

## Postoperative Outcome of Women with Vesicovaginal Fistula

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### Abstract

### Original Research Article

**Background:** Obstetric fistula although virtually eliminated in high income countries, still remains a prevalent and debilitating condition in many parts of the developing world. It occurs in areas where access to care at childbirth is limited, or of poor quality and where few hospitals offer the necessary corrective surgery. **Objective:** To evaluate preoperative factors that affect post-operative outcome of fistula patients. **Methods:** Patients were selected with convenience sampling type of non-probability sampling technique due to vesicovaginal fistula (any type). The primary end point was to evaluate preoperative factors that affect post-operative outcome of fistula patients and to evaluate the post-operative outcome. The secondary end point includes the correlation between pre-operative factors and post-operative outcome. **Results:** Among the surveyed 55 populations, 38 (69.1%) population were multiparous and rest 17 (30.9%) population were primiparous. Majority 42 (75.6%) population came from low-income socioeconomic status. Out of 44 vesicovaginal fistula, 52.4% were successfully repaired, 31.8% were failed and remaining 15.9% were cured (successful with incontinence). Of the 26-bladder base fistula 61.5% were successfully repaired, 15.4% were failed and 23.1% were cured. Among the 19 small sized fistula 84.2% were successfully closed, 3 (15.8%) were cured and the entire 4 extensive fistula failed. Vaginal scarring was absent in 31 cases and mild, moderate and gross scarring was present in 14, 4 and 6 cases respectively. Among those having mild scarring, 57.1% were successfully closed, 28.6% were failed and 14.3% were cured. Bony attachment was in 2 cases and both the cases failed and calculi in urinary bladder were in 2 cases and both of them healed. In 49 cases, operation was done in vaginal route. Graft was given in 3 cases, out of them 1 was successfully closed and 2 failed. Ureter was injured in 2 cases, both were successful. Among cured cases, stress incontinence was 10.9% and urge incontinence was 5.5%. Failure was significantly associated with large size of fistulae, vaginal scarring, complete or partial urethral loss and bony attachment. Independent predictors for residual stress incontinence after successful fistula closure were urethral involvement, circumferential fistulae and previous unsuccessful fistula repair. **Conclusion:** Risk factors for failure include extensive tissue loss, urethral destruction, vaginal scarring and bony attachment. Specially trained and experienced surgeons are needed for successful operation.

**Keywords:** Obstetric fistula, vesicovaginal fistula, postoperative outcome, fistula repair, risk factors, urethral involvement.

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## INTRODUCTION

A fistula is an abnormal communication between two epithelial surfaces. Genital tract fistula is an abnormal communication between genital and urinary or intestinal tract.[1]

Fistula is a preventable and treatable condition.[2] Vesicovaginal fistula (VVF) is not a life-threatening medical problem but the women face demoralization, social boycott and even divorce and

separation. They are excluded from all religious and family activities. Such extreme distress and despair are experienced due to the chronic nature of the illness and the continuous urine leakage. The frequency, etiology and presentation of VVF differ according to surgical treatment and adherence to the therapeutic principles and the experience of the surgeon [3]

Various classifications of genital fistula have been developed but none of these has been adopted internationally. Waaldijk (1995) developed a

classification based on the closing mechanism of the urethra: external urethral orifice (EUO) and its effect on the closing mechanism of the urethra classifying obstetric fistula as type I, II and III.[4]

Genital fistula is a largely neglected component of maternal health in the developing world. It has multiple medical and nonmedical implications. One of the most common types of fistula, obstetric fistula arises in women, largely due to the fact that they are affected by prolonged, obstructed labour without timely medical intervention. The condition is preventable and treatable, but access to emergency obstetric care remains limited in many parts of the world, especially in resource-constrained settings. The condition is associated with poor maternal health outcomes and violates the human rights of women and girls. It is also a marker of health system failure.[5]

The frequency, etiology and presentation of VVF differ from country to country and within a country based on the level of obstetric care, maternal age, nutritional status and parity, socioeconomic status, cultural practices and beliefs. A study conducted at the Addis Ababa Fistula Hospital, Ethiopia was done to determine surgical outcome and factors influencing surgical treatment outcome. The success rate of surgical repair varies and is influenced by the severity and classification of the fistula, among other factors. The study also highlighted the need for standardized systems to predict surgical outcomes and the limited data available in the literature regarding these factors.[6]

The first classification of obstetric fistula was developed by WHO in 1983 — the fate of treatment is largely determined by the severity of the fistula and its surgical success rate.[7] WHO classified obstetric fistula into 30<sup>th</sup> surgical classification types. These classifications are based on anatomical site and size of the fistula and the degree of tissue loss.

