

Obstetric Fistula Repair Through Transvaginal Approach: The Experience in DMCH

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Abstract: Background: Vesicovaginal fistula (VVF) is an abnormal fistulous tract extending between the bladder and the vagina that allows the continuous involuntary discharge of urine into the vaginal vault. The successful closure depends on many factors, although the majority of genitourinary fistulas can be closed surgically. Aim of the study: The aim of the study was to find out the outcome of obstetric fistula repair through a transvaginal approach. Methods: This prospective observational study was conducted in the Department of Gynecology & Obstetrics, Dhaka Medical College Hospital Dhaka, Bangladesh from June 2006 to May 2007. A total of 30 women with VVF difficulties who were admitted to the hospital were recruited as the study population. To repair the obstetrics fistula of women, the transvaginal surgical procedure was followed. For data analysis, statistical software SPSS version 22.0. All data were presented in mean values. The results were presented in tables, figures. The observations were recorded as statistically significant (p-value <0.05). Results: Postoperative complications were not found in 28 (93.3%) cases and no information was found in 2 (6.7%). Duration of retaining catheter (days) <10 in 1 (3.3%), 10-15 in 19 (63.3%), 16-21 in 8 (26.7%) and no information found in 2 (6.7%). Total length of stay (week) was 3-4 week in 13 (43.3%), 5-8 week in 10 (33.3%), 9-12 in 3 (10.0%), 13-24 in 4 (13.4%). The patient developed stress incontinence in 8 (26.7%) and no information was found in 22 (73.3%). 20 (66.7%) cases resulted successfully, Stress incontinence was found in 3 (10.0%), failed VVF in 1 (3.3%), Failed RVF in 6 (20.0%). The reason for failure was 2 (6.7%) bad cases and no information was found in 28 (93.3%). Conclusion: The transvaginal approach is less invasive and achieves comparable success rates as compared to other methods of VVF repair. Genital fistula repair surgery with Foley catheter has a high success rate, reduced morbidity, minimal blood loss, and short tome hospital stay.

Keywords: Fistula, Obstetric, Transvaginal

1. Introduction

An obstetric fistula is a hole or tears in the tissue wall between the vagina and the bladder or rectum or holes between them both that cause urine and/or feces incontinence. Obstetric fistulas can be classified into three categories. Vesico Vaginal Fistula (VVF), is a type of obstetric fistula that connects the bladder and the vagina. It frequently occurs as a result of lengthy obstructed labor, such as when the baby is too big to go through the birth canal, or because the mother's pelvis is too small or immature, perhaps due to youth, or malnutrition that

inhibits normal growth. Without treatment, prolonged obstructed labor is estimated to cause at least 8% of maternal deaths worldwide [1] and it often leads to stillbirths and can cause fistulas in surviving women. Fistulas may also occur congenitally, or from surgical, radiation, malignant, and other causes, such as unskilled abortion [2]. In the developing world, however, it is estimated that over 90% of fistulas are caused by obstetric surgery, whereas in the United States and the United Kingdom, over 70% of fistulas are caused by pelvic surgery [3]. The baby's head crushes the vaginal wall against the mother's pelvic bones during lengthy labor, and if the

