

# Urogenital Fistulas in Women

## 5-year Experience at a Single Center

Onkar Singh, Shilpi Singh Gupta, Raj Kumar Mathur

**Introduction:** Urogenital fistula is one of the most devastating complications that can result from labor or urogenital surgeries. It is still a frequent problem in the developing world. Urogenital fistulas can lead to devastating medical, social, and psychological problems; thus cause major impact on the lives of girls and women. However, these cases are still largely neglected in the developing world. We aimed to evaluate causative factors and discuss management of urogenital fistulas.

**Materials and Methods:** Forty-two cases of urogenital fistula developing within 5 to 38 days after delivery, pelvic surgery, and obstetric procedures were treated over a period of 5 years from 2003 to 2008. These included 37 vesicovaginal fistulas (88.1%), 4 uterovesical fistulas (9.5%), and 1 pure ureterovaginal fistula (2.4%). All of the patients were catheterized immediately on presentation and the catheter was left in situ for a minimum of 3 weeks before surgical intervention.

**Results:** The most common cause of vesicovaginal fistulas was obstructed labor, while other varieties of fistulas were mostly associated with pelvic surgery. Spontaneous closure occurred in 3 cases of vesicovaginal fistula. Surgical intervention needed in 39 patients. Peritoneal flap and Martius flap were interposed between suture lines in transabdominal and transvaginal approaches, respectively. Thirty-four fistulas (80.1%) were closed at the first attempt. There was no mortality from the surgical procedure.

**Conclusion:** Vesicovaginal fistula is the most common urogenital fistula. Obstructed labor and its complications are still the leading cause of its development. Peritoneal flap interposition technique is a successful and effective treatment method for urogenital fistula.

*Keywords: urinary fistulas,  
vesicovaginal fistula, female  
urogenital diseases*

*Urol J. 2010;7:35-9.  
www.uj.unrc.ir*

*Department of Surgery, MGM  
Medical College and MY Hospital,  
Indore, India*

*Corresponding Author:  
Onkar Singh, MS  
Department of Surgery, MGM  
Medical College and MY Hospital,  
Indore, India, 452001  
Tel: +91 98 9377 7321  
E-mail: dronkarsingh@gmail.com*

*Received April 2009  
Accepted November 2009*

### INTRODUCTION

“In an unequal world, these women are the most unequal among unequals.<sup>(1)</sup>” The misfortune that may lead a woman to the development of a urogenital fistula (UGF) has remained one of the difficult challenges to surgical therapy for centuries. Fistulas are perhaps the most distressing and feared complications of gynecological and obstetric procedures.<sup>(2)</sup>

Whereas in former years this pitiful condition resulted from obstetrical methods, it is rarely seen after childbirth in countries where modern concepts of obstetrical practice are applied. The principal cause in developed countries has come to be trauma due to gynecological surgeries, chiefly hysterectomy. However, concerning parts of the world which are still in developing

phase, difficult labor has not left its place as the most common reason for the most frequent type of UGF, ie, vesicovaginal fistula (VVF). The objective of this study was to review our experience in the management of these UGFs over a 5-year period (May 2002 to May 2007), with an emphasis on causes, means of treatment, and outcomes.

## MATERIALS AND METHODS

A total of 42 cases of UGF were treated in our hospital between May 2002 and May 2007, including 29 referred cases from other hospitals. Among the patients referred from other centers, 6 had already undergone at least one failed surgical intervention for VVF. The mean age of our patients was 28 years (range, 18 to 68 years). All medical records were reviewed, and the etiology of fistula, time of presentation, prior treatment, management, and outcomes were recorded. The follow-up period ranged from 4 to 42 months after discharge from hospital.

## RESULTS

The most common variety of UGF was VVF, found in 37 patients (88.1%), and the leading cause of VVF was obstructed labor, which included 22 (59.5%). Transabdominal hysterectomy for benign conditions was the second most common cause in 8 patients (21.6%), while vaginal hysterectomy, Wertheim radical hysterectomy for malignancy, and laparoscopic hysterectomy were the cause in 4 (10.8%), 2 (5.4%), and 1 (2.7%), respectively (Table). Associated ureterovaginal fistula was detected in 2 patients with VVF. Time for development of VVF due to obstructed labor ranged from 5 to 38 days, while remaining cases of iatrogenic VVF presented with urinary leak within 13 days. Eleven among 15 cases of iatrogenic VVF had a history of trauma to the urinary bladder, vaginal stump or ureters during primary surgery. All these injuries were repaired in the same sitting, but fistula still occurred.

Other than the VVF cases, there were 1 case of pure ureterovaginal fistula following Wertheim radical hysterectomy and 4 uterovesical fistulas. Of the 4 patients with uterovesical fistulas, 2 had a history of pelvic trauma and 1 had undergone

Type and Frequency of Different Urogenital Fistulas and Their Causative Factors

Type and Cause of Fistula	Patients (%)
Vesicovaginal fistula	
Obstructed labor	22 (52.4)
Transabdomian hysterectomy	7 (16.7)
Vaginal hysterectomy	4 (9.5)
Laparoscopic hysterectomy	1 (2.4)
Radical hysterectomy for malignancy	1 (2.4)
Vesicovaginal and ureterovaginal fistulas	
Transabdominal hysterectomy	1 (2.4)
Radical hysterectomy for malignancy	1 (2.4)
Uterovesical fistula	
Suprapubic resection of bladder tumor	1 (2.4)
Pelvic trauma	2 (4.8)
Spontaneous tuberculosis	1 (2.4)
Ureterovaginal fistula	
Radical hysterectomy for malignancy	1 (2.4)

partial cystectomy for bladder tumor. One of the women with uterovesical fistula had been referred from another center after one failed surgical attempt to close the fistula. She underwent fistula repair via transabdominal route, which failed. Biopsy of the fistulous tract was reviewed, which came out to be tubercular. She was started on 4-drug antituberculosis therapy and kept catheterized. Fistula healed in 6 weeks, and antituberculosis therapy continued for 6 months.

Diagnostic workup included vaginal examination and cystoscopy in all of the patients, while retrograde cystography was done in 5. Intravenous contrast studies were done in all of the 19 patients with a history of surgery (intravenous urography in 16 and computed tomography-intravenous urography in 3), in order to rule out any possible involvement of the ureters. The three-swab test was required in 4 patients to confirm the diagnosis, as cystoscopy and contrast studies could not demonstrate the fistula.

Initially, antibiotic therapy was started in all of the patients. Conservative management with catheterization was successful in 3 patients with VVF, which presented within 7 days after obstructed labor. One spontaneous closure of the fistula was also noted in an undiagnosed tubercular uterovesical fistula, after 2 failed attempts to repair the fistula. In all these cases, the fistula size was less than 1 cm. The Foley catheter

was kept in situ for a total of 6 weeks.

Thirty-nine cases (95.1%) were managed surgically, 28 by transabdominal approach and 11 (all of which were VVF) by the transvaginal approach. Thus, all UGFs other than VVFs were operated through transabdominal approach. Selection of the surgical approach (transabdominal versus transvaginal) in VVFs was made depending on the location and size of the fistula. The transabdominal approach was used in cases where the fistula was located high on the vaginal stump or close to the ureter opening and with more than 2 cm of size. Also, all 6 cases which were referred from other centers after failed surgical intervention were managed surgically through transabdominal approach. One patient among these needed 2 surgical repairs.

Both transvaginal and transabdominal approaches involved complete excision of the fistulous tract. The transvaginal approach also involved labial fat interposition, obtained from one or both sides (Martius flap). In all cases of UGF which were repaired via transabdominal approach by the intra-abdominal technique, the peritoneal flap interposition was done. Peritoneal flaps were raised, from one or both sides, from the peritoneum overlying the common iliac vessels. There was no mortality following operative procedures. No incontinence was found in any cases after the fistula was repaired.

## DISCUSSION

A urogenital fistula is an abnormal opening between the vagina and the urinary bladder (VVF), the vagina and the ureter (ureterovaginal fistula), or the uterus and the bladder (uterovesical fistula), through which urine continually leaks. Naturally, UGF makes the patients embarrassed that they are unable to control their bodily functions, that they are constantly soiled and wet, and that they smell. Thus, UGFs have a profound effect on the patient's emotional well-being that results from the social distress because of persistent leakage of urine and feces. This may be further complicated by recurring infections, infertility, and damage to the vaginal tissue that makes sexual activity impossible. The VVF is the most common among UGFs, due

to its relationship with various obstetric and gynecologic risk factors.

Urogenital fistula has remained a hidden condition, because it affects some of the most marginalized members of the population—poor, young, often illiterate girls and women in remote regions of the world. In the developed countries, with the advent of widespread emergency obstetric care, UGFs are rarely seen.<sup>(3)</sup> However, it is still frequent in the developing world, with the number of new cases annually estimated at 100 000 to 500 000.<sup>(4)</sup> To point out the exact nature of this problem in the developing countries like India, it is wise to compare incidence rates of these fistulas in the developing countries with those in the developed countries. In the developing world, the true incidence of VVFs is unknown, as many patients with this condition suffer in silence and isolation. In India and Pakistan, some 70% to 90% of women with fistula are abandoned or divorced.<sup>(5)</sup>

In the past, obstetric complications like prolonged obstructed labor, coupled with a lack of medical attention, were more common causes of UGF, especially VVF.<sup>(1,3,6)</sup> In developed countries, with much better obstetric facilities, the causative factors of UGF are mostly associated with gynecologic and pelvic surgery, especially hysterectomy, occurring in 1 in 1800 hysterectomies.<sup>(3,5,7)</sup> However, prolonged labor still remains a major cause in many underdeveloped countries with a low standard of obstetric care.<sup>(2,8)</sup> In prolonged labor, the unrelenting pressure of the entrapped fetal head against the mother's pelvis can cut off the flow of blood to the soft tissues of the bladder, vagina, and rectum. Independent of the fetal outcome, prolonged obstructed labor usually leads to sloughing away of the injured pelvic tissue, leaving a fistula between adjacent organs.<sup>(9)</sup>

Other rare etiologies of UGFs include urological and gastrointestinal surgery, illegal abortion, cesarean section, and congenital anomalies.<sup>(10-12)</sup> Bai and coworkers reported an overall incidence of 0.33% for urinary tract injury in pelvic surgeries.<sup>(13)</sup> The bladder is the most common organ to be injured, comprising 76% of the cases. Harkki-Siren and colleagues reported the

incidence of VVF formation to be 0.8 in 1000 procedures for all kinds of hysterectomies.<sup>(14)</sup> In their report of 230 cases of VVF, Kochakarn and associates found that more than 70% were caused by hysterectomy.<sup>(15)</sup> Laparoscopic hysterectomy has a higher incidence of urological injury than open surgery.<sup>(14)</sup> Urogenital fistulas other than VVF, are mostly the result of iatrogenic trauma; 4 of 5 cases of UGFs other than VVF among our patients were of nonobstetrical origin.

Regarding management, the most important factor for successful repair of a fistula is adherence to basic principles, including pre-operative evaluation, adequate exposure of the fistula, good hemostasis, resection of devascularized tissue, excision of surrounding fibrous tissue and removal of foreign body, tension-free closure, and adequate postoperative urinary drainage.<sup>(16)</sup> Our patients were kept catheterized for 14 to 21 days postoperatively.

Treatment of UGF is surrounded by a number of controversies. The first of those is when to perform the repair, ie, early or late repair, which can be a difficult dilemma for the physician and the patient. According to the literature, it is apparent that there is no consensus as to the definition of late (2 to 4 months) and early (1 to 3 months) repair.<sup>(17)</sup> Experienced surgeons are now operating as soon as the tissues are clean.<sup>(18)</sup> In our series, repair of fistula was done early, within 3 months. Classical opinion of repairing the UGF late, after 3 months, may be more applicable to the iatrogenic UGF, which forms a greater proportion of cases seen in the developed world. Moreover, several authors have reported comparable success with early and late surgical repair of iatrogenic UGF.<sup>(17,19,20)</sup> We found immediate repair to be highly effective in terms of closure and continence, and it prevents progressive downgrading of the patient medically, socially, and mentally.

Controversies also exist regarding approach and technique of repair. For VVF, transvaginal or transabdominal approach depends on the location of the fistula, relation with the ureteric orifice, and time to repair after fistula formation.<sup>(4)</sup> Many studies have claimed that the transvaginal approach is less invasive than the transabdominal

procedure.<sup>(21)</sup> In our institute, we prefer the vaginal approach when the fistula is low and easily approached vaginally. Advantages include lesser blood loss, low complication rate, shorter hospital stay, and early resumption of routine activities. The transabdominal approach is selected in cases where the fistula is high lying and cannot be adequately visualized vaginally, is close to the ureteral orifice, or is a large complex fistula.

There are various internationally recognized techniques for fistula repair. The specific method used usually depends on the surgeon's preferences and the nature of the fistula. Successful repair of UGF, especially complex and recurring, necessitates the use of adjunctive measures.<sup>(22)</sup> These include placement or interposition of some local tissue or graft between the two structures connected by the fistula, after complete excision of the fistula. Labial fat pad (Martius flap) interposition is a well-known technique performed via transvaginal approach. Via transabdominal and intraperitoneal approach, many tissues have been interposed in repair of VVF and other UGFs, including the omentum, peritoneal flap, gracilis muscle, bladder wall flap, or appendix epiploica.<sup>(23)</sup> The omentum and peritoneal flaps are easy to mobilize and thus are commonly used. Khawaja and colleagues found the peritoneum to be equally good as the omentum for the use as interposing tissue in repair of VVF, with a comparable complication rate.<sup>(24)</sup> Our experience also supports Khawaja and associates' observations. Also, suture can be applied in such a manner, so that minimum lengths of suture lines come in contact. This can be done by closing the bladder opening vertically and the vaginal opening horizontally in cases of VVF. Closing the vaginal opening transversally will also prevent or at least cause minimal vaginal stenosis. This can be followed in other UGFs wherever possible.