Successful rates of obstetric vesicovaginal fistula repairs are estimated to be 80-90% with residual urinary incontinence rates of 15-36%.[8] However, the absence of a standardized system of terminology, classification, data collection and reporting has made it difficult to compare surgical outcomes. Furthermore, there is also limited data in the literature regarding fistula, bladder or vaginal characteristics or fistula closure techniques that predict surgical success.[9]

Predictors of successful fistula repair reported in the fistula literature include non-obstetric fistula, small fistula size, absence of fibrosis, initial attempt at repair, and fistulae that were not circumferential and did not involve the urethra.[10]

The best chance of fistula closure is generally agreed to be at the time of the first operation. In the large series of 2484 patients, it is reported that successful

fistula closure in 83% of patients at the first attempt, whereas successful closure was achieved in only 65% of patients who needed two or more operations. [11]

Urological fistula surgery doesn't require special or advanced technology but needs experienced urogynaecological and support care with trained team and post-operative care which can restore health, hope and sense of dignity to women. [12]

## OBJECTIVES

### General:

- To evaluate preoperative factors that affect post-operative outcome of fistula patients.

### Specific:

- To evaluate the preoperative status of fistula
- To evaluate the post-operative outcome
- To correlate between pre-operative factors and post-operative outcome

## METHODOLOGY

### Materials and Methods

#### Study design

This analytical cross-sectional study

#### Place of study

Department of Obstetrics & Gynaecology, Dhaka Medical College Hospital

#### Study period

June 2012 to December 2012

#### Study Population

Every consecutive female patient of any age admitted with genital fistula in National Fistula Center of Dhaka Medical College Hospital, Dhaka during the study period fulfilling the inclusion and exclusion criteria was enrolled in the study

#### Screening methods

By taking history and clinical examination

#### Sampling Method

Purposive sampling

#### Sample size calculation for cross sectional study (Hoque 2009, page 217)

Sample size,  $n = (Z^2pq) / e^2$

Where,  $Z = 1.96$  (where 5% error is acceptable)

$p =$  prevalence of the disease  $= 3.7\% = 0.037$  (Shaikh et al 2011)

$q = 1 - p = 1 - 0.037 = 0.963$  acceptable error  $5\% = 0.05$

$n = (Z^2pq) / e^2$

$= (1.96)^2 \times 0.963 \times 0.037 / 0.05^2$

$= 3.84 \times 0.035631 / 0.0025$

$= 0.1362804 / 0.0025$

= 54.7  
= 55

#### Inclusion criteria

- Age: any age
- Any type of vesicovaginal fistula
- Patients willing to give consent

#### Exclusion criteria

- Patients unwilling to participate
- Patients with congenital fistula, fistula caused by malignancy or radiotherapy
- Patients with other co-morbid conditions
- Patients not fit for repair of fistula

#### Procedure of preparing & organizing materials

The patients were operated by the same surgeon for fistula surgery. All patients were selected for fistula repair after being admitted in the VVF ward using urinary catheter drainage for 21 days. All patients underwent dye test before surgery. The surgery was done by vaginal route using continuous bladder drainage for 21 days. All patients underwent dye test after 21 days of continuous bladder drainage. All patients were followed up for 3 months after surgery (including dye test and successful repair, unsuccessful repair and incontinence after successful repair).

#### Procedure of data collection

All patients eligible for the study was admitted in the VVF ward of National Fistula Center, DMCH, Dhaka during the study period. A total 55 consecutive patients was recruited in the study by convenient sampling. Data was collected on socio-demographic

variables: age, marital status, education, occupation, parity, obstetric characteristics: antenatal care attendance, time spent in labour, place of delivery, mode of delivery, outcome of delivery, fistula site of development, time spent with fistula and previous repairs and physical examination findings (height, weight, type of fistula, fistula classification and size, degree of vaginal scarring and outcome of repair at discharge). Pre-operatively all women was assessed and the fistula was classified using the Waaldijk classification 1995 based on the size and site of fistula. Outcome of repair was assessed using dye test on the 21st day after surgery. Outcome of repair was defined as successful repair with continence, successful repair with incontinence due to urethra and unsuccessful repair. All patients were operated by the same surgeon. Followed using fistula surgery done by vaginal route using continuous bladder drainage for 21 days. All patients underwent dye test after 21 days of continuous bladder drainage. All patients were followed up for 3 months after surgery. The patients were also assessed by dye test and clinical examination.

