



## Case Report

## Buccal mucosal graft interposition in the treatment of recurrent vesicovaginal fistula: A report on two cases



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## ABSTRACT

**Objective:** To present the use of autologous buccal mucosa graft (BMG) in the treatment of recurrent vesicovaginal fistula (VVF).

**Case reports:** In 2011, two women, aged 45 years and 56 years, were admitted due to recurrent VVF. Both women had previously undergone abdominal hysterectomies for benign conditions and, subsequently, vaginal VVF repair due to vaginal urine leakage. On admission, the younger woman had a round fistula, with a diameter of 1.5 cm, located on the left side, supratrigonally; the other woman had an ellipsoidal fistula measuring 2.5 cm × 1.5 cm, located medially and supratrigonally. Both women underwent suturing of the VVF with the interposition of BMG. After the last treatment, both women were cured.

**Conclusion:** Treatment of recurrent VVF with the interposition of BMG is a good alternative to the use of other tissue grafts. Larger series are needed to confirm the advantages of this method.

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## Introduction

Vesicovaginal fistula (VVF) represents a pathological communication between the urinary bladder and vagina. The most common cause of VVF is hysterectomy, while less common causes are obstetrical trauma and pelvic surgery [1]. The main symptom of VVF is the involuntary leakage of urine from the vagina. Diagnosis of VVF is based on cystoscopy, vaginal examination, intravenous urography, or computed tomography urography [2]. Cystoscopy is essential for preoperative assessment of the important characteristics of the fistula, such as the size, location, and margins of the fistula, and its proximity to the ureteral orifices and bladder neck. Chapple and Turner-Warwick [3] divided all VVFs according to simple and complex fistulas. A simple VVF is usually small, far from the orifices and the urethra, and has vital tissue margins, while all other fistulas are complex. In Goh's classification, recurrent VVFs,

fistulas with ureteric involvement and post-radiation VVFs are classified in subtype III [4].

If VVF is not diagnosed intraoperatively, surgical repair is delayed for 2 months or 3 months, until the healing process is completed. Generally, simple VVF require surgical suturing of the vaginal and bladder wall, while complex fistulas require the interposition of tissue grafts. Common surgical approaches are vaginal, transvesical, transabdominal, and laparoscopic. The vaginal approach should be the method of choice for the majority of simple fistulas. The indications for a transvesical approach, most commonly used in the past, are rare today. The transabdominal approach is indicated for the treatment of complex fistulas, where it is necessary to interpose a tissue graft between the urinary bladder and the vagina. Various tissue grafts can be used in both vaginal (labial fat pad and gracilis muscle) and abdominal repair (peritoneum, omentum, and myocutaneous muscle flaps). These grafts improve local vascularity, absorb urinary extravasate, and prevent leakage of urine from the bladder [5]. However, 5–10% of VVFs recur after the primary repair. The causes of recurrence are postoperative infection and various comorbidities, or else they may be related to the surgeon's level of experience.

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## Case presentation

In 2011, two women, aged 45 years and 56 years, were admitted due to recurrent VVF. Both women had previously undergone abdominal hysterectomies for benign conditions and, subsequently, vaginal VVF repair due to vaginal urine leakage. The periods between hysterectomy and fistula repair were 6 weeks and 8 weeks, respectively. On admission, the younger woman had a round fistula, with a diameter of 1.5 cm, located on the left side, supratrigonally; the other woman had an ellipsoidal fistula measuring 2.5 cm × 1.5 cm, located medially and supratrigonally. Both fistulas were classified as type 1b, subtype III, according to Goh. Both women underwent transvesical extraperitoneal VVF repair with the interposition of BMG.

