

## Original Article



# Vesico-Vaginal Fistula Repair Through Abdominal Approach

Hafiz Al-Asad<sup>1</sup>, Asif Yazdani<sup>2</sup>, Zulfia Zinat Chowdhury<sup>3</sup>, Muhammad Faruk Hussain<sup>4</sup>,  
AKM Shahadat Hossain<sup>5</sup>, Md. Mostafizur Rahman<sup>6</sup>, Md. Ashraful Islam<sup>7</sup>.

### Abstract

**Background:** Vesico-Vaginal Fistula (VVF) is a major cause for concern in many developing countries with significant morbidity. Among the different techniques abdominal approach of VVF repair is important one. **Objective:** To find out the outcome of VVF repair by abdominal approach. **Materials and Methods:** It is a prospective study. Twenty-three patients with VVF were operated with abdominal approach from the period of January 2016 to January 2019. Age of patients, co-morbidities, cause, size and location of VVF were evaluated. Then abdominal approach of VVF repair was done. Operative time and need of blood transfusion were encountered. Post operative (POD) urine leakage, wound infection or other complications were enlisted. Patients were discharged with keeping urethral catheter for 14 days. Follow up was done after 1 and 3 month and in each follow up history and physical examination was done. All collected data were evaluated. **Results:** Mean age of the patient was 40 years. Among the 23 patients 12 (52%) patients had history of total abdominal hysterectomy, 9 had history of caesarian section and 2 cases had history of pelvic surgery. VVF repair was done at least 12 weeks after its occurrence. Operative time ranged from 90 minutes to 150 minutes. In the immediate POD no obvious complications were noted except one patient developed wound infection on 7<sup>th</sup> POD. Follow-up done as per schedule and no recurrence of VVF noted. **Conclusion:** VVF repair through abdominal approach is a feasible, safe and effective technique if performed meticulously.

**Key words:** Abdominal approach, Outcomes, POD, Risk factors, VVF, Wound infection.

**Date of received:** 11.03.2020.

**Date of acceptance:** 20.08.2020.

**KYAMC Journal.2020;11(3): 129-132.**

**DOI:** <https://doi.org/10.3329/kyamcj.v11i3.49869>

### Introduction

It is estimated that there are about three million VVF sufferers world wide.<sup>1</sup> VVF is a major cause for concern in many developing countries. It represents a significant morbidity in female urology. In developing nations obstetric trauma is the major etiologic cause of VVF.<sup>2</sup> VVFs have a debilitating impact on a patient's quality of life. The most common symptom in patients with VVF is constant urine leakage from the vagina. The etiology of VVF varies and may broadly be categorized into congenital or acquired, the latter being divided into obstetric, surgical, radiation, malignant, and miscellaneous causes. VVFs are the most commonly acquired fistulae of the urinary tract. In developed nations, surgery, especially gynecologic procedures, is the major cause.<sup>3</sup> VVFs can be

classified in various ways. Simple fistulas are usually small in size (<0.5cm) and are present as single non-radiated fistulas. Complex fistulas include previously failed fistula repairs or large-sized (>2.5 cm) fistulas, more often a result of chronic diseases or radiotherapy. Most authors consider intermediate-sized fistulas (between 0.5 and 2.5 cm) as complex ones. The evaluation of size, number, and exact location of fistula is important before curative surgery is undertaken. Better preoperative diagnosis allows better surgical planning.<sup>4</sup> Surgical repair is the gold standard treatment for VVF and numerous closure techniques have been documented since Marion Sims first reported a successful closure in 1852. Successful closure rates for VVF repair vary considerably in the literatures likely due to differences among patient

1. Assistant Professor, Urology, Dhaka Medical College Hospital, Dhaka, Bangladesh.
2. Resident, Urology, Dhaka Medical College Hospital, Dhaka, Bangladesh.
3. MO, Haematology, National Institute of Cancer Research and Hospital, Bangladesh.
4. Assistant Professor, Urology, Dhaka Medical College Hospital. Dhaka, Bangladesh.
5. Professor, Urology, Dhaka Medical College Hospital. Dhaka, Bangladesh.
6. Associate Professor (CC), Urology, Khwaja Yunus Ali Medical College Hospital, Enayetpur, Sirajganj, Bangladesh.
7. IMO, Urology, Dhaka Medical College Hospital, Dhaka, Bangladesh.