#### Procedure of data analysis

Data was analyzed using computer based statistical program SPSS version 12 (Statistical Package for the Social Sciences). Descriptive statistics such as frequency and percentage were used to describe categorical variables. Chi-square test was used to determine the association between preoperative risk factors and outcome of fistula repair. P value <0.05 was considered as statistically significant.

## RESULTS

**Table I: Characteristics Associated with Success, Cure, and Failure of Fistula (n=55)**

Characteristics of Fistula	Frequency (n=55)	Successful Closure (n=31)	Failed (n=15)	Cured (n=9)
<b>Type of fistula</b>		<b>n (%)</b>	<b>n (%)</b>	<b>n (%)</b>
Vesicovaginal	44	23 (52.3)	14 (31.8)	7 (15.9)
Vesico-cervical	9	4 (44.4)	3 (33.3)	2 (22.2)
Vesico-uterine	2	2 (100.0)	0 (0.0)	0 (0.0)
Urethro-vaginal	2	1 (50.0)	1 (50.0)	0 (0.0)
<b>Sites of fistula</b>				
Base	26	16 (61.5)	4 (15.4)	6 (23.1)
Neck	10	4 (40.0)	6 (60.0)	0 (0.0)
Juxtacervical	9	2 (22.2)	7 (77.8)	0 (0.0)
Urethral	2	0 (0.0)	2 (100.0)	0 (0.0)
Vault	4	0 (0.0)	2 (50.0)	2 (50.0)
Circumferential	4	0 (0.0)	5 (71.4)	2 (28.6)
<b>Size of fistula</b>				
Small: Up to 2 cm	19	16 (84.2)	0 (0.0)	3 (15.8)
Medium: 2.1-4 cm	16	13 (81.3)	1 (6.3)	2 (12.5)
Large: 4.1-6 cm	16	2 (12.5)	10 (62.5)	4 (25.0)
Extensive: >6.1 cm	4	0 (0.0)	4 (100.0)	0 (0.0)
<b>Associated problems</b>				
Vaginal stenosis	4	2 (50.0)	0 (0.0)	2 (50.0)
RVF	4	2 (50.0)	2 (50.0)	0 (0.0)
Bladder neck destruction	8	4 (50.0)	4 (50.0)	0 (0.0)

Characteristics of Fistula	Frequency (n=55)	Successful Closure (n=31)	Failed (n=15)	Cured (n=9)
Urethral stenosis	1	0 (0.0)	1 (100.0)	0 (0.0)
Urethral loss	8	0 (0.0)	6 (75.0)	2 (25.0)
<b>Scarring</b>				
Absent	31	19 (61.3)	5 (16.1)	7 (22.6)
Mild	14	8 (57.1)	4 (28.6)	2 (14.3)
Moderate	4	0 (0.0)	4 (100.0)	0 (0.0)
Gross	6	4 (66.7)	2 (33.3)	0 (0.0)
<b>Bony attachment</b>				
Present	2	0 (0.0)	2 (100.0)	0 (0.0)
Absent	53	31 (58.5)	13 (24.5)	9 (17.0)
<b>Calculi in urinary bladder</b>				
Present	2	2 (100.0)	0 (0.0)	0 (0.0)
Absent	53	31 (58.5)	13 (24.5)	9 (17.0)

Table I shows, there were 44 vesicovaginal fistula and of them 23 (52.4%) were successfully closed, 14 (31.8%) were failed and rest 7(15.9%) were cured. 26 fistula occurred in the base of the urinary bladder and of them 16 (61.5%) were successfully closed, 4(15.4%) were failed and remaining 6 (23.1%) were cured. There were 19 small sized fistula, 16 medium, 16 large and 4 were extensive. Among the small fistulae 16 (84.2%) were successfully closed, 3(15.8%) cured. There were vaginal scarring in 16 cases, out of them 8 (50.0%) were

successfully closed, 6 (37.5%) were failed and 2 (12.5%) were cured. Vaginal scarring was absent in 31 cases and mild, moderate and gross scarring was present in 14, 4 and 6 cases respectively. Among those having mild scarring, 8 (57.1%) were successfully closed, 4 (28.6%) were failed and 2 (14.3%) were cured. Bony attachment was present in 2 cases, both of them (100.0%) were failed and calculi was found in urinary bladder in 2 cases which were repaired successfully.