compression lasts long enough, the tissue becomes necrotic, leaving a hole between the vaginal wall and the bladder or rectum [4, 5]. Obstetric fistula has almost completely disappeared in affluent countries, although it still exists in many poor countries [6, 7]. Fistula is connected with physical difficulties and comorbidities, some of which are caused by obstructed/prolonged labor and others which are the result of the fistula itself. Fetal death, cervix or pelvic bone injury, neurological problems such as foot drop, urine and/or feces leaks into the vagina, urogenital infections, ammonia dermatitis, genital lacerations, kidney infections, and amenorrhea are only a few of them [2, 6]. Due to faulty reporting, underreporting, and shame, which prevents women from complaining about fistula, exact prevalence figures of obstetric fistula (globally and nationally) are lacking. Fistula prevalence is estimated to be high in several nations in South Asia, particularly Bangladesh, and in Sub-Saharan Africa, including Sudan, Ethiopia, Chad, Ghana, and Nigeria [7]. Fistulas are a component of the obstructed labor complex, a multi-organ condition that encompasses gynecologic, skeletal, neurological, and dermatologic damage [8]. According to three-country research, 59% of women who had successfully repaired a fistula also had additional morbidities [9]. Amenorrhea may occur as a result of obstructed labor for reasons that are not totally apparent and are still being researched. According to current beliefs, amenorrhea is caused by a malfunction of the gonadotropin hormonal axis. [12] Foot drop, a disorder that causes dragging of the foot and inability to walk without a cane or help, is considered to be caused by fetal head compression of the sacral nerves as well as perineal nerve injury. Prolonged labor can potentially cause neurogenic bladder dysfunction. Ammoniacal dermatitis and vulvar excoriation are typical direct consequences of vesicovaginal fistula-induced urine leakage. Given the negative impact of fistula on the health of women and girls, treatment and prevention are major public health problems. Surgery to treat the fistula is followed by therapy, which includes extending and moving limbs that have atrophied as a result of perineal and sciatic nerve injury. Lower limb weakness, foot drop, and lower limb contracture require physiotherapy to be treated [10]. Psychological and emotional therapy, skill development, and outreach to identify and transport women with fistula to distant treatment clinics round out treatment efforts [11]. There is currently no gold standard technique for the management of a simple VVF. Traditionally fistula repair was carried out by either transabdominal or transvaginal approach with success rates ranging from 50 to 100%.

2. Methods and Materials

This descriptive case study was conducted at the Department of Gynecology & Obstetrics, Dhaka Medical College Hospital, Bangladesh from June 2006 to May 2007. A total of 30 women who were admitted at the study hospital during the study period were recruited as the study population. The initial sample size was determined as 75, but due to lack of time and consent from the participants, the final sample size

was only 30. A case registry was prepared beforehand.

1. Inclusion Criteria.
2. Patients having any type of vesicovaginal fistula.
3. Transvaginal surgical approach was used.
4. Patients who had given consent to participate in the study.
5. Exclusion Criteria.
6. Other obstetric fistula except vesicovaginal fistula.
7. Transferred to another hospital.
8. Unable to answer the criteria question.
9. Exclude those affected with other chronic diseases etc.

Informed consent was taken from the participants. The study was approved by the ethical committee of Dhaka Medical College Hospital. For statistical analysis, SPSS version 22.0 for Windows software was used. Data were presented in mean values mean \pm SD. The results were presented in tables, figures as per presentation requirements. For statistically significant observed and recorded as P-value < 0.05.

