women 45 to 65 years old (average age 53.7) with urethral stricture disease underwent urethral reconstruction using a dorsal buccal mucosa graft. Stricture etiology was unknown in 1 patient, ischemic in 1 and iatrogenic in 1. Buccal mucosa graft length was 5 to 6 cm and width was 2 to 3 cm. The urethra was freed dorsally until the bladder neck and then opened on the roof. The buccal mucosa patch was sutured to the margins of the opened urethra and the new roof of the augmented urethra was quilted to the clitoris corpora.

**Results:** In all cases voiding urethrogram after catheter removal showed a good urethral shape with absent urinary leakage. No urinary incontinence was evident postoperatively. On urodynamic investigation all patients showed an unobstructed Blaivas-Groutz nomogram. Two patients complained about irritative voiding symptoms at catheter removal, which subsided completely and spontaneously after a week.

**Conclusions:** The dorsal approach with buccal mucosa graft allowed us to reconstruct an adequate urethra in females, decreasing the risks of incontinence and fistula.

*Key Words: urethra, urethral stricture, mouth mucosa, female, transplants*

Urethral strictures in women have long been debated with regard to their etiology and impact on voiding patterns.[1,2] Some groups suggest that most female urethral strictures are iatrogenic and apart from radiation inducing urethral fibrosis they may be the consequence of prolonged urethral catheterization or surgical repair of diverticulum, fistula or anti-incontinence procedures.[3–7] Often overzealous urethral dilation with subsequent fibrosis due to bleeding and extravasation are among the most frequent causes of iatrogenic urethral strictures. Surgical treatment in these cases is still debated. It varies from a simple vaginal flap to pedicle labial skin tube urethroplasty wrapped with labial fat or omentum depending on stricture complexity.[8–12]

BMG represents the gold standard for urethral reconstruction in males with complex hypospadias or urethral strictures.[13,14] In male strictures graft urethroplasty using a dorsal approach to the urethra has shown improved urethral reconstruction due to a decrease in fistulas and graft weakening by urethral diverticula.[15] We suggest the technique of urethral stricture correction in females using BMG for urethroplasty with a dorsal approach.

## MATERIALS AND METHODS

From April 2005 to July 2005, 3 women 45 to 65 years old (average age 53.7) with urethral stricture disease underwent urethral reconstruction using dorsal BMG. All patients complained of preoperative recurrent urinary infection, straining and a burning sensation during voiding, terminal dribbling and decreased flow.

Stricture etiology was unknown in 1 patient, ischemic in 1 due to prolonged catheterization for coma reversal and iatrogenic in 1 due to diverticulum repair. Two patients who refused daily clean intermittent catheterization underwent multiple prior dilations, which failed before surgical treatment. Only 1 patient elected to start a regular program of clean intermittent catheterization, which was interrupted after 3 months. One patient had experienced failure after previous urethroplasty.

To evaluate stricture length all patients were evaluated preoperatively with voiding cystourethrography (fig. 1). In all patients urodynamic evaluation showed a stable bladder with low flow and low detrusor pressure with Qmax less than 12 ml per second and detrusor pressure at Qmax more than 20 cm $H_2O$. Post-void residual volume was 90 to 200 ml. At clinical evaluation the urethral meatus was fibrotic, while the urethra was rigid and stenotic. No patients complained of urinary stress incontinence.

### Surgical Technique

With the patient under general anesthesia in the dorsal lithotomy position a 10Fr silicone urethral catheter is positioned. BMG is harvested from the right inner cheek. The BMG is 5 to 6 cm long and 2 to 3 cm wide. All patients undergo free graft urethroplasty using the dorsal approach to the urethral lumen.

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* Correspondence: Via Carpaccio, 9, 52100 Arezzo, Italy (e-mail: r.migliari@tin.it).




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FIG. 1. Case 2. Preoperative voiding cystourethrography

The dorsal part of the urethra is exposed by a reversed U-shape incision over the meatus starting from the 3 o'clock to the 9 o'clock position. The vulvar mucosa is separated from the urethral channel and a plane is developed between the underlying urethra and overlying clitoral cavernous tissue to free the entire length of the urethra (fig. 2). Dissection is done with care taken not to damage the bulbs and the clitoral body crura by staying close to the fibrous tissue of the urethra. During dissection the anterior portion of the striated urethral sphincter is identified and moved upward.