**Table II: Events in fistula repair operation (n=55)**

Fistula repair operation	Frequency (n=55)	Successful closure (n=31)	Failed (n=15)	Cured (n=9)
<b>Route of operation</b>				
Vaginal	49	27 (55.1)	13 (26.5)	9 (18.4)
Abdominal	4	4 (100.0)	0 (0.0)	0 (0.0)
Abdomino-vaginal	2	0 (0.0)	2 (100.0)	0 (0.0)
<b>Operation was</b>				
Easy	20	18 (90.0)	2 (10.0)	0 (0.0)
Difficult	25	13 (52.0)	5 (20.0)	7 (28.0)
Very difficult	10	0 (0.0)	8 (80.0)	2 (20.0)
<b>Other associated procedure</b>				
Repair of RVF	4	2 (50.0)	2 (50.0)	0 (0.0)
<b>Blood transfusion</b>				
Not needed	51	30 (58.8)	12 (23.5)	9 (17.6)
Needed	4	1 (25.0)	3 (75.0)	0 (0.0)
<b>Graft</b>				
Not given	52	30 (57.7)	13 (25.0)	9 (17.3)
Given	3	1 (33.3)	2 (66.7)	0 (0.0)
<b>Complications developed during operations</b>				
Severe bleeding with shock	2	0 (0.0)	2 (100.0)	0 (0.0)
Severe bleeding without shock	1	0 (0.0)	1 (100.0)	0 (0.0)
Injury to ureter	2	2 (100.0)	0 (0.0)	0 (0.0)
Injury to others	1	1 (100.0)	0 (0.0)	0 (0.0)

Table II shows, in 49 cases VVF was repaired by vaginal approach. Of them, 27 (55.1%) were successfully closed, 13 (26.5%) failed, and 9 (18.4%) were cured. In 20 cases, the operation was easy; among them, 18 (90.0%) were successfully closed and 2 (10.0%) failed. Repair of RVF was done in 4 cases; 2 (50.0%) were successfully repaired and 2 (50.0%) failed. Four cases needed blood transfusion; among them, 1 (25.0%) was successfully closed and 3 (75.0%) failed.

Graft was given in 3 cases; 1 (33.3%) was successfully closed and 2 (66.7%) failed. Severe bleeding with shock was found in 2 cases.

Severe bleeding without shock was found in 1 case, and it failed (100.0%). Ureter injury was found in 2 cases, both of which failed (100.0%). Injury to another organ (omentum) was found in 1 case, and it was successfully closed (100.0%).

**Table III: Outcome of Fistula Repair (n=55)**

Result of Operation	Number of Population	Percentage (%)
Successful	31	56.4
Failed	15	27.3
<b>Successful Repair with Complications</b>		
– Stress Incontinence	6	10.9
– Urge Incontinence	3	5.5
<b>Reason of Failure</b>		
– Bad Cases	13	23.6
– Faulty Technique	0	0
– Postoperative Infection	2	3.7

Successful operation was found in 31 (56.4%) cases and failed in 15 (27.3%). Among successful repairs with complications (cured), stress incontinence occurred in 3 cases (5.5%) and urge incontinence in 6 cases

(10.9%). Among failed operations, 13 cases (23.6%) were categorized as bad cases, and 2 cases (3.7%) had postoperative infections.

**Table IV: Postoperative Complication After Repair of Fistula (n=55)**

Complication	Response	Total (n=55)	Successful Closure (n=31)	Failed (n=15)	Cured (n=9)
Catheter blockage occurred	Yes	10 (18.2%)	8 (25.8%)	1 (6.7%)	1 (11.1%)
	No	45 (81.8%)	23 (74.2%)	14 (93.3%)	8 (88.9%)
Catheter was changed	Yes	18 (32.7%)	12 (38.7%)	4 (26.7%)	2 (22.2%)
	No	37 (67.3%)	19 (61.3%)	11 (73.3%)	7 (77.8%)
Postoperative fever	Yes	20 (36.4%)	12 (38.7%)	5 (33.3%)	3 (33.3%)
	No	35 (63.6%)	19 (61.3%)	10 (66.7%)	6 (66.7%)
High vaginal swab for C/S	Positive	3 (5.5%)	0 (0.0%)	2 (13.3%)	1 (11.1%)
	Negative	52 (94.5%)	31 (100.0%)	13 (86.7%)	8 (88.9%)
Skin infection	Yes	32 (58.2%)	20 (64.5%)	12 (80.0%)	0 (0.0%)
	No	23 (41.8%)	11 (35.5%)	3 (20.0%)	9 (100.0%)
UTI (urine culture positive)	Yes	7 (12.7%)	4 (12.9%)	2 (13.3%)	1 (11.1%)
	No	48 (87.3%)	27 (87.1%)	13 (86.7%)	8 (88.9%)
Constipation	Yes	32 (58.2%)	15 (48.4%)	8 (53.3%)	9 (100.0%)
	No	23 (41.8%)	16 (51.6%)	7 (46.7%)	0 (0.0%)