## CONCLUSION

Large numbers of UGFs have an obstetric origin, and are caused by prolonged obstructed labor and its complications. Early repair after clearing the infection is very effective and avoids extra sociomedical and mental trauma. The use of some

interposing tissue is highly recommended. When the basic principles of fistula repairs are adhered to, peritoneal flap repair is successful and very effective.

## CONFLICT OF INTEREST

None declared.

## REFERENCES

- Zacharin RF. A history of obstetric vesicovaginal fistula. *Aust N Z J Surg*. 2000;70:851-4.
- Hilton P, Ward A. Epidemiological and surgical aspects of urogenital fistulae: a review of 25 years' experience in southeast Nigeria. *Int Urogynecol J Pelvic Floor Dysfunct*. 1998;9:189-94.
- Kochakarn W, Pummangura W. A new dimension in vesicovaginal fistula management: an 8-year experience at Ramathibodi hospital. *Asian J Surg*. 2007;30:267-71.
- Danso KA, Martey JO, Wall LL, Elkins TE. The epidemiology of genitourinary fistulae in Kumasi, Ghana, 1977-1992. *Int Urogynecol J Pelvic Floor Dysfunct*. 1996;7:117-20.
- Cottingham J, Royston E. *Obstetric fistula: A review of available information*. Geneva: World Health Organization; 1991.
- Creanga AA, Genadry RR. Obstetric fistulas: a clinical review. *Int J Gynaecol Obstet*. 2007;99 Suppl 1:S40-6.
- Kumar S, Kekre NS, Gopalakrishnan G. Vesicovaginal fistula: An update. *Indian J Urol*. 2007;23:187-91.
- Lawson J. Tropical obstetrics and gynaecology. 3. Vesico-vaginal fistula--a tropical disease. *Trans R Soc Trop Med Hyg*. 1989;83:454-6.
- Wall LL. Dead mothers and injured wives: the social context of maternal morbidity and mortality among the Hausa of northern Nigeria. *Stud Fam Plann*. 1998;29:341-59.
- Puri M, Goyal U, Jain S, Pasrija S. A rare case of vesicovaginal fistula following illegal abortion. *Indian J Med Sci*. 2005;59:30-1.
- Ba-Thike K, Than A, Nan O. Tuberculous vesico-vaginal fistula. *Int J Gynaecol Obstet*. 1992;37:127-30.
- Dolan LM, Easwaran SP, Hilton P. Congenital vesicovaginal fistula in association with hypoplastic kidney and uterus didelphys. *Urology*. 2004;63:175-7.
- Bai SW, Huh EH, Jung da J, et al. Urinary tract injuries during pelvic surgery: incidence rates and predisposing factors. *Int Urogynecol J Pelvic Floor Dysfunct*. 2006;17:360-4.
- Harkki-Siren P, Sjoberg J, Tiitinen A. Urinary tract injuries after hysterectomy. *Obstet Gynecol*. 1998;92:113-8.
- Kochakarn W, Ratana-Olarn K, Viseshsindh V, Muangman V, Gojaseni P. Vesico-vaginal fistula: experience of 230 cases. *J Med Assoc Thai*. 2000;83:1129-32.
- Ayed M, El Atat R, Hassine LB, Sfaxi M, Chebil M, Zmerli S. Prognostic factors of recurrence after vesicovaginal fistula repair. *Int J Urol*. 2006;13:345-9.
- Blaivas JG, Heritz DM, Romanzi LJ. Early versus late repair of vesicovaginal fistulas: vaginal and abdominal approaches. *J Urol*. 1995;153:1110-2; discussion 2-3.
- Waalwijk K. The immediate surgical management of fresh obstetric fistulas with catheter and/or early closure. *Int J Gynaecol Obstet*. 1994;45:11-6.
- Blandy JP, Badenoch DF, Fowler CG, Jenkins BJ, Thomas NW. Early repair of iatrogenic injury to the ureter or bladder after gynecological surgery. *J Urol*. 1991;146:761-5.
- Cruikshank SH. Early closure of posthysterectomy vesicovaginal fistulas. *South Med J*. 1988;81:1525-8.
- Dupont MC, Raz S. Vaginal approach to vesicovaginal fistula repair. *Urology*. 1996;48:7-9.
- Punekar SV, Prem AR, Kelkar AR, Ridhorkar VR. Repair of complex vesicovaginal fistulas using peritoneal flap interposition: a different design. *Indian J Urol*. 1997;14:24-8.
- Gerber GS, Schoenberg HW. Female urinary tract fistulas. *J Urol*. 1993;149:229-36.
- Khawaja AA, Ahmed R, Anjum R. Role of peritoneum as interposition tissue in the management of vesicovaginal fistula. *J Surg Pak*. 2005; 10:2-4.