3. Results

According to demographic characteristics of the respondents, the Mean age of the participants was 28.53 \pm 6.67, delivery age 13.70 \pm 9.48, married age 16.10 \pm 3.79, height 55.90 \pm 3.74, and weight 44.00 \pm 5.49. In assessing the occupation, 26 (87.6%) were housewives, 2 (6.7%) garments workers, and 2 (6.7%) others profession. In educational qualification, 19 (63.3%) were illiterate, 7 (23.3%) had primary education completed and 4 (13.4%) had secondary education. 19 (63.3%) had primipara and 11 (36.7%) had multipara and the Mean \pm SD of no living children was 3.00 \pm 1.41. Regarding marital status, 3 (10.0%) were divorced, 25 (83.3%) were married and 2 (6.7%) were separate. In response to the duration of labor (day) 10 (33.3%) responded 1-2 days and followed by 13 (43.3%) 3-5 days and 7 (23.3%) >5 days. 1 (3.3%) case had other major medical-surgical illnesses as they had numbness of limbs and 30 (96.7%) had no such record. 18 (60.0%) of them developed fistula in 7 days, 9 (30.0%) 7-14 days and 3 (10.0%) after 14 days. The Mean duration of incontinence was 59.30 \pm 48.17. The place of delivery of 5 (16.7%) was home -fathers house, 3 (10.0%) own house, and 22 (73.3%) institutional. In 9 (30.0%) cases delivery was conducted by the TBA, 5 (16.7%) by relatives, and 16 (53.3%) by a doctor. 6 (20.0%) had Regular menstruation. 5 (16.7%) had previous fistula repair at other hospitals for 1 time, 2 (6.7%) had for 2 times, 3 (10.0%) had for 3 times and 20 (66.7%) given no information. 15 (50.0%) had a vaginal delivery, 2 (6.6%) had assisted vaginal delivery and 13 (43.4%) had Caesarian cases. 29 (96.7%) had fistula for childbirth and 1 (3.3%) for trauma. In assessing the fetal outcome, it was found that 25 (83.3%) had a stillbirth and 5 (16.7%) had early neonatal death cases. Table 3 shows the preoperative care of the patients. In assessing the pre-operative stay weeks it is found that, in 17 (56.7%) cases, it was 1/52-4/52, in 1 (3.3%) case >12/52, and in 12 (40.0%) cases 5/52-12/52. For pre-operative care, nutritional care was provided in 30 (100.0%) cases and followed by prophylaxis in 4 (13.3%) and local vaginal care

in 6 (20.0%) cases. Under the nerve and musculoskeletal injury assessment, 5 (16.7%) had unilateral foot drop 25 (83.3%) had no injury. Table 4 shows the operation of the patients. 24 (80.0%) had spinal anesthesia and 6 (20.0%) had SAB anesthesia. The Mean of the time taken for the operation was 1.97 ± 0.67 of procedure (Repair) in 29 (96.7%) cases were urinary fistula and followed by stress incontinence in 7 (23.3%) cases, Urethral Sling Operation in 4 (13.3%), and Rectovaginal fistula in 1 (3.3%). Under the type of urinary fistula, 1 (3.3%) had Urethral vaginal, 17 (56.7%) had mid vaginal, 6 (20.1%) had Juxta-cervical, 2 (6.6%) Vesico-uterine, 1 (3.3%) Circumferential and 3 (10.0%) Vault. 23 (76.7%) had 1 fistula and 7 (23.3%) had 2 fistulas. The VVF length (in cm) was 1-2cm in 20 (66.7%) cases and followed by 3-4cm in 8 (26.7%) cases and >5-cm in 2 (6.6%) cases. The VVF Width (in cm) was 1-2cm in 19 (63.3%), 3-4cm in 10 (33.4%) and >5cm in 1 (3.3%) cases. 1 (3.3%) had no scarring and followed by 13 (43.4%) mild scarring, 15 (50.0%) moderate and 1 (3.3%) obliterated vaginal. Bladder Size was fair in 4 (13.3%) cases and good in 26 (86.7%) cases. The status of bladder neck was intact in 29 (96.7%) and partially damaged in 1 (3.3%). The urethra was intact in 28 (93.3%) and partially damaged in 2 (6.7%). Both ureters were inside in 27 (90.0%) and both ureters and outside in 3 (10.0%) cases. Ureteric catheters catheterized in 6 (20.0%) and not catheterized in 26 (80.0%). Fistula closure was 1 layer in 30 (100.0%) cases. The graft was found in 3 (10.0%) and not found in 27 (90.0%). Flap labial in 7 (23.3%) and not applicable in 23 (76.7%). Sphincter was intact in 6 (20.0%) and no information found in 24 (80.0%) cases. Under the intraoperative complication, difficulty in the closure was in 11 (36.7%), hemorrhage in 7 (23.3%), difficulty to delineate fistula in 1 (3.3%), bleeding later controlled in 1 (3.3%), and no difficulty in 14 (46.7%). Duration of surgery (hr) was 1 in 3 (10.0%), 2 hours in 19 (63.3%) and >3 hour in 8 (26.7%). Surgery outcome (urinary) was cured in 4 (13.3%), failed in 8 (26.7%), improved in 2 (6.7%), and successful in 16 (53.3%). Surgery outcome (Bowl) was improved in 2 (6.7%) and no information was found in 28 (93.3%). Table 5 shows the post-operation course of the patients. Transfusion (preoperative) was done in 20 (66.7%) and not done in 10 (33.3%). Transfusion (Cause) was for nutritional 23 (76.7%), for blood 2 (6.7%). 26 (86.7%) took Prophylaxis and no information was found in 4 (13.3%). vaginal pack in 12 (40.0%) in 1 day, 15 (50.0%) in 2 days and 3 (10.0%) in >3 days. Post-operative complications were not found in 28 (93.3%) cases and no information was found in 2 (6.7%). Duration of retaining catheter (days) <10 in 2 (6.7%), 10-15 in 19 (63.3%) and 16-21 in 9 (30.0%). Total length of stay (week) was 3-4 week in 13 (43.3%), 5-8 week in 10 (33.3%), 9-12 in 3 (10.0%), 13-24 in 4 (13.4%). The patient developed stress incontinence in 8 (26.7%) and no information was found in 22 (73.3%). 20 (66.7%) cases resulted successfully, Stress incontinence was found in 3 (10.0%), failed VVF in 1 (3.3%), Failed RVF in 6 (20.0%). The reason for failure was 2 (6.7%) bad cases and no information was found in 28 (93.3%).