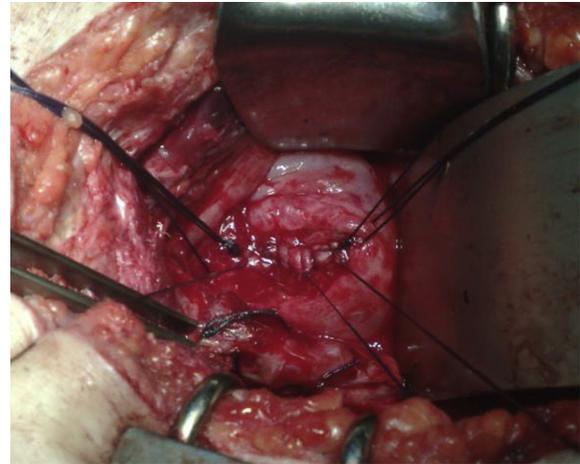
During surgery, the bladder was opened and the fistulous opening visualized. Then, a cleavage between the bladder and vagina was developed and stay-sutures were placed around the fistula (Figure 1). The anterior vaginal wall was closed with interrupted Vicryl-0 sutures (Figure 2). After that, a 3–4 cm × 2–2.5 cm large autologous BMG was harvested from a point 1.5 cm away from Stensen's duct and 1.5 cm from the edge of the cheek, superficial to the buccinator muscle. After that, the graft was defatted and thinned (Figure 3). The BMG was laid on the anterior vaginal wall, with the mucosa faced toward the bladder, and secured with interrupted 4-0 sutures (Figure 4). After that, the graft was quilted over the vaginal wall. Finally, both urethral and suprapubic catheters were introduced and the bladder wall was closed with Vicryl 1/0 (Johnson & Johnson, Ethicon) interrupted sutures. In both patients, the suprapubic catheter was removed on Postoperative Day 7, and the urethral catheter was removed on the Postoperative Day 14. Both patients were seen through the usual postoperative period and remained fistula-free.

## Discussion

VVF is a relatively uncommon urological disorder. From a series of 220 VVFs, we found that the most common causes of VVFs were hysterectomy for benign conditions (62.7%), hysterectomy for malignant tumors (30.4%), cesarean section (5.9%), and obstetric injuries (0.9%) [6]. All VVFs can be divided according to simple and complex fistulas. However, Goh's classification, which provides useful information regarding the choice of surgical approach and the prediction of successful fistula closure, is more precise. The important data in Goh's classification relate to the size of the fistula, the distance of the fistula from the external urethral meatus, the



**Figure 1.** Opening of the fistula on the bladder base; stay sutures placed around the fistula.



**Figure 2.** The anterior vaginal wall closed with interrupted sutures.



**Figure 3.** A buccal mucosal graft.



**Figure 4.** Buccal mucosal graft placed on the anterior vaginal wall above the vaginal sutures.

presence of fibrosis around the fistula and vagina, and vaginal length.

Generally, complex and recurrent VVFs should be treated with the interposition of a tissue graft. The tissue graft can be taken from the surrounding tissues, with stalk (flap), or it can be a free graft from distant tissue or an organ. In the course of the transvaginal

approach, various local flaps can be used: a labial fat tissue flap (Martius flap), labial skin flap, vaginal flap, bulbocavernosus muscle flap, and tubular gluteal skin graft [7–10]. The flaps that can be used in the course of the transabdominal approach are the visceral peritoneum from the posterior wall of the uterus, rectus abdominis flap, rotational bladder flap, urachal flap, and perisigmoid fat flap [11–15]. The most commonly used free grafts are free bladder mucosal autograft and small intestinal submucosa graft [16,17].

The use of buccal mucosa graft in the treatment of VVF has not been described in the literature thus far. However, BMG is widely used in situations where additional tissue is necessary for the reconstruction of the vulva or vagina, in female urethral injuries, as well as in the treatment of female urethral strictures [18–20]. In addition, the use of BMG in the reconstruction of rectourethral fistula is reported, both in female and male patients [21,22].

So far, BMG has most commonly been used in the reconstruction of the male urethra. The significant ability of BMG to survive on the urothelium and to remain vital is well known [23,24]. Buccal mucosa is histologically similar to the urethra and possesses a similar cytokeratin pattern and amount of immunoglobulin A to a normal urethra. In addition, buccal mucosa has a thin submucosa that is important for revascularization, and a thick epithelium, which provides firmness for the graft [25,26].

We have decided to use BMG for recurrent VVF repair for several reasons. First, the harvesting of BMG is a relatively simple procedure, accompanied by low morbidity. Second, BMG is able to survive and remain vital. Third, BMG enables the reconstruction of urinary tract tissue without the leakage of urine. Fourth, this procedure is easier for the patient, because there is no need to open the peritoneal cavity.

The interposition of a tissue graft between the bladder and vagina is mandatory in the treatment of recurrent VVF. The use of BMG is accompanied by satisfactory healing characteristics, low morbidity, and does not require the opening of the peritoneal cavity. The indisputable advantage of this method is that it can be performed even in patients who have undergone previous abdominal surgery, and obese patients. However, a larger series is needed to confirm the advantages of this technique.

### Conflict of interest

There were no conflicts of interest relevant to this article.

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