Original Article

Management of Vesicovaginal Fistula: An Experience with 32 Cases

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Objective: To document our experience of the repair of vesicovaginal fistula (VVF) with special reference to surgical approach.

Study Design: Case series study

Place and duration: Department of Urology and Renal Transplantation, Institute of Kidney Diseases, Hayatabad Medical Complex (HMC), Peshawar and Urology Department, Lady Reading Hospital, Peshawar over a period of five years from January 2006 to December 2010.

Materials and Methods: The study included VVF patients who underwent operative treatment during the study period. Fistulas were divided into two simple and complex types depending on the site, size, etiology and associated anomalies. Simple VVFs were approached through the vaginal route while complex VVFs were managed through transabdominal route. Patients were evaluated at two to three weeks initially, three-monthly twice and later depending on symptoms.

Results: There were 32 patients with VVF. The mean age was 35 ± 07 years. Twenty patients (61.5%) had simple fistulas while 12 (38.5%) patients had complex fistulas. The most common etiology was obstetric trauma in 16 (50%) patients, followed by pelvic Surgery in 13 (40.62 %) patients. Twenty (62.5%) patients were managed by transvaginal route, of which 3 had supratrigonal and 17 trigonal fistulas. Twelve (37.5%) patients with complex fistulas were managed by abdominal route. The mean blood loss, postoperative pain and mean hospital stay were shorter in transvaginal repair. The success rate was 90.62%. At a mean follow-up of three years, 29 women were sexually active, of these 07 (21.87%) complained of mild to moderate dyspareunia which gradually decreased over time.

Conclusion: The approach for the management of VVF has to be individualized depending on the local findings. Most of the simple fistulas irrespective of their locations are easily accessible transvaginally. The transvaginal approach is less invasive and achieves comparable success rates. We recommend transabdominal approach for complex fistula, which allows simultaneous correction of associated anomaly.

Keywords: Fistula, management, tuberculosis, vesicovaginal

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Introduction

Vesicovaginal Fistula (VVF), commonly caused by prolonged obstructed labor, is one of the worst complications of childbirth and poor obstetric care in the developing world.[1] In developed world complicated pelvic surgery or pelvic irradiation is the common cause of vesicovaginal fistula.[2] This unpleasant complication leaves the affected women with continuously leaking urine, excoriation of vulvas and vaginas, often rendering them social outcasts.[3] The key to successful repair of vesicovaginal fistula lies in the classic principles defined by Couvelaire in 1953, "good visualization, good dissection, good approximation of the margins and good urine drainage.[4] These principles can be achieved both through vaginal and abdominal approaches.

The clinical history of vesicovaginal is usually straightforward. Typically, a gynecologic procedure, such as hysterectomy or prolonged labour is involved. Often, the operation is reported to have been technically challenging. Poor intraoperative exposure, coupled with heavy bleeding at the operative site, are often risk factors. Associated bladder injury may have occurred and may have been repaired.[5]

Patients with vesicovaginal fistula often report painless unremitting urinary incontinence. This is also called total, or continuous, incontinence. Urinary incontinence may be exacerbated during physical activities, leading some women to confuse this with stress incontinence.[6]

Conversely, patients with ureterovaginal fistula may experience constitutional symptoms of fever, chills, malaise, flank pain, and gastrointestinal symptoms in association with continuous urinary incontinence. Constitutional symptoms may result from hydronephrosis secondary to ureteral obstruction or urinary extravasation into the retroperitoneal space.[7] Acute onset of vesicovaginal fistula immediately after pelvic surgery does not cause constitutional symptoms. If the Foley catheter is still in place, the first sign of impending fistula formation is the presence of hematuria.[8]

Although the choice of vesicovaginal fistula repair technique partly depends on the characteristics of the fistula (site, size, clinical context), it also largely depends on the experience of the surgical team. Most of the simple vesicovaginal fistulas both trigonal and supratrigonal, can be easily managed thorough the transvaginal route, specially by using simple maneuvers to bring the fistula closer to the operating surgeon.[6] More complex fistula requires transabdominal route for optimal repair.[9]

In managing patients both with simple and complex vesicovaginal fistulas and formulate a mechanism to choose the best approach based on our experience.

