

Salvage Repair of Vesicovaginal Fistula

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Purpose: To present the long-term results of failed vesicovaginal fistula repair using flap splitting techniques.

Materials and Methods: Nine women with a previous failed vesicovaginal fistula repair, aged 18 to 69 years, underwent salvage vaginal reconstruction for damaged urethra or bladder, at a five-year interval lasting from 2003 to 2007. Fistulas were repaired using an interposed pediculated vaginal wall flap.

Results: The repair was successful in all the patients, even in those with rectovesicovaginal fistula or a large vesicovaginal fistula with sphincter damage.

Conclusion: Pediculated vaginal wall flap is an easily-prepared, well-vascularized tissue, which provides long-term favorable outcomes.

Keywords: recurrence, urologic surgical procedures, surgical flaps, vaginal fistula, treatment outcome

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INTRODUCTION

A fistula represents an extra-anatomic communication between two or more epithelium or mesothelium-lined body cavities or to the skin surface (Figure 1).⁽¹⁾ Urogenital fistula may be congenital or acquired. Vesicovaginal fistulas (VVF) are the most common type of acquired fistula of the urinary tract.⁽¹⁻³⁾

The etiology of VVFs differs in various parts of the world.⁽⁴⁾ In industrialized world, the most common cause (>75%) of VVF is injury to the bladder at the time of gynecologic, urologic, or other pelvic surgeries (iatrogenic). Malignant diseases, pelvic irradiation, and obstetric trauma, including forceps lacerations and the uterine rupture, are other important causes.^(1,5,6) In the developing world, where routine perinatal obstetric care may be limited, VVFs most commonly result from prolonged

obstructed labor.^(1,5)

Vesicovaginal fistulas may be repaired through a transvaginal or transabdominal (transvesical) approach.^(1,4,6) There is no “best” approach for all the patients with VVF, and excellent outcomes can be expected with both approaches, depending on the particular circumstances of the fistula.^(1,4,6) Although factors, such as size, location, and need for adjunctive procedures often have an impact on choosing the approach, the most important factor is usually the surgeon’s preference.^(1,6,7)

The majority of VVFs in the industrialized world are amenable to a transvaginal repair.⁽⁶⁾ There is a consensus that the best chance for success is the first surgery.^(1,4,8,9) Two main subgroups of transvaginal repairs are Flap-Splitting technique and Latzko procedure.^(6,9)

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Figure 1. Vesicovaginal fistula before repair.

Our aim was to present the long-term results of failed VVF repair using flap splitting techniques.

MATERIALS AND METHODS

From January 2003 to January 2007, 9 women with previous failed VVF repairs, aged 18 to 69 years, were recruited to this study.

The first and youngest subject was an 18-year-old girl, who had a large rectovesicovaginal fistula due to a penetrating trauma to her perineum during

cycling, which resulted in total urinary, fecal incontinence, and several unsuccessful surgical repairs. Three patients were young women aged 20, 22, and 23 years with a VVF due to delivery at home. Another subject was a 19-year-old woman with a VVF due to dystocia and use of devices during delivery at hospital. The next patient was a 29-year-old woman with a history of postpartum stress urinary incontinence (SUI) treated with sling surgery. Persistent urinary retention occurred immediately after the operation, which has been treated with transurethral resection of the bladder neck. Thereafter, she became totally incontinent because of a large urethrovesicovaginal fistula. The last three subjects were 52, 57, and 69-year-old women with VVFs following treatment of the uterine cervix cancer with hysterectomy and adjuvant radiotherapy.

All of the patients were evaluated in the same manner. Initially, voiding cystourethrography and intravenous pyelography were performed. Thereafter, cystoscopy and vaginoscopy were carried out to evaluate the exact size, number, and location of the fistula, and biopsy if there was any history of malignancy to rule out cancer relapse. Finally, we did the main surgical procedure in jackknife position, using a pediculated vaginal wall flap technique (Figure 2). We did not use other types of flap, such as maritus.

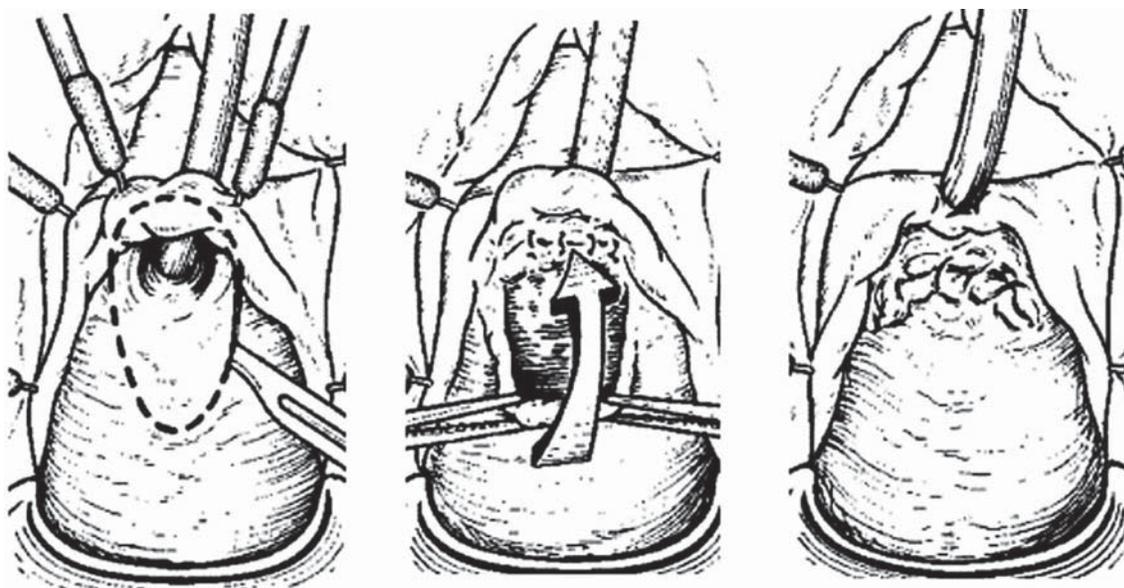


Figure 2. Vaginal wall flap technique for transvaginal VVF repair.

Because the patients were unable to keep their bladder full, we could neither assess their bladder's capacity nor perform urodynamic study to evaluate coincidental SUI. However, after the recovery from the surgery, we did so and there was only mild to moderate SUI (urodynamically defined as leak point pressure more than 60 cm H₂O) in 4 patients.

Fistulas repairs were done using classic method (Figure 2). Indwelling urethral catheters were kept in all the patients postoperatively until



Figure 3. Vesicovaginal fistula after repair.

cystography confirmed successful repair of the fistula (Figure 3). Imaging studies were done 10 to 21 days postoperatively or if necessary, including persistent urine leakage. Anticholinergic medications were given to decrease the bladder irritability. Sexual intercourse was forbidden for 3 months postoperatively.

RESULTS

Demographic and clinical characteristics of the patients are demonstrated in Table. The patients were followed up for 51 to 100 months. Physical examination and urodynamic studies were performed annually for at least 3 years to ensure vaginal and urethral integrity, and exclude any obstruction due to urethral stricture. Significant vaginal shortening and stenosis were not observed. Urethral integrity and patency were restored in all the patients, with no incontinence. Patients were able to empty their bladder voluntarily and completely.

Patients with combined VVF repair and urethral elongation, subsequently underwent a Young Diz operation. All of the patients received short-term (3 months) oral anticholinergic to prevent postoperative detrusor hyperactivity. We performed urodynamic study 3 months postoperatively. Four patients had mild to moderate SUI, who were treated successfully with conservative measures, such as Kegel exercises.

Demographic and clinical characteristics of the patients

Patients, number	Age, years	Number of previous repair	Type of fistula	Predisposing factors	Outcome
1	18	3	Rectovesicovaginal	Penetrating trauma	Excellent
2	20	2	Vesicovaginal	Delivery at home (obstructed labor)	Excellent
3	22	2	Vesicovaginal	Delivery at home (obstructed labor)	Excellent
4	23	3	Vesicovaginal	Delivery at home (obstructed labor)	Excellent
5	19	2	Vesicovaginal	Dystocia and use of devices during delivery at hospital	Excellent
6	29	4	Vesicovaginal	Sling surgery for stress urinary incontinence	Excellent
7	52	2	Vesicovaginal	Endometrial cancers with hysterectomy and adjuvant radiotherapy	Excellent
8	57	2	Vesicovaginal	Endometrial cancers with hysterectomy and adjuvant radiotherapy	Excellent
9	69	2	Vesicovaginal	Endometrial cancers with hysterectomy and adjuvant radiotherapy	Excellent

DISCUSSION

Vesicovaginal fistula is an abnormal opening between the bladder and vagina, causes urine leakage from the vagina.^(1,2) Intra-operative injury to the urinary bladder is clearly a primary risk factor for subsequent development of a postoperative VVF.^(6,9) Other risk factors include prior uterine surgery (cesarean section), endometriosis, infection, diabetes mellitus, arteriosclerosis, pelvic inflammatory disease, and prior radiation therapy.^(1,10)

Patients with VVF often complain from painless urinary incontinence, which occurs all the time.⁽¹⁰⁾ Patients with anatomical urethral damage have usually been repeatedly operated and present with severe incontinence that is difficult to treat. Therefore, a thorough clinical and radiological evaluation is required to precisely define the extent of the anatomical defect and to assess the surrounding tissues that might be used in the reconstructive procedures.^(6,11,12)

Repair is usually undertaken 8 to 12 weeks after the injury. This time delay allows resolution of wound inflammation prior to attempting corrective surgery. In postmenopausal patients, estrogen replacement prior to surgery may improve the chance of successful closure. It has been stated that the best opportunity to achieve successful repair of a VVF is with the initial operation. Previous failed attempts result in scar formation and anatomic derangement, and may compromise potential reconstructive flaps. Therefore, careful pre-operative planning is essential to maximize the chance for a successful result. The low-lying fistula (subtrigonal) is best repaired through the vaginal approach.⁽⁷⁾

The indications for tissue interposition are not well-defined, but these measures are most commonly used in the setting of irradiated tissues, obstetric fistulas, failed prior repairs, large fistulas, and fistulas with tenuous repairs.

Vaginal flap or Flap-Splitting technique popularized by Raz and colleagues results in a three-layer closure without the use of an adjuvant flap and a four-layer closure if a flap is used. It can be performed as an outpatient procedure and is applicable to the most simple, uncomplicated VVFs.⁽¹⁾

Anterior vaginal wall usually provides sufficient tissue, especially in primary cases, to cover adequately the urethral or vesical defects. After careful dissection and removal of all scar tissues from the fistula opening, mobilization, and good closure of the communicated organs, the vaginal wall flap is interposed between layers of repair, enhancing secure healing, and is compatible with the classic surgical principles for the fistula repair.⁽⁶⁾

Anatomical reconstruction of the damaged urethra can be achieved by using mucosal flaps from the vagina alone or with the interposition of surrounding healthy tissues that can be easily mobilized and transferred to the desired position, aiming at a significant improvement of the postoperative outcome.⁽⁵⁾ There is no controversy concerning the necessity to interpose well-vascularized flaps between the layers of fistula closure that enhance the healing and secure a watertight repair in cases of complex VVF or previously failed repairs and in those with anatomical urethral defect.⁽¹⁰⁾

The main factor in correcting a VVF is to separate communication between the bladder and vagina.⁽¹⁾ This can be accomplished by interpositioning tissues between the two damaged organs and obtaining a watertight tension-free closure.^(4,9,10) The success rate of repairing vesicovaginal and ureterovaginal fistulas through vaginal approach is 90%.^(1,7) Early repair using a transvaginal approach is recommended.⁽¹⁰⁾

CONCLUSION

The vaginal pediculated wall flap is easy to dissect, is close to the operative field, and its use does not cause any cosmetic, sexual, or functional problems for the patient.

CONFLICT OF INTEREST

None declared.

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