**Correspondence:** : Dr. Hafiz Al-Asad, Assistant Professor, Department of Urology, Dhaka Medical College Hospital, Cell: +88 01712-179043, Email: hafizalasad34@yahoo.com

demographics, complexity and repair strategies.<sup>3-5</sup> The method of closure depends on the surgeon's training and experience. Complex or high fistulas are better treated abdominally with meticulous dissection, and simple ones can be treated easily vaginally by simple excision of the devascularized tissue and multi-layer approximation of healthy tissues.<sup>6</sup> The trans-abdominal O'Connor's operation has been the most accepted method of repair of supra-trigonal fistula. The traditional O'Connor operation utilizes supra-pubic access for extra-peritoneal dissection of the retro-pubic space to dissect the bladder, followed by long sagittal cystotomy (bivalving the bladder) until the fistula is reached. The fistulous tract is excised, followed by two-layer closure after tissue transposition between the bladder and vaginal walls. The abdominal approach has been recommended for high retracted fistulas in a narrow vagina, fistulas which are proximal to the ureters, associated pelvic pathology and multiple fistulas.<sup>7</sup> In addition, the abdominal approach has good results with durable success (85-100 %).<sup>8</sup> Trans-peritoneal approach offers an opportunity for wide exploration and the use of a peritoneal or omental graft in managing larger fistulas. If there is associated intra-abdominal pathology, the abdominal approach allows concomitant procedures.<sup>4</sup>

This study demonstrates the outcome of repair of VVF by trans-abdominal, trans-peritoneal approach.

## Materials and Methods

Patients with VVF formed the study group. Twenty-three abdominal VVF repairs were done. Mean patient age was 40 years and mean fistula size was 2.5 cm. Patients with VVF due to gynaecological malignancy and having history of radiotherapy was excluded from study. A detailed history and physical examination was done in all patients. A three swab test was done to confirm the clinical suspicion. A routine ultrasonography of kidney, ureters, and bladder region was done in all cases. Intravenous urogram was necessary in patients having history of surgery. Cystoscopy was done to identify the fistula, its size and position. At the same instance vaginoscopy was done to observe the end of the fistula. VVF repair was performed at least 12 weeks after its occurrence.

Repairs were approached through an infra-umbilical, midline incision and a trans-peritoneal VVF repair technique was used for all patients. To briefly summarize the technique, cystoscopy was first performed and a guide wire was placed through the fistula tract. If the fistula was located in close proximity to the ureteral orifices, ureters were also commonly stented so ureteral orifices are not damaged during repair. Lysis of adhesions was then performed to separate abdominal viscera from the posterior peritoneum covering the bladder. Once adequate exposure was obtained, the retro-pubic space was entered and the bladder was mobilized from the pelvic side walls, leaving the bladder vascular pedicles intact. The peritoneum was next separated from the posterior wall of the bladder down to the vaginal apex. Starting approximately 5 cm above the fistula, the bladder was then bisected along the

posterior wall to the fistula tract, as identified by the guide wire. The edges of the fistula tract were excised from both the bladder and the vagina. After resecting the fistula tract, the surgical plain between bladder and vagina was sharply dissected around the excised tract for an additional 2 cm margin. Once adequate tissue was mobilized, the vagina and bladder were then closed independently with 3/0 vicryl. An interposition flap of peritoneum or omentum was placed between bladder and vaginal closures. Fistula data, including location and size, were determined through review of operative documentation at time of repair. Operative length and need of blood transfusion were extracted from anesthesia records. After surgery all patients were mobilized within 24 hours, urinary leakage was assessed during hospital stay, drain was removed at 7<sup>th</sup> POD and stitches were removed on same day. Patients were discharged on 8<sup>th</sup> POD with urethral catheter for 14 days. After 14 days catheter was removed. Patient's follow up was done on 1<sup>st</sup> and 3<sup>rd</sup> month. In each follow up history regarding urinary leakage and physical examination that is per vaginal examination was done. All findings were recorded.

