Original Article

Within Our Walls: A Comprehensive Case Series on Vesicovaginal Fistula

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Abstract

Background: Vesicovaginal Fistula (VVF) may result from obstetric injuries or gynecologic surgeries, resulting in incontinence of urine, which needs surgical intervention to achieve the best results.

Objectives: To evaluate the clinical presentation, surgical results, and complications in patients diagnosed and treated for Vesicovaginal Fistula.

Methods: This was a descriptive, retrospective, single-center case series that evaluated 15 consecutive VVF patients treated at the Pakistan Kidney and Liver Institute & Research Center (PKLI&RC) in the time frame from September 2018 to September 2024 through transabdominal repair, depending on the size and site of the fistula. The data was collected pre-operatively, intra-operatively, and post-operatively.

Results: The mean age was 43.00 ± 7.51 years with a mean BMI of 28.36 ± 5.16 kg/m2. A total of 12 patients (80%) complained of urine leakage via the vagina. Eight patients (53.3%) had previous VVF repair, with abdominal hysterectomy being the main cause in 4 patients (26.7%). The median operating time was 215 minutes (IQR 180-270 minutes) with a median post-operative stay of 5 days (IQR 4-6 days). Blood transfusion was not required. The complications seen were transient fever and discomfort in 2 patients (13.3%) with long-term complications in 2 patients (13.3%).

Conclusion: Main causes of VVF include obstetric and gynecologic surgeries. Repair procedure, surgical method, results are good, and the complications are minimal. There are specific strategies that ought to be followed after the procedure to facilitate a successful recovery and to prevent a relapse.

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Introduction

Vesicovaginal fistula (VVF) can be described as an abnormal or pathological connection that develops between the urinary bladder and the vagina, leading to continuous involuntary leakage of urinary fluid into the vaginal canal. VVF can be associated with severe physical, psychological, and sociological aspects among affected women.[1] Estimating the incidence of VVF differs across the world's socioeconomic and different healthcare delivery systems. However, in the majority of LMICs, VVF complications follow prolonged obstructed labor causing ischemic damage compared to HICs, where hysterectomy becomes the main key contributor in VVF complications that follow the use of the operative procedure in(gynecologic surgery)High income countries.[2,3] Hysterectomy-related VVF has been associated with an approximate annual rate of 2.2/1000 in the

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laparoscopic method compared to 1/1000 in the open lower abdomen method in addition to 0.2/1000 in the vaginal method of VVF complication development.[4] Other causes of VVF in association pelvic radiation, pelvic malignancies, trauma, and infections.[5,6]

Pathophysiology includes damage to the vesicovaginal septum due to ischemia, injury, or septum necrosis, which can be exacerbated by compromised healing or vascularization.[7-9] If left untreated, VVF will result in chronic urinary incontinence, skin erosion in the vulvar region, infections of the urinary tract, and extreme levels of psychosocial morbidity.[10] The reference treatment for VVF is surgery, depending on fistula size, site, cause, and tissue integrity.[11] Although high success has been reported, fistula recurrence and complications still pose concerns.[12]

The rationale is to note the clinical spectrum, surgical outcomes, and complications encountered in the cases treated in the tertiary care center in the country. Hopefully, the findings from the current series could lead to improvements in surgical practice and patient care in the aspects concerning the quality of life associated with the treatment of VVF.

Methods

This single-centered case series retrospective study was held at the Urology Department, PKLI Lahore, Pakistan, on those VVF patients who were being treated between September 2018 and September 2024. The criteria used to select the candidate were those who were diagnosed with VVF and their complete data files were accessible. Patients who were not selected because their data files were incomplete were eliminated. The patient files of VVF, which were stored in the form of electronic files, were considered.