Materials and Methods

This case series study was carried out at the Department of Urology and Renal Transplantation, Institute of Kidney Diseases, Hayatabad Medical Complex (HMC), Peshawar and Urology Department, Lady Reading Hospital**,** Peshawar over a period of five years from January 2006 to December 2010. The study included VVF patients who underwent operative treatment during the study period. These included all patients who presented to us during this period and also patients who were referred to us by primary and secondary healthcare centers as well as by private practitioners. The data recorded etiology, site, size and numbers of fistulas; surgical approach and ancillary procedures required; complications and their sexual rehabilitation. All patients were evaluated preoperatively by history, physical examination, serum creatinine, ultrasonography abdomen and intravenous urography (IVU).

Cystoscopy was performed to determine the site, size and numbers of the fistulas along with the assessment of the mucosa around the fistulous opening. Vaginal speculum examination was done to assess the vaginal capacity and vaginal mucosal integrity. On the basis of site, size, etiology and associated anomaly, fistulas were divided in two groups, simple and complex.

Primary fistula greater than 4 cm in size or recurrent fistula greater than 2cm in size, fistula involving urethra and/or bladder neck, fistula requiring ureteric reimplantation/ augmentation cystoplasty, fistula with large bladder stone or fistula with scarred and non-capacious vagina and post radiotherapy fistula were considered as complex fistulas while the remainder were categorized as simple fistulas. Fistula repair was done through either the vaginal or abdominal route, depending on the type of fistula i.e. simple or complex. Primary fistulas were repaired once local vaginal tissue was healthy and infection-free while for recurrent or obstetric fistulas repair was delayed for at least three months or unless infection-free. Simple VVFs were approached through the vaginal route and complex VVFs via the transabdominal route.

Vaginal Repair: When the vaginal route was used and ureteric orifices were close to the fistula, both the ureters were catheterized cystoscopically to safeguard the ureters. After identification of fistula, a small-sized Foley catheter was passed through it in the bladder directly or after minimal dilatation of fistula tract in case of small fistula and balloon was inflated. Traction on Foley catheter helped to bring the fistula closer to the operating surgeon.

The fistula repair was done in three layers. First layer was created by approximating the fistula edges at the bladder wall. Second layer was created by approximation of perivesical fascia over the first layer. Third layer of repair involved the closure of vaginal flaps. Interposition graft was taken from labial fat or peritoneum of cul-de-sac in all patients. Bladder was drained with per urethral catheter in all patients for 14 days postoperatively.

Abdominal Repair: Cystoscopy and ureteric catheterization was done before opening the abdomen. Bladder was bivalved till the fistula site and then was dissected off the vagina. Bladder and vagina were closed separately and interposition graft was placed in all using omentum or pelvic peritoneum. Suprapubic and per urethral catheter was placed for bladder drainage for 14 days postoperatively.

All patients were kept on anticholinergics to avoid bladder spasms and full-dose antibiotics in the perioperative period for three days and then discharged on 500 mg ciprofloxacin daily till the catheter was removed.

Patients were evaluated at two to three weeks initially and three-monthly later twice and later on depending on the presence of symptoms. Abstinence from sexual intercourse was advised for three months postoperatively.

Results

There were 32 patients with VVF. The patients ranged in age from 19-57 years with a mean age of 35±07 years. Twenty patients (61.5%) had simple fistulas while 12 (38.5%) patients had complex fistulas. The locations of these fistulas were supratrigonal 11 (34.38 %), trigonal 18 (56.25 %), mixed 3 (9.37 %). Twenty five (78.12 %)

patients had primary fistula while 11 (21.88 %) recurrent fistula with history of only one previous surgery. The most common etiology was obstetric trauma in 16 (50%) patients, followed by pelvic Surgery in 13 (40.62 %) patients. The details of fistula are given in table I.

Table I: Details of the fistulas. (n=32)

Fistula Details		Number of patients (%)
Type of Fistula	Primary	25 (78.12 %)
	Recurrent	07 (21.88 %)
Nature of Fistula	Simple	20 (62.5 %)
	Complex	12 (37.5 %)
Location of Fistula	Trigonal	18 (56.25 %)
	Supratrigonal	11 (34.38 %)
	Mixed	03 (9.37 %)
Etiology of fistula	Obstetric Trauma	16 (50.00 %)
	Pelvic Surgery	13 (40.62 %)
	Post-radiation	02 (6.25 %)
	Tuberculosis	01 (3.12 %)

Twenty (62.5%) patients with simple fistulas were managed by the transvaginal route, of which 17 had trigonal and 3 supratrigonal fistulas. Twelve (37.5%) patients with complex fistulas were managed through the abdominal route. The sites of fistulas in these patients were trigonal (n=1), supratrigonal (n=8) and trigonal plus supratrigonal (n=3). Reasons for transabdominal repair were: poor vaginal capacity (n=3), large fistula size (>4 cm) and closeness to ureteric orifice (n=6), extensive fibrosis around fistula with nonpliable vagina (n=2), and non-visualization of ureteric orifice on cystoscopy in one patient. Routes of fistula repairs according to their etiology are given in table II.