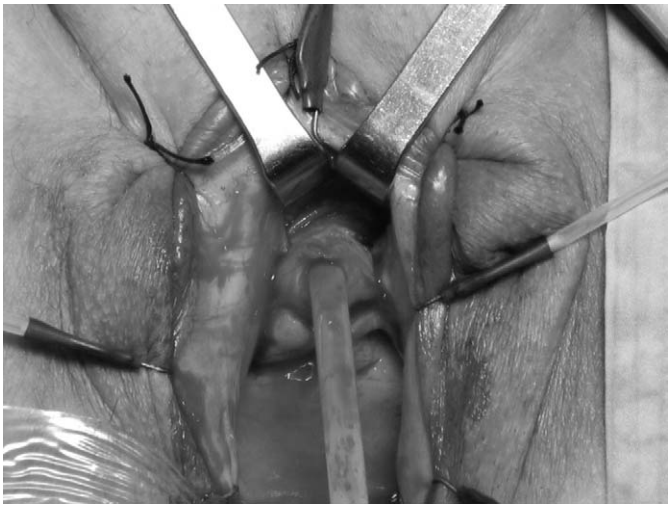

FIG. 2. Whole dorsal part of urethra is dissected free from surrounding tissue. Note anterior part of striated urethral sphincter.

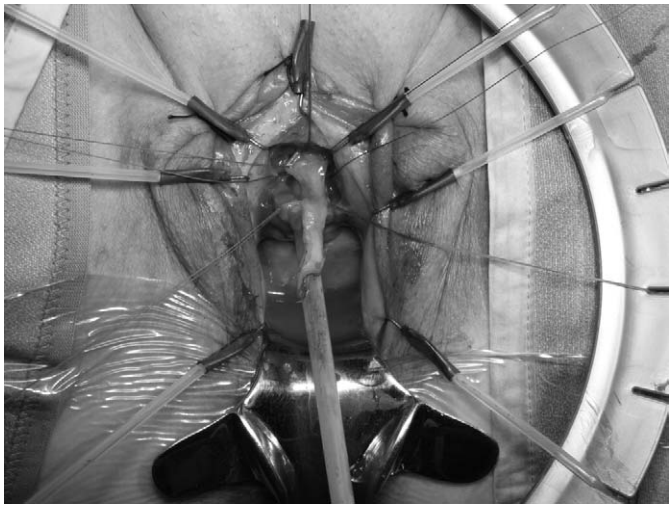

FIG. 3. Buccal mucosa graft tailored about 1.5 cm wide and 4 cm long is positioned on dorsal part of opened urethra.

The bladder neck is identified by the catheter balloon. A 5-zero stitch is placed on the dorsal surface of the urethra as close as possible to the bladder neck to mark it. An incision is made through the entire thickness of the dorsal urethra (mucosa and spongiosal tissue) from meatus to bladder neck. By traction with 6 stitches on the edges of the opened urethra the ventral urethral plate is well exposed (fig. 3).

Subsequently the BMG is sutured to the right margin of the urethral plate and then to the left margin (fig. 4). The augmented dorsal urethra is quilted to the clitoris body to cover the new urethral roof. Distal the BMG is tailored and split to achieve a normal meatal slit-like appearance. Finally, the vulvar mucosa is reapproximated with 5-zero poliglecaprone sutures.

Patients were discharged home after 2 days. After 15 days the catheter was removed. Voiding cystourethrography showed a normal-appearing urethra.

## RESULTS

In all cases voiding urethrogram after catheter removal showed a good urethral shape with absent urinary leakage.

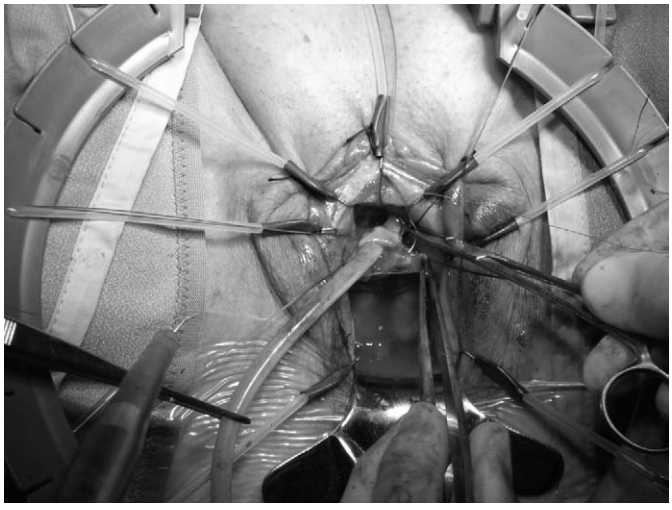

FIG. 4. Left side of buccal mucosa graft is sutured to epithelial margin of opened urethra using 6-zero interrupted stitches with knots inside lumen.