All patients underwent the VVF repair procedure under general or regional anaesthesia. In most instances, after proper preparation of patients for the procedure, an abdominal procedure ensued, with patients positioned in lithotomy position. After that, the fistula would be identified, and dissection of the surrounding tissue would entail the identification of the edges of the fistula. Edges were thus removed and closure carried out through the use of absorbable sutures (Vicryl 2-0 and 3-0). Care was taken to perform tension-free closure of the bladder and vaginal walls. Ureteral stents were used in selected patients to maintain the patency of the ureters during the healing phase. A Foley catheter was left in situ in the postoperative period for 2–3 weeks for drainage of the bladder in order to allow healing and to reduce.

The main outcome measurements for the study include the clinical profile of the patients, surgical outcome, and complication that occurred among patients treated for VVF. Using a data collection form, data for this study were obtained retrospectively. The data form allowed for the acquisition of information systematically, which included preoperative clinical presentation, imaging, previous clinical/surgical history, previous surgery, pathology, biopsy, and follow-up information for more than 30 days. Approval from the Institutional Review Board (IRB) has been obtained for conducting this study [PKLI-IRB/AP/175]. Data for this study has also been collected between September 2018 and September 2024. Informed consent has not been required for the study as it is a retrospective study. The data was coded and anonymized to protect patient privacy. All identifiable information was removed before the data was analyzed. Data was analyzed with SPSS version 27.0. Statistics were done with SPSS (Statistical Package for the Social Sciences)

Descriptive statistical methods were employed to analyse and describe the subject's demographic and clinical variables. Continuous variables were presented using means and standard deviations if they were normally distributed, whereas median and interquartile ranges were used if they were not normally distributed. Categorical variables were presented using frequencies and percentages. Normality tests on continuous variables were conducted using Shapiro-Wilk tests. Variables that had non-significant p-values ($p > 0.05$) in Shapiro-Wilk tests were assumed to be normally distributed. Similarly, variables that were significantly different from normality ($p < 0.05$) were assumed to be non-normally distributed.

Results

All 15 patients were married women from various districts of Punjab. The mean age was 43.0 ± 7.5 years, and mean BMI was 28.4 ± 5.2 kg/m^2. The median duration of symptoms was 12 months (IQR: 6–24 months).

All patients presented with continuous urinary incontinence. In addition, three patients (20%) also reported other associated features such as foul-smelling discharge with excoriation, perineal dermatitis from prolonged catheterization, and dysuria with intermittent fever.

Eight patients (53.3%) had undergone at least one prior attempt at VVF repair, representing failed previous surgical interventions. Comorbidities included diabetes mellitus in 1 patient (6.7%), both diabetes and hypertension in 5 (33.3%), and HCV positivity in 1 (6.7%). The leading cause was abdominal hysterectomy, seen in 4 patients (26.7%). Details of prior failed procedures are summarized in Table 1.

All patients underwent transabdominal repair via midline

Table 1: *Causes of Vesicovaginal Fistula (n = 15)*

Cause	n (%)
Hysterectomy with ureteric reimplantation	1 (6.7)
Total abdominal hysterectomy + multiple repairs	2 (13.3)
Cesarean section with bladder repair	2 (13.3)
C-section + hysterectomy with ureteric injury	1 (6.7)
Hysterectomy alone	1 (6.7)
Multiple repairs + hysterectomy for uterine rupture	2 (13.3)
TAH + salpingo-oophorectomy	2 (13.3)

incision with omental interposition. The median fistula size was 0.6 cm (IQR: 1.5 cm). (Figure 1 A-D)

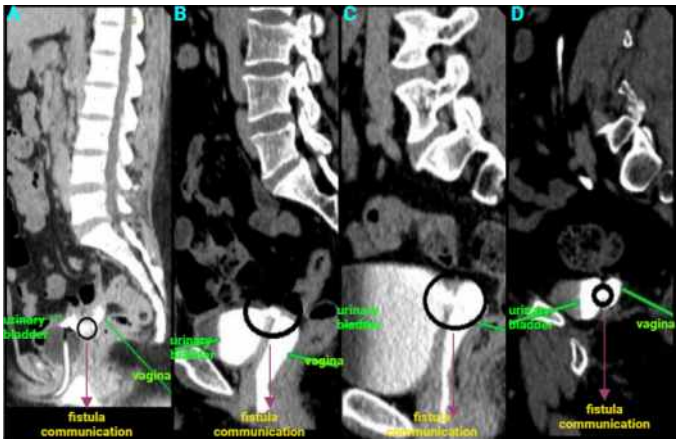

Figure 1: *CT images of various patients illustrating fistulous communication (black ring) between the bladder and vagina. Panels A-D highlight the fistula tract in distinct anatomical locations and orientations, showing the complexity and variation of fistula presentations across patients.*