## Results

Total 23 patients with VVF attended in the department of Urology, Dhaka Medical College Hospital, for repair during the period January 2016 to January 2019. Among them 12(52%) patients had history of total abdominal hysterectomy, 9 (39%) had history of caesarian section, 2(9%) cases had history of pelvic surgery. Their ages ranged from 30 years to 65 years with mean age 40±13.

Table I show demographics associated with VVF repair. Mean fistula size was 2.5±1.8, ranging from 1.5 to 3.8 cm. Location of fistula was, 15(65%) at posterior bladder wall, 5(22%) at trigone and 3(13%) at supra-trigone. Time with fistula prior to repair was 5±3 month and at least 3 months. Operative time ranged from 90 minutes to 150 minutes. Single unite blood transfusion was needed in 17 patients, others need no transfusion. In the immediate postoperative period no urinary leakage or obvious complications were noted. Patients were allowed to move within 24 hours. One patient developed wound infection on 7<sup>th</sup> post-operative day. All patients had their drain tubes removed on the 7<sup>th</sup> postoperative day and discharged with urethral catheters. Catheters were removed after 14 days following surgery. Follow-up was done at 1<sup>st</sup> and 3<sup>rd</sup> month. No recurrence of VVF was noted in any one of them.

**Table I:** Demographics of VVF repair.

Demographics	R	esults
Age (years)(Mean±SD)		40±13
Fistula size (Mean± SD)		2.5±1.8
Location of fistula (n%)		
Posterior bladder wall		15(65%)
Trigone		5(22%)
Supratrigone		3(13%)
Time with fistula prior to repair (months) (Mean±SD)		5±3
Etiology of fistula(n%)		
Abdominal hysterectomy		12(52%)
Caesarian Section		9(39%)
Pelvic surgery		7(30%)

## Discussion

There is no "best" approach for repair of VVF. Although factors such as size, location, and need for adjunctive procedures often have an impact on the choice of approach, the most important factor is the experience of the surgeon.<sup>9</sup> Thus, there is no preferred approach for all fistulas, and the optimal approach to the uncomplicated post gynecologic VVF is usually the one that is most successful in the individual surgeon's hands.<sup>10</sup> VVF can be treated with surgery or conservatively and the timing of repair remains controversial.<sup>2</sup> According to the literature, it is apparent that there is no consensus as to the definition of late (2-4 months) and early (1 to 3 months) repair.<sup>11</sup> Conservative approaches such as catheter drainage, occlusion with fibrin, peeling of the tract epithelium with metal screw and steroid use have been reported in the literature for closure of small fistulas and outcome varies.<sup>12</sup>

Our success rate is 100% which is better comparing to the 75% initial success rate reported by Ockim, et al. in a series of 24 abdominal VVF repairs, and similar to those reported by Hadzi-Djokic (32 patients, 94% success), and Rahjamaheswari (19 patients, 100%).<sup>13-15</sup> Success rate is defined as no recurrence of fistula. In other study conducted by John T Stoffel, the variable most strongly associated with repair failure was new, persistent overactive bladder symptoms requiring assessment or intervention. There were also trends suggesting that failure was also associated with using tobacco prior to repair or having comorbidities potentially affecting wound healing (diabetes/ chronic UTI). In our study,<sup>5</sup> patients had Diabetes Mellitus and none were smoker. Six patients developed overactive bladder symptoms on 1<sup>st</sup> follow-up, but this symptom was absent in 2<sup>nd</sup> follow up as we prescribed bladder sedative. During surgery we did not use interposition flap in 3 patients but this was not associated with failure. This is compatible with other study conducted by Pshak, et al., who did not note any increased failure in their series of 73 vaginal VVF patients repaired without interposition flaps.<sup>16</sup> In our study, most common etiology of VVF were abdominal hysterectomy. Most of these operations were carried out in periphery outside city by inexperienced and unskilled surgeons. The commonest site of VVF is at the vaginal vault in the posterior bladder wall, as this is the usual site of bladder injury during abdominal hysterectomy, which is the case in this study also.<sup>17</sup>

## Conclusion

So careful and meticulous approach is essential for a successful repair of VVF. Most common scenario in our country for VVF is iatrogenic injury following abdominal hysterectomy performed by inexperienced surgeons. There are various methods of VVF repair other than transperitoneal route, like laparoscopic, transvaginal approach. Although there are some drawbacks of abdominal approach of VVF repair, like longer duration of hospital stay due to lengthy recovery time, cosmetic deformity etc., but outcome can be excellent compared with other methods.

## Acknowledgement

All praise goes to Allah for giving me the ability to complete this study. I must thank Professor Dr. AKM Shahadat Hossain for giving me all kind of support and guidance. I am also grateful to my patients and staffs for their spontaneous participation.

## References

1. Li AY, Papin JE, Suskind AM, Cameron AP, Clemens JQ. Abdominal Approach for Vesicovaginal Fistulas: Outcomes and Risk Factors for Failure. *Int Arch Urol Complic* 2017; 3: 2-9.
2. Tatar B, Oksay T, Cebe FS, Soyupek S, Erdemo?lu E. Management of vesico-vaginal fistulas after gynecologic surgery. *Turkish journal of obstetrics and gynecology* 2017; 14 (1): 45-50.
3. Eilber KS, Kavalier E, Rodriguez LV, Rosenblum N, Raz S. Ten-year experience with transvaginal vesicovaginal fistula repair using tissue interposition. *J Urol* 2003; 169: 1033-1036.
4. Stamatakos M, Sargedí C, Stasinou T, Kontzoglou K. Vesicovaginal Fistula: Diagnosis and Management. *Indian J Surg* 2014; 76 (2): 131-136.
5. Sjøveian S, Vangen S, Mukwege D, Onsrud. Surgical outcome of obstetric fistula: a retrospective analysis of 595 patients. *Acta Obstet Gynecol Scand* 2011; 90: 753-760.
6. Gedik A, Deliktas H, Celik N, Kayan D, Bircan MK. Which Surgical Technique Should be Preferred to Repair Benign, Primary Vesicovaginal Fistulas? *Urology J* 2015; 12: 2422-2427.
7. Armenakas NA, Pareek G, Fracchia JA. Iatrogenic bladder perforations: long-term follow-up of 65 patients. *J Am Coll Surg* 2004; 198: 78-82.
8. Dalela D, Ranjan P, Sankhwar PL, Sankhwar SN, Naja V, Goel A. Supratrigonal VVF repair by modified O'Connor's technique: an experience of 26 cases. *Eur Urol* 2006; 49 (3): 551-556.
9. Rovner ES, Urinary tract fistula, in Campbell-Walsh Urology, Wein J, Kavoussi LR, Novick AC, Partin AW, Peters CA, Eds. Saunders, Philadelphia, Pa, USA, 9th ed. 2007: 2323- 2340.
10. Akman RY, Sargin S, Ozdemir G, Yazicioglu A, Cetin S. Vesicovaginal and ureterovaginal fistulas: a review of 39 cases. *International Urology and Nephrology* 1999; 31 (3): 321-326,
11. Walsh K, Stone AR. How is the lower urinary tract affected by gynecological surgery? *BJU Int* 2004; 94: 272-275.

12. Sadiq G, Sadiq M, Sultana N. Obstetric trauma is the commonest cause of urogenital fistulae. *Rawal Med J* 2008; 33: 197-200.
13. Ockrim JL, Greenwell TJ, Foley CL, Wood DN, Shah PJ. A tertiary experience of vesico-vaginal and urethro-vaginal fistula repair: factors predicting success. *BJU Int* 2009; 103: 1122-1126.
14. Hadzi-Djokic J, Pejcic TP, Acimovic M. Vesico-vaginal fistula: report of 220 cases. *Int Urol Nephrol* 2009; 41: 299-302.
15. Rajamaheswari N, Bharti A, Seethalakshmi K. Vaginal repair of supratrigonal vesicovaginal fistulae--a 10-year review. *Int Urogynecol J* 2012; 23: 1675-1678.
16. Pshak T, Nikolavsky D, Terlecki R, Flynn BJ. Is tissue interposition always necessary in transvaginal repair of benign, recurrent vesicovaginal fistulae? *Urology* 2013; 82: 707-712.
17. T .E. Elkins. Surgery for the obstetric vesicovaginal fistula: a review of 100 operations in 82 patients. *American Journal of Obstetrics and Gynecology* 1994; 170 (4): 1108-1120.