While comparing the two approaches we found lesser amount of mean blood loss (330 vs. 600 ml), shorter mean operative time (67 vs. 145 min) and shorter mean hospital stay (three vs. seven days) in transvaginal repair as compared to transabdominal repair. Transvaginal repair was also associated with decreased requirement of analgesics.

Table II: Route of fistula repair according to etiology. (n=32)

Etiology	Veginal Repair n=20	Abdominal Repair n=12
Obstetric Trauma (n=16)	11	05
Pelvic Surgery (n=13)	09	04
Post-radiation (n=02)	-	02
Tuberculosis (n=1)	-	01

We used interposition flaps all transvaginal and transabdominal repair. We used omentum in six patients, Martius flap (bulbocavernosus muscle) in twelve patients and peritoneal flap in two patients as interposition tissue in vaginal repair while in abdominal repair it was omentum in eight patients, peritoneum in three patients and both omentum and peritoneum in one patient.

We had three failures with an overall success rate of 90.62%. Of these three patients, two had initial surgery by abdominal route while one had through vaginal approach. Recurrent fistula size was less than 1 cm in two patients, which were managed by the transvaginal approach while the third patient infection of the fistula site and was managed by transabdominal route three months after the initial operation. At a mean follow-up of three years (range six months – 3.6 years) 30 women were sexually active and of these 7 (21.87 %) patients complained of mild to moderate dyspareunia, the intensity of which gradually reduced over one year since the time of fistula repair.

Discussion

Vesicovaginal fistulas are among the most distressing complications of obstetric and gynecologic procedures. The condition is a socially debilitating problem with important medicolegal implications. In contrast to the western world, obstetric VVFs remain a major medical problem in many underdeveloped countries with a low standard of antenatal and obstetric care.[8-11] In contrast to the postsurgical fistula, which is usually the result of more direct and localized trauma to otherwise healthy tissues, the obstetric fistula is the result of a "field injury" to a broad area that results in wider area of damage; thus producing a larger size of fistula.[12] Various methods of fistula repair have been described, Latzko procedure, open transabdominal, transvaginal, laparoscopic, transurethral endoscopic and urinary diversion depending on the characteristics of the fistula.[11,13,14] The vaginal approach essentially involves adequate exposure and dissection of fistulous tract along with layered closure of the fistula with or without an interpositional flap.[15,16] The most frequently used abdominal approach nowadays is the O'Connors bivalve technique.[8] The success rate has varied between 75-95% with these various techniques.[11,12,17,18]

In spite of the management being better defined and standardized over the last decade the surgical approach has always been an issue of contention for the repair of VVF. The fundamental treatment principles for VVF repair (adequate exposure, tension-free approximation of the fistula edges, nonm overlapping suture lines, good hemostasis, watertight closure and adequate postoperative bladder drainage) can be achieved through both, vaginal and abdominal route, depending

upon the surgical experience. Transvaginal exposure of vesicovaginal fistulas may be a little challenging but it has been shown to be associated with less blood loss, morbidity and shorter hospital stay.[12]

The factors like fistula size, closeness of fistula to the ureteric orifice and time interval of injury now hardly affect the choice of repair and nowadays there is a trend more towards the transvaginal approach.[12,17] Transvaginal exposure of VVF may be a little difficult which may be lessened by catheterization of the fistula with a Foley catheter and use of the inflated balloon for traction enables the operating surgeon to pull it closer to view.[6, 12] We too found this maneuver quite useful in most of our patients with both trigonal as well as supratrigonal fistulas. We did not excise the fistulous tract or the involved vaginal cuff for fear of enlarging the fistula size. Moreover, raising adequate vaginal and bladder flaps obviates the need of these two steps.[12,17,19]

In the present study 20 patients were managed transvaginally out of which 3 had supratrigonal fistulas and these were the patients in whom traction by catheter placed through the fistula helped us in bringing the fistula closer to view thus making the vaginal approach quite convenient. Even recurrent fistulas up to 2 cm (n=2), which had occurred after prior failed repair done elsewhere could also be done through the vaginal route. However, when the fistula is complex vaginal exposure of the fistula is suboptimal which may compromise the repair or endanger the ureters. In these circumstances, a transabdominal approach should be considered. We had 20 cases of complex VVFs, which were managed with the same technique.

Obstetric trauma (50%) remains the predominant cause in our cases that gave rise to a wider fistula secondary to field injury effect which is comparable to previously reported series.[12] However, the majority of post-hysterectomy fistulas in the present series are less than 2 cm in diameter which is again comparable to other previously reported series.[16]

To improve the results of fistula repair various grafts and flaps have been interposed between the bladder and vagina to promote healing and decrease the incidence of fistula recurrence.[10,11,12,14] Since most of our patients had poor nutritional status, previously failed repair done elsewhere and complex fistulas, we used interposition flaps in all patients. Martius labial pad of fat was the flap of choice in vaginal repair, while in the abdominal route it was omentum, if omentum was not available peritoneum was used. When compared, the two approaches i.e. transabdominal versus transvaginal, the results were quiet comparable. We found that the transvaginal approach is less morbid with less postoperative pain, early recovery and shorter hospital stay.

Conclusion

The approach for the management of VVF has to be individualized depending on the local findings. Most of the simple fistulas irrespective of their locations are easily accessible transvaginally. The transvaginal approach is less invasive and achieves comparable success rates. We recommend transabdominal approach for complex fistula, which allows simultaneous correction of associated anomaly.

References

1. Latzko W. Postoperative vesicovaginal fistulas: Genesis and therapy. Am J Surg 1942;58:211-28.
2. Zimmern PE, Hadley HR, Staskin DR, Raz S. Genitourinary fistulae. Vaginal approach for repair of vesico-vaginal fistulae. Urol Clin North Am 1985;12:361-7.
3. Carr LK, Webster GD. Abdominal repair of vesicovaginal fistula. Urology 1996;48:10-1.
4. Couvelaire R. Reflections on a personal statistics of 136 vesicovaginal fistulas. J Urol Medicale Chir 1953;59:150-60.
5. Woo HH, Rosario DJ, Chapple CR. The treatment of vesicovaginal fistulae. Eur Urol 1996;29:1-9.
6. Stothers L, Chopra A, Raz S. Vesicovaginal fistula. *In* : Raz S, ed. Female urology. WB Saunders Co: Philadelphia, London; 1996: 492-506.
7. Eilber KC, Kavaler E, Rodriguez LV, Rosenblum N, Raz S. Ten-year experience with vesicovaginal fistula repair using tissue interposition. J Urol 1998;160:728-30.
8. O'Connor VJ Jr, Sokol JK, Bulkley GJ, Nanninga JB. Suprapubic closure of vesicovaginal fistula. J Urol 1973;109:51-4.
9. Hadley HR. Vesicovaginal fistula. Curr Urol Rep 2002;3:401-7.
10. Dalela D, Goel A, Shakhwar SN, Singh KM. Vesical calculi with unrepaired vesicovaginal fistula: A clinical appraisal of an uncommon association. J Urol 2003;170:2206-8.
11. Hodges AM. The Mitrofanoff urinary diversion for complex vesicovaginal fistulae: Experience from Uganda. BJU Int 1999;84:436-9.
12. Arrow Smith S, Hamlin EC, Wall LL. Obstructed labor injury complex: Obstetric fistula formation and the multifaceted morbidity of maternal birth trauma in the developing world. Obstet Gynecol Surv 1996;51:568-74.
13. Raz S, Bregg KJ, Nitti VW, Sussman E. Transvaginal repair of vesicovaginal fistula using a peritoneal flap. J Urol 1993;150:56-9.
14. McKay HA. Vesicovaginal fistula repair: Transurethral suture cystorrhaphy as a minimally invasive alternative. J Endourol 2004;18:487-90.
15. Ou CS, Huang UC, Tsuang M, Rowbotham R. Laparoscopic repair of vesicovaginal fistula. J Laparoendosc Adv Surg Tech A 2004;14:17-21.
16. Sims JM. On the treatment of vesicovaginal fistula. Am J Med Sci 1852;23:59.
17. Martius H. Die operative Wiederherstellung der vollkommen fehlenden Harnrohre und des Schliessmuskels derselben. Zentralbl Gynakol 1928;52:480.
18. Iselin CE, Aslan P, Webster GD. Transvaginal repair of vesicovaginal fistulas after hysterectomy by vaginal cuff excision. J Urol 1998;160:728-30.
19. Sotelo R, Mariano MB, Garcia-Segui A, Dubois R, Spaliviero M, Keklikian W, *et al* . laparoscopic repair of vesico vaginal fistula. J Urol 2005;173:1615-8.