Table 1. Demographic profile and others findings of the patients (N=30).

Variables	n	%	P-Value
Occupation			
Housewives	26	86.6	0.188
Garments workers	2	6.7	
Others	2	6.7	
Education			
Illiterate	19	63.33	0.355
Primary	7	23.33	
Secondary	4	13.34	
Parity			
Primi para	19	63.3	0.166
Multipara	11	36.7	
No living children	3.00 \pm 1.41		0.135
Marital status			
Married	25	83.33	0.126
Divorced	3	10.0	
Separated	2	6.67	
Current age	28.53 \pm 6.67		0.001
Age at delivery	13.70 \pm 9.48		0.216
Age at marriage	16.10 \pm 3.79		0.125
Height	55.90 \pm 3.74		0.133
Weight	44.00 \pm 5.49		0.106

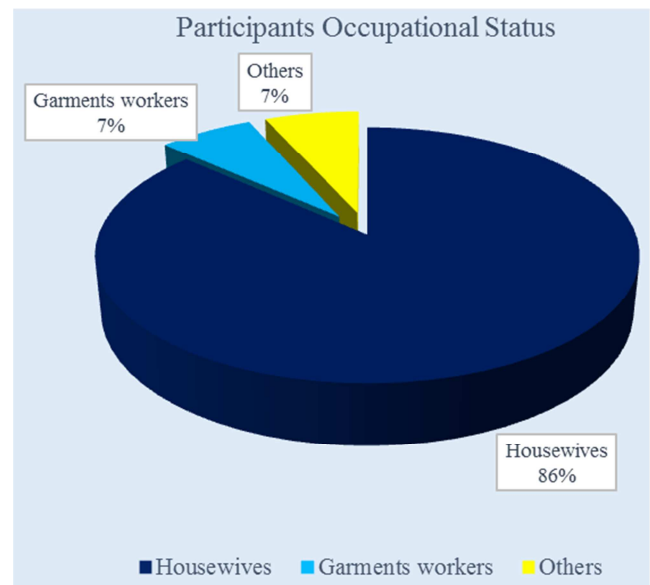


Figure 1. Participant's Occupational Status.