Table IV shows catheter blockage occurred in 17 cases in the postoperative period. Of them, 9 (52.9%) were successfully closed, 7 (41.2%) failed, and 1 (5.9%) was cured. In 10 cases, the catheter was changed; among them, 1 (10.0%) was cured. Out of 17 cases, 6 (35.3%) failed and 1 (10.0%) was cured. Postoperative fever occurred in 10 cases; among them, 1 (10.0%) was successfully closed and 8 (80.0%) failed. Postoperative per vaginal bleeding was found in 8 cases; 4 (50.0%) failed and 4 (50.0%) were cured. Three cases had positive high vaginal swab for C/S; all of them (100.0%) failed. Two cases had skin infection; 1 (50.0%) was successfully closed and 1 (50.0%) failed. UTI evidenced by urine culture was found in 32 cases; 21 (65.6%) were successfully closed, 7 (21.9%) failed, and 4 (12.5%) were cured. Constipation was present in 23 cases; 11 (47.8%) were successfully closed, 7 (30.4%) failed, and 5 (21.8%) were cured.

## DISCUSSION

Vesicovaginal fistula remains a major cause of physical, psychological, and social suffering for women in developing countries, and successful surgical repair plays a crucial role in restoring continence and

improving quality of life. In the present study, postoperative outcomes were influenced by several fistula-related characteristics. Similar to the findings of Arrowsmith (1996), fistula located at the base of the bladder had the highest success rate, with 61.5% successfully closed.[13] Smaller fistulas showed the best prognosis, with 84.2% successful closure, while all extensive fistulas failed to heal, indicating that fistula size remains one of the strongest predictors of surgical success.

Vaginal scarring also demonstrated a strong association with outcome. Patients with no scarring achieved an 83.9% success rate, while moderate and gross scarring showed progressively higher failure rates. These findings are comparable with previous studies which reported that tissue fibrosis reduces elasticity and compromises surgical repair.[14] The presence of bony attachment and severe tissue destruction further contributed to poor outcomes and complete failures in such cases.

Operative-related events also affected outcomes. Vaginal operations were the preferred route, with a success rate of 55.1%. Graft use was limited but

showed mixed results, with one success and two failures, likely because grafts were used in complicated cases. Severe intraoperative bleeding was strongly associated with failure, reaffirming that difficult dissection and tissue friability correlate with poor prognosis. Blood transfusion was required in four patients, three of whom failed, suggesting that low preoperative hemoglobin, operative difficulty, and prolonged surgery may have influenced outcomes.

Postoperative complications such as catheter blockage, catheter displacement, urinary tract infection, postoperative fever, and perineal wound complications significantly affected healing. Catheter-related problems accounted for 12.6% of total complications, complicating the healing process. UTI was common (21 cases), but closure was still successful in 65.6% of these patients, consistent with other findings.[15] Postoperative fever and PV bleeding were associated with higher rates of failure, demonstrating that early postoperative morbidity compromises integrity of the repair.

Overall, the first-attempt success rate was 56.4%, decreasing with repeated attempts. This trend was also reported in previous studies likely because only complicated or previously failed cases are referred to tertiary centers such as DMCH.[16] Factors responsible for failure included severe tissue loss, excessive scarring, difficult anatomy, intraoperative bleeding, postoperative infection, and technical challenges related to training surgeons. These findings highlight the need for experienced fistula surgeons and improved perioperative care to optimize outcomes.

## CONCLUSION

Post-operative outcomes of VVF repair are strongly influenced by fistula characteristics and intraoperative findings. Small, uncomplicated fistulas have high closure rates, whereas extensive tissue damage and urethral loss significantly increase the risk of failure. Skilled and experienced surgeons are essential for improving surgical results and minimizing postoperative complications.

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