Table 2: *Postoperative Complications (≤30 days)*

Complication	Management	Clavien-Dindo	n (%)
Fever	Analgesia + antibiotics	I	1 (6.7)
Seroma	Aspiration under LA	I	1 (6.7)
Wound infection	Secondary healing	II	1 (6.7)
Fever + flank pain	Antibiotics	II	1 (6.7)

Median operative time was 215 minutes (IQR: 180-270 min), and median blood loss was 150mL (IQR: 100-300ml). However, none were transfused. Median length of stay in the hospital was 5 days (IQR: 4-6 days). Six patients (40%) were admitted to ICU post-operatively due to anesthesiologic or monitoring needs; all were discharged home without significant complications. There were a few cases of early post-operative complications. Four patients (26.7%) experienced minor complications (Table 2).

During the long-term follow-up period of >30 days, 2 patients (13.3%) developed urinary tract infections, one of whom also experienced stent-related symptoms, and were treated successfully with courses of antibiotics and removal of the stent.

Table 3: *Comparison of Present Study Findings with Published Literature on Vesicovaginal Fistula Repair*

Study	Sample size	Mean Age (yrs)	Etiology (major cause)	Surgical Approach	Success Rate	Post-op Complications
Present study (PKLI, Lahore, 2025)	15	43.0 ± 7.5	Hysterectomy-related (26.7%)	Transabdominal repair with omental interposition (100%)	100% closure	26.7% minor complications (fever, seroma, wound infection); 13.3% late UTIs
Nizamuddin et al., 2020 (Swat, Pakistan) [16]	58	25–65	Obstructed labour (44.8%)	Transabdominal (96.6%), combined 3.4%	96.5%	Bladder dysfunction (44.8%), UTIs (34%), wound infection (3.4%)
Hafeez et al., 2005 (Lahore, Pakistan) [17]	14	34.8 ± 6.3	Obstetric (71.4%)	Vaginal (78.6%), abdominal (21.4%)	85.7%	Not specified
Ashraf et al., 2012 (Faisalabad, Pakistan) [18]	68	32 (17–53)	Iatrogenic hysterectomy (61.8%)	Abdominal (73.5%), vaginal (26.5%)	Abdominal: 90%; Vaginal: 83.3%	Wound infection (10%), ileus (14%), hematuria (16%)
Widyasari et al., 2025 (Indonesia) [19]	47	42 ± 6	Surgery (42.6%), malignancy (38.3%), obstetric (17%)	Mixed; many high/complex cases	Repair success ~95.5% (1 failure)	Not detailed
Deepak et al., 2025 (India) [20]	32	Not given	Hysterectomy (majority)	Transabdominal (88.4%), transvesical (100%), vaginal (66.6%)	Overall 87.5%	Recurrence (12.5%), urgency (15.6%), UTI (6.3%), SSI (3.1%)

Discussion

A vesicovaginal fistula is an abnormal connection between the bladder and vagina, resulting in chronic leakage of urine through the vaginal canal.[13] It has a profound impact on quality of life, as normally asymptomatic women are faced with chronic dribbling, odor, and subsequent social isolation. The most commons cause in developed countries is gynecological surgery, while in developing countries obstructed labor and pressure necrosis are the major etiological factors.[14] Surgical intervention is generally advised when conservative measures fail, and success in fistula repair ranges from 70% to 100%, depending on the approach-transvaginal, transabdominal, or transperitoneal.[15] Preventive measures must involve universal education, improving the status of women, and facilitating access to medical services.[5] In our case series, most cases of VVFs were iatrogenic and following a hysterectomy, and over half the patients had previously failed repairs. Transabdominal repair with omental interposition resulted in a 100% success rate and minor complications for all patients. In order to appreciate the findings in this study, a comparison of the findings with other studies being conducted within the country and worldwide has been shown in a tabulated form (Table 3).

The comparative analysis clearly shows that, while obstructed labor is still a strongly contributing factor for VVF in certain areas of Pakistan, the role of iarogenous trauma in relation to gynecological surgery is being increasingly realized, as evidenced by the data presented here and other studies carried out in Faisalabad and India. Also, while other studies were carried out using a combination of surgical modalities, our purely transabdominal technique of fistula closure with interpositional omentoplasty showed recession rates comparable to, if not better than, those of other regions, as well as globally, especially among the complex/ failure group. These two factors, cumulatively, suggest that our data would support a policy of individually tailored surgical plans, giving preference to the transabdominal technique of repair whenever possible, especially in the setting of complex/past failures, as evidenced in the current scenarios of the ever-unfolding etiology of VVF. Strength of this study exists in being performed in a high-volume tertiary center, wherein the follow-up was six years, giving good information on the operative and pathologic findings. Yet, the drawbacks of this research lie in being a retrospective in nature and in being based on a small sample population. Directions for research in the future should emphasize prospective investigation on a large scale in order to validate the efficacy of methods of VVF surgery.

Conclusion

This particular case series also draws attention to the fact that hysterectomy remains the main cause of vesicovaginal fistula in our series, in line with new trends in our region and the global outlook. There was a 100% success rate with transabdominal repair with interposition, in patients with previous unsuccessful repairs as well. In the short-term follow-up of patients, complications of 26.7% were recorded, which were all simple and conservatively managed, while in the long-term follow-up, the morbidity was restricted to urinary tract Infections in 13.3% of patients.

Ethics Approval: The present study protocol was reviewed and approved by the Institutional Review Board of Pakistan Kidney and Liver Institute and Research Centre Lahore, Pakistan (approval number: Ref # PKLI-IRB/AP/175). Written informed consent was waived due to the retrospective nature of the study.

Conflict of Interest: The authors declare no conflict of interest.

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Authors' Contribution

NBN, NZ, SM, AR, AA, AN: Conception & design, acquisition of data, critical revision, final approval of the version to be published

SIB, MA, AC: Acquisition of data, drafting of article, final approval of the version to be published

SI: Drafting of article, analysis & interpretation of data

References

1. Chinthakanan O, Sirisreetreerux P, Saraluck A. Vesicovaginal fistulas: prevalence, impact, and management challenges. Medicina (Kaunas). 2023; 59(11):1947. doi: 10.3390/medicina59111947.
2. Rajaian S, Pragatheeswarane M, Panda A. Vesicovaginal fistula: review and recent trends. Indian J Urol. 2019; 35(4):250–8. doi: 10.4103/iju.IJU_147_19.
3. Malik MA, Sohail M, Malik MT, Khalid N, Akram A. Changing trends in the etiology and management of vesicovaginal fistula. Int J Urol. 2018; 25(1):25-9. doi: 10.1111/iju.13419.

4. Kurokawa I, Nomura Y, Nakagawa C, Okada Y, Fuji K, Yoshimura Y. Transvaginal vesicovaginal fistula closure: a retrospective study of 28 cases at a single facility in Japan. Int J Urol. 2023;30(7):586-91. doi: 10.1111/iju.15181.
5. Margulies SL, Geller EJ. Vaginal repair of vesicovaginal fistula: comparison of national practice patterns by surgeon specialty. Int Urogynecol J. 2022; 33(6): 1675 -83. doi: 10.1007/s00192-022-05199-1.
6. Hernández-Hernández D, Navarro-Galmés MÁ, Padilla-Fernández B, Ramos-Gutiérrez VJ, Castro-Díaz DM. Same problem, different approaches: transvesical and extravesical laparoscopic vesicovaginal fistula repair-case report. Transl Androl Urol. 2021;10(10):3885-3890. doi: 10.21037/tau-21-373.
7. El-Azab AS, Abolella HA, Farouk M. Update on vesicovaginal fistula: a systematic review. Arab J Urol. 2019; 17(1):61-8. doi: 10.1080/2090598X.2019.1590033.
8. Jen RP, Rangel E, Sugano DE, Rodriguez LV. Vesicovaginal fistula: open approach. In: Sotelo R, Polotti CF, Arriaga J, editors. Urinary fistula. Cham: Springer; 2022. doi: 10.1007/978-3-031-15317-4_10.
9. Mengistu Z, Ayichew Z. Large vesicovaginal fistula after vaginal insertion of a plastic cap healed with two weeks of catheterization: a case report. Int Med Case Rep J. 2022; 15:437-41. doi: 10.2147/ IMCRJ. S380716.
10. Jefferson FA, Hanson KT, Robinson MO, Habermann EB, Madsen AM, Gebhart JB, et al. Perioperative outcomes of vesicovaginal fistula repair by surgical approach. Urogynecology.2024;30(2):114-22.doi:10. 1097/ SPV.0000000000001394.
11. Özkaya F, Cinislioğlu AE, Aksoy Y, Adanur Ş, Topdağı Yılmaz EP, Polat Ö, et al. Vesicovaginal fistula repair experiences in a single center high volume of 33 years and necessity of cystostomy. Turk J Urol. 2021; 47(1): 66-72. doi: 10.5152/tud.2020.20080.
12. Goh J, Romanzi L, Elneil S, Haylen B, Chen G, Ghoniem G, et al. An International Continence Society (ICS) report on the terminology for female pelvic floor fistulas. Neurourol Urodyn. 2020;39(8):2040-2071. doi: 10. 1002/ nau.24508.
13. Johnson BE, Venishetty N, Sung J, Goueli R. Case report: Development of vesicouterine and vesicovaginal fistulas after uterine rupture. Urol Case Rep. 2022; 46: 102297. doi:10.1016/j.eucr.2022.102297.
14. Niu S, Li Y, Tu S, Niu S, Qian J, Yang F, et al. Minimally invasive complete urinary tract drainage in the treatment of vesicovaginal fistula: a case report. Exp Ther Med. 2022;24(5):1-5. doi: 10.3892/etm.2022.11582.
15. Pandit H, Tajane A, Wagholika H, Shaikh A. Vesico vaginal fistula. In: Jain N, editor. Complex total laparoscopic hysterectomy (TLH) with newer approaches in bladder dissection. Singapore: Springer; 2024. doi: 10.1007/978-981-97-3226-5_23.
16. Nizamuddin, Elahi F, Ali M, Akbar F, Hussain M, Gul S. Outcome of vesicovaginal fistula repair at Urology Department STH Swat. J Saidu Med Coll Swat. 2020; 10(2):132-4. doi:10.52206/jsmc.2020.10.2.%25p.
17. Hafeez M, Asif S, Hanif H. Profile and repair success of vesicovaginal fistula in Lahore. J Coll Physicians Surg Pak. 2005;15(3):142-4.
18. Ashraf A, Jafari G, Mahboob G, Subhani M, Munir M, Akmal H, et al. Vesicovaginal fistula, causative factors and outcome of surgical management: An experience at PMC/Allied Hospital Faisalabad. Ann Punjab Med Coll. 2012;6:150-5. doi: 10.29054/ apmc/ 2012. 448
19. Widyasari A, Setyohadi TH, Hardianto G, Kurniawati EM. Vesicovaginal fistula: Characteristics, diagnosis, and management at Dr. Soetomo Hospital in three years (2020-2022). J Obstet Gynecol Cancer Res. 2025; 10(8): 588-91. doi:10.24200/jogcr.10.8.588.
20. Deepak N, Deepak MK. Surgical management of vesicovaginal fistula (VVF): Experience from a tertiary care centre. Int J Acad Med Pharm. 2025;7(2):61-4. doi:10.47009/jamp.2025.7.2.13.