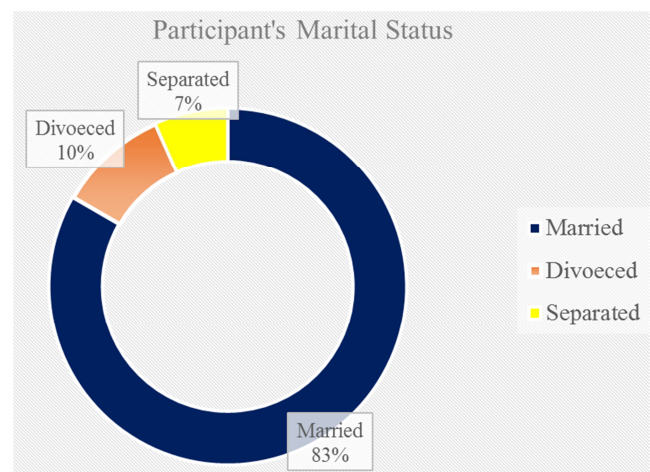


Figure 2. Participant's Marital Status.

Table 2. Obstetric and medical history of the patients (N=30).

Variables	n	%	P-Value
Duration of labor (day)			
1 -2 days	10	33.3	0.319
3-5 days	13	43.4	
>5 days	7	23.3	
Other major medical-surgical illness			
Yes	1	3.3	0.355
No	29	96.7	
Day of fistula developed			
Less than 7 days	18	60.0	0.539
7-14 days	9	30.0	
More than 14 days	3	10.0	
Duration of Incontinence (in months)	59.30 ± 48.17		0.853
Place of delivery			
Home -fathers house	5	16.7	0.689
Own house	3	10.0	
Institutional	22	73.3	
Conducted delivery			
TBA	9	30.0	0.185
Relatives	5	16.7	
Doctor	16	53.3	
Mode of delivery			
Vaginal	15	50.0	0.475
Assisted vaginal	2	6.6	
Caesarian	13	43.34	
Cause of fistula			
Childbirth	29	96.7	0.596
Trauma	1	3.3	
Fetal Outcome			
Stillbirth	25	83.3	0.031
Early neonatal death	5	16.7	

Table 3. Preoperative care of the patients (N=30).

Variables	n	%	P-Value
Pre-operative stay (week)			
1/52-4/52	17	56.7	0.193
>12/52	1	3.3	
5/52-12/52	12	40.0	
1/52-4/52	17	56.7	
Pre-operative care provided			
Nutritional	30	100.0	-
Prophylaxis	4	13.3	
Local vaginal care	6	20.0	
Nerve and musculoskeletal Injury			
Unilateral Foot drop	5	16.7	0.301
No Injuries	25	83.3	

Table 4. Operation of the patients (N=30).

Variables	n	%	P-Value
Anesthesia			
Spinal	24	80.0	0.392
SAB	6	20.0	
Time is taken for an operation	1.97 ± 0.67		0.586
Approach for urinary Fistula Repair			
Vaginal	30	100	
Type of procedure: (Repair)			
Urinary fistula	29	96.7	
Stress incontinence	7	23.3	
Urethral Sling Operation	4	13.3	
Recto vaginal fistula	1	3.3	
Type of urinary fistula			

Variables	n	%	P-Value
Urethral vaginal	1	3.3	0.153
Mid vaginal	17	56.7	
Juxta-cervical	6	20.1	
Vesico-uterine	2	6.6	
Circumferential	1	3.3	
Vault	3	10.0	0.067
No of fistula			
1	23	76.7	
2	7	23.3	0.258
VVF Length: (in cm)			
1-2	20	66.7	
3-4	8	26.7	
>5	2	6.6	0.139
VVF Width: (in cm)			
1-2	19	63.3	
3-4	10	33.4	
>5	1	3.3	0.242
Scarring			
None	1	3.3	
Mild	13	43.4	
Moderate	15	50.0	
Obliterated vaginal	1	3.3	0.315
Bladder Size			
Fair	4	13.3	
Good	26	86.7	0.596
Status of the bladder neck			
Intact	29	96.7	
Partially damaged	1	3.3	0.262
Status of urethra			
Intact	28	93.3	
Partially damaged	2	6.7	0.396
Status of both Ureters			
Both inside	27	90.0	
Both outside	3	10.0	0.594
Ureteric catheters			
Catheterized	6	20.0	
Not Catheterized	26	80.0	-
Fistula closure			
1 layer	30	100.0	
2 layers	0	0.0	0.690
Graft			
Yes	3	10.0	
No	27	90.0	0.830
Flap			
Labial	7	23.3	
Not applicable	23	76.7	0.594
Sphincter status			
Intact	6	20.0	
No information	24	80.0	-
Intraoperative Complication			
Difficulty enclosure	11	36.7	
Hemorrhage	7	23.3	
Difficulty to delineate fistula	1	3.3	
Bleeding later controlled	1	3.3	0.594
None	14	46.7	
Duration of surgery (hr)			
1	3	10.0	0.594
2	19	63.3	
>3	8	26.7	
Surgery outcome (urinary)			0.489
Cured	4	13.3	
Failed	8	26.7	
Improved	2	6.7	
Successful	16	53.3	0.765
Surgery outcome Bowl			
Improved	2	6.7	
No information	28	93.3	

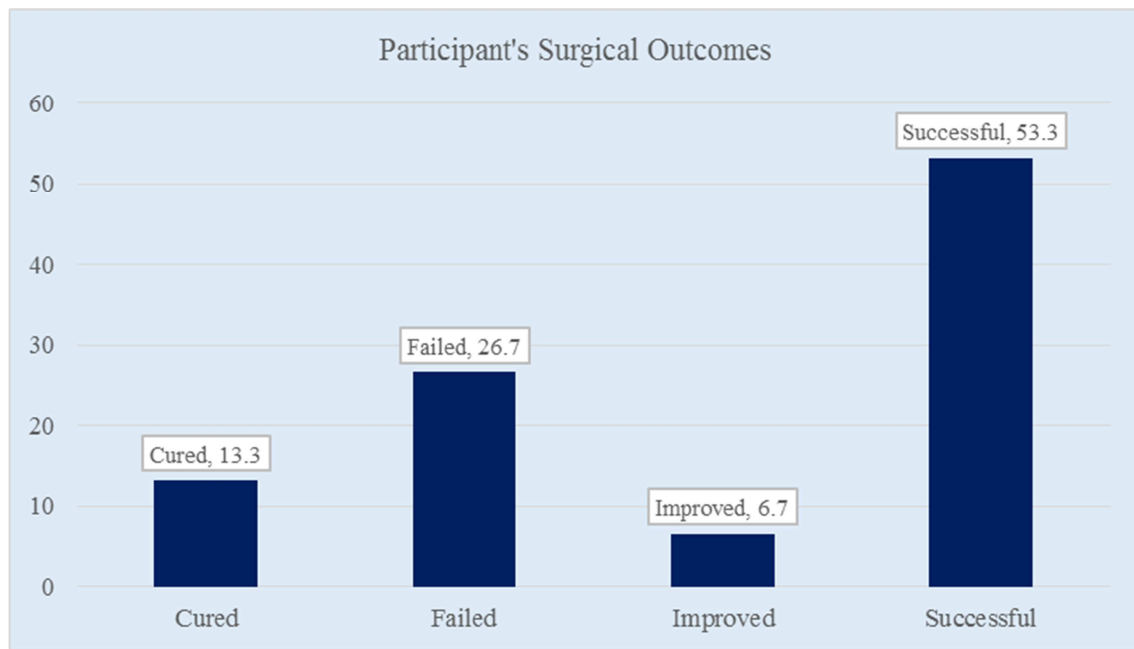


Figure 3. Participant's Surgical Outcomes.

Table 5. Post operation course of the patients (N=30).

Variables	n	%	P-Value
Transfusion (preoperative)			
Yes	20	66.7	0.223
No	10	33.3	
Transfusion (Cause)			
Nutritional	25 (83.3%)	83.3	0.301
Blood	5 (16.7%)	16.7	
Antibiotic Prophylaxis	26	86.7	0.099
No information	4	13.3	
Vaginal pack (in days)			
1	12	40.0	0.512
2	15	50.0	
>3	3	10.0	
Postoperative complications			
No	28	93.3	0.117
No information	2	6.7	
Duration of retaining catheter: (days)			
<10	2	6.7	0.450
10-15	19	63.3	
16-21	9	30.0	
The total length of stay: (week)			
3-4	13	43.3	0.280
5-8	10	33.3	
9-12	3	10.0	
13-24	4	13.4	
Patient developed			
Stress incontinence	8	26.7	0.043
No information	22	73.3	
Result			
Successful	20	66.7	0.735
Stress incontinence	3	10.0	
Failed VVF	1	3.3	
Failed RVF	6	20.0	0.765
Reason for failure			
Bad cases	2	6.7	
No information	28	93.3	

4. Discussion

Vesicovaginal fistula (VVF) is an emotionally distressing postoperative complication that has serious social and quality-of-life implications. It is uncommon in the western world, while Obstetric VVF continues to occur in developing countries due to ignorance and inadequate medical facilities, Obstetric causes include injury at the time of cesarean section, forceps delivery, and obstructed labor [12, 13]. In our study, almost 70% of patients had fistula due to obstetric causes and the remaining had fistula due to hysterectomy. None is considered to be the “best”, of literature is robust with trans abdominal, transvaginal, laparoscopic, and robotic approaches of VVF repair, and yet [14-16]. Although adjuvant factors like size, location, and history of previous surgeries have an impact on the choice of approach, the most important factor is the preference and experience of the surgeon [17]. In our series also, we found these factors important in affecting the outcome. The transvaginal route is now the preferred route of the fistula approach at our institution. Plenty of patients now prefers a vaginal approach to abdominal laparotomy. Abdominal repair is performed transvaginally and there is inherent increased morbidity associated with a cystotomy and bowel manipulation. Also, as the bladder is opened, there are increased bladder spasms and discomfort postoperatively. The vaginal approach is a less invasive approach. There is a decreased requirement of analgesics, allows high cure rate, shorter hospital stay, relatively lower costs, and does not require sophisticated or expensive material, dedicated OTs, and infrastructure as needed for laparoscopic or robot-assisted repairs [18]. There is also an obvious advantage of the cosmetic difference. Operating such high lying fistula is easily possible transvaginally with our technique described earlier. The Martius flap is an excellent flap and can be viewed as the vaginal equivalent of the omentum used in the trans abdominal repair. To buttress the repair of complex VVF include peritoneal, labial, and gluteal muscle flaps, other flaps that can be harvested [19, 20]. We used Martius flap in 48 patients and peritoneal flap in 7 patients. Also, in all our cases of urethrovaginal fistula, we used a Martius flap, which could be easily harvested. Many people argue about the potential problem of fistula exposure during the transvaginal repair. This was also elaborated by Rajamaheswari et al. who advocated that ¾th of gynecological supra-trigonal VVF can be repaired vaginally in the first attempt with a success rate comparable to that of the abdominal approach [21]. The advantages of our technique are innumerable. High-lying fistulae can be easily approached by inserting a catheter into the fistulous tract and applying gentle downward traction while exposing the bladder and perivesical fascia and creating vaginal wall flaps. For the excision of scar tissue surrounding the fistula orifice, this approach also improves visualization of the structured layers of the fistula orifice, which is beneficial.

Limitations of the Study: The study was conducted in a

single hospital with a small sample size. So, the results may not represent the whole community.

5. Conclusion and Recommendation

The transvaginal approach is less invasive and achieves comparable success rates as compared to other methods of VVF repair. Genital fistula repair surