

A New Flap Technique for Vesicovaginal Fistula Repair: Case Report

Vezikovajinal Fistül Onarımında Yeni Bir Flep Tekniği

Öner ODABAŞ, MD,^a
Cavit CEYLAN, MD,^a
Serkan DOĞAN, MD^a

^a3rd Urology Clinic,
Yüksek İhtisas Training and
Research Hospital,
Ankara

Geliş Tarihi/Received: 12.04.2010
Kabul Tarihi/Accepted: 01.10.2010

Yazışma Adresi/Correspondence:
Öner ODABAŞ, MD
Yüksek İhtisas Training and
Research Hospital, Ankara,
TÜRKİYE/TURKEY
onerodabas@gmail.com

ABSTRACT Until today, some operation techniques with or without tissue flaps were described to repair vesicovaginal fistula (VVF). We described a new surgical flap technique using the umbilical ligament with around fatty tissue as a bolster for a 49-year-old woman with VVF. The patient has applied to our clinic with a complain of urine coming from her vagina. From her medical history we learned that in July 2009, transabdominal hysterectomy and bilateral salphingo-ooferectomy and umbilical hernia repair was carried out. We performed sistoscopy and confirmed VVF. We chosed an abdominal (suprapubic) transperitoneal transvesical approach for repair of VVF. The umbilical ligament with around fatty tissue was dissected as a flap from the level of umbilicus to the bladder level. The fistula tract was excised, bladder and vaginal openings was closed with vicryl sutures. Prepared umbilical ligament flap was placed and fixed between repaired bladder and vaginal wall.

Key Words: Vesicovaginal fistula; surgical flaps; surgical procedures, operative

ÖZET Vezikovajinal fistül (VVF) onarımında, bugüne kadar flep kullanılarak ya da kullanılmaksızın çeşitli operasyon teknikleri kullanılmıştır. Kırk dokuz yaşında VVF tanısı konan bir kadında çevre yağ dokusuyla birlikte umblikal ligamentin destek olarak kullanıldığı yeni bir cerrahi flep tekniği tanımladık. Hasta kliniğimize vajenden idrar gelmesi yakınmasıyla başvurdu. Anamnezinden Temmuz 2009 yılında transabdominal histerektomi, bilateral salpingo-ooferektomi ve umblikal herni operasyonları geçirdiği öğrenildi. Sistoskopi yaparak VVF tanısını doğruladık. Umblikal ligaman, çevresindeki yağ dokusuyla birlikte umblikus düzeyinden mesane seviyesine kadar flep şeklinde serbestleştirildi. Fistül traktı eksize edilerek mesane ve vajen açıklıkları vikril sütürlerle kapatıldı. Hazırlanan umblikal ligament flep mesane ve vajen duvarları arasına yerleştirilerek tesbit edildi.

Anahtar Kelimeler: Vezikovajinal fistül; cerrahi flepler; cerrahi işlemler, operasyon

Türkiye Klinikleri J Urology 2010;1(3):75-8

The patient with vesicovaginal fistula (VVF) has total urinary incontinence usually associated with urogenital infections bad odor and ammonia dermatitis, and her psychosocial condition may be devastating, as women may be socially isolated from their families and community.

The etiology of VVF differs in various parts of the world according to development level of the countries. In the industrialized world, the most common cause of VVF is injury to the bladder at the time of gynecologic, urologic, or other pelvic surgery which is in sharp contrast to the statistics in developing countries like India, where 83% to 93% of fistulae are caused by prolonged labor.¹⁻⁴

Surgical injury to the lower urinary tract most commonly occurs in hysterectomy operation. Other most frequent causes are related to general surgery procedures in the pelvis, anterior colporrhaphy or cystocele repair, anti-incontinence surgery, or other urologic procedures.⁵ Additionally, malignant disease, pelvic irradiation, and obstetric trauma including forceps lacerations and uterine rupture causes VVF in the industrialized world.⁶ The rate of iatrogenic bladder injury during abdominal hysterectomy is estimated to be between 0.5% and 1.0%.⁷

Vesicovaginal fistula is a challenging condition especially for the gynecologic surgeon. The goal of treatment of VVF is return of normal urinary continence and genital function. Surgical outcome is improved with surgeon's experience, timing of repair, and techniques used. A good success rate for fistula repair requires mean consideration of the following: adequate mobilization of tissue, low-tension closure, watertight closure of bladder, hemostasis, adequate blood supply at area of repair, and continuous catheter drainage postoperatively.

CASE REPORT

The 49-year-old woman patient has applied to our clinic with a complain of urine coming from her vagina. From her medical history it was found out that in July 2009, transabdominal hysterectomy and bilateral salphingo-ooforectomy and umbilical hernia repair was carried out, during the procedure an injury was sustained to the bladder but it was repaired primarily. It was learned that in the same day during the post-op monitoring, the patient had no urine outlet and in control sistoscopy left ureter orifice was not visible. The following laparotomy revealed that left ureter orifice was closed down with stitching. It was learned that ureter stitch was removed, bladder was closed primarily and bilateral ureteral double j stent was applied on the patient.

In her physical examination, horizontal incision scar under umbilicus, pfannenstiell incision scar and in right down quadrant appendectomy incision scar were detected. It was observed that she had leakage from her vaginal cuff appeared follo-

wing her intraabdominal pressure increase. The patient had a urethral foley catheter installed, and her other physical examination results were normal.

Vesicovaginal fistula was considered for the patient and she was accepted to the clinic. We performed sistoscopy and confirmed VVF approximately 1.5 cm in diameter at midline behind the interüreteric ridge. Her vagina was a bit narrow and the fistula was deep localization. Therefore we decided to operate the patient by intraabdominal approach and took informed consent from her.

OPERATION TECHNIQUE

An abdominal (suprapubic) transperitoneal transvesical approach has been chosen for repair by mobilizing the bladder from the vagina in order to produce a closure with separate tension-free layers.

In this approach, a laparotomy was done with a lower midline incision to entry into the peritoneum. The umbilical ligament with around fatty tissue was dissected as a flap from the level of umbilicus to the bladder level (Figure 1, 2). Then extraperitoneally anterior surface and the dome of bladder was dissected and opened. The fistula tract was established at posterior wall above the trigonic ridge and a catheter was introduced through fistula. Then incising the peritoneum, meticulous dissection was made and bladder is mobilized off the vagina posteriorly. The fistula tract is excised, bladder and vaginal openings was closed with



FIGURE 1: Mobilised umbilical ligament with around fatty tissue to the level of bladder.

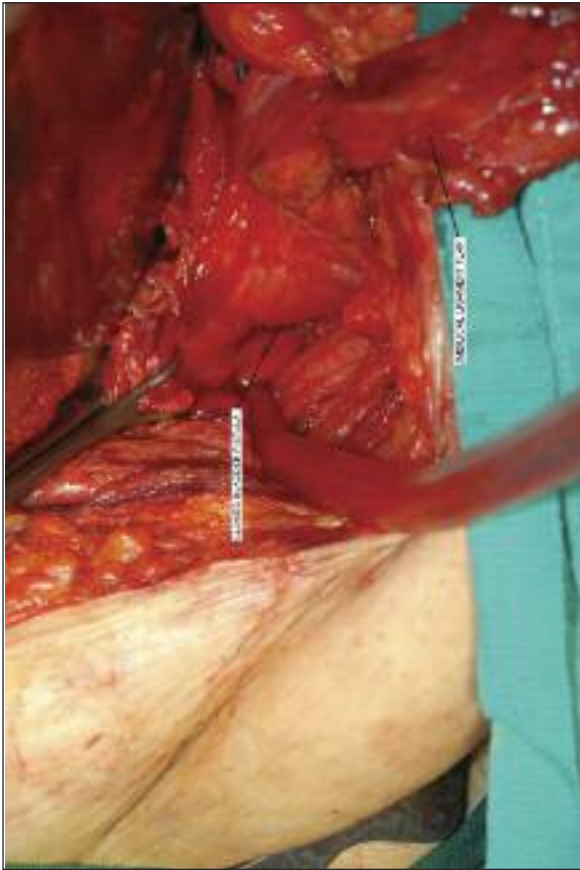


FIGURE 2: Intravesically closed fistula opening.

vicryl sutures respectively. Prepared umbilical ligament flap was placed and fixed between repaired bladder and vaginal wall.

DISCUSSION

The best opportunity to achieve successful repair of VVF is with the initial operation.⁸ Previous failed attempts produce scar and anatomic distortion and may be required perfect reconstructive flaps. Therefore, careful preoperative planning is essential to maximize the chances for a successful result. There is no “best” approach for all patients with VVF.

The principal disadvantages of the transvaginal approach include the relative lack of familiarity of the vaginal route to many urologists; the potential for vaginal shortening, especially with the Latzko approach; and the difficulty in exposing high or retracted fistulas near the vaginal cuff, especially in deep, narrow vaginas like this case.

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. In our case VVF was repaired immediately after abdominal hysterectomy operation but it was not successful.

In transvaginal repair of VVF, a labial fat pad (Martius flap) or a peritoneal flap is most commonly used. The use of a peritoneal flap during transvaginal repair of a complex VVF is a simple procedure that does not require extravaginal harvesting of the flap.⁹ In transabdominal approach, omentum or peritoneum is often used as an interpositional flap.¹⁰ The greater omentum is often long enough to reach into the deep pelvis without any further mobilization. In some patients, however, it will not reach into the pelvis without tension, and therefore some mobilization may be necessary.

A variety of flaps including gracilis muscle flaps, labial myocutaneous flaps, seromuscular intestinal flaps, and rectus abdominis flaps have been used as adjunctive measures in the repair of complex VVF.¹¹⁻¹⁴

Historically, the use of the gracilis muscle flap for repair of a VVF has involved a vaginal operative approach.¹⁵ In 1988, Fleischmann and Picha described an abdominal approach for the use of gracilis muscle as an interposition graft in VVF.¹⁶ Complications of the gracilis myocutaneous flap include scar tissue formation, donor site hematoma, abscess, hypoesthesia in distal thigh, and some function loss in the lower extremity that is usually measurable but imperceptible for most patients.¹⁷

All pedicled local flaps have their limitations in terms the size, the tissue volume, the restriction of mobility and the functional and esthetic disadvantages for the donor site. Another problem is that normally the well-perfused proximal part of the flap does not reach the defect, because of the loss of tissue so that the defect is covered by poorly perfused parts of the flap, or the vascular pedicle is too short and therefore a flap cannot reach the defect at all.

Hessami and Chang reported that they couldn't make an omental J flap or a peritoneal flap because of a lack of adequate size of omentum and inability to mobilize enough peritoneum at the anterior cul-de-sac; hence they used biomaterial as an interposition graft.¹⁸

This is the first case which an umbilical ligament with fatty tissue is used as a bolster at VVF operation. We consider that this method is easy, applicable to any case and without the complications as seen in other major flaps.

REFERENCES

1. Tancer ML. Observations on prevention and management of vesicovaginal fistula after total hysterectomy. *Surg Gynecol Obstet* 1992;175(6):501-6.
2. Lee RA, Symmonds RE, Williams TJ. Current status of genitourinary fistula. *Obstet Gynecol* 1988;72(3 Pt 1):313-9.
3. Raut V, Bhattacharya M. Vesical fistulae--an experience from a developing country. *J Postgrad Med* 1993;39(1):20-1.
4. Sarker B, Ghoshroy S, Saha SK, Mukherjee A, Ganguly RP, Saha S. A study of Genitourinary Fistulae in North Bengal. *J Obstet Gynecol Ind* 2001;51(5):165-9.
5. Armenakas NA, Pareek G, Fracchia JA. Iatrogenic bladder perforations: longterm followup of 65 patients. *J Am Coll Surg* 2004;198(1):78-82.
6. Gerber GS, Schoenberg HW. Female urinary tract fistulas. *J Urol* 1993;149(2):229-36.
7. Keettel WC, Sehring FG, deProsse CA, Scott JR. Surgical management of urethrovaginal and vesicovaginal fistulas. *Am J Obstet Gynecol* 1978;131(4):425-31.
8. Elkins TE. Surgery for the obstetric vesicovaginal fistula: a review of 100 operations in 82 patients. *Am J Obstet Gynecol* 1994;170(4):1108-18.
9. Eilber KS, Kavalier E, Rodríguez LV, Rosenblum N, Raz S. Ten-year experience with transvaginal vesicovaginal fistula repair using tissue interposition. *J Urol* 2003;169(3):1033-6.
10. Eisen M, Jurkovic K, Altwein JE, Schreiter F, Hohenfellner R. Management of vesicovaginal fistulas with peritoneal flap interposition. *J Urol* 1974;112(2):195-8.
11. Izes J, Smith JI, Zinman L. The gracilis muscle in repair of complex lower urinary tract fistulae (a 15 year experience). *J Urol* 1992;147 (Suppl):281A.
12. Symmonds RE, Hill LM. Loss of the urethra: a report on 50 patients. *Am J Obstet Gynecol* 1978;130(2):130-8.
13. Mráz JP, Sutorý M. An alternative in surgical treatment of post-irradiation vesicovaginal and rectovaginal fistulas: the seromuscular intestinal graft (patch). *J Urol* 1994;151(2):357-9.
14. Menchaca A, Akhyat M, Gleicher N, Gottlieb L, Bernstein J. The rectus abdominis muscle flap in a combined abdominovaginal repair of difficult vesicovaginal fistulae. A report of three cases. *J Reprod Med* 1990;35(5):565-8.
15. Patil U, Waterhouse K, Laungani G. Management of 18 difficult vesicovaginal and urethrovaginal fistulas with modified Ingelman-Sundberg and Martius operations. *J Urol* 1980;123(5):653-6.
16. Fleischmann J, Picha G. Abdominal approach for gracilis muscle interposition and repair of recurrent vesicovaginal fistulas. *J Urol* 1988;140(3):552-4.
17. Carr MM, Manktelow RT, Zuker RM. Gracilis donor site morbidity. *Microsurgery* 1995;16(9):598-600.
18. Hessami SH, Chang DT. Use of biomaterial as interposition graft in the treatment of vesicovaginal fistula. *J Pelvic Med Surg* 2007;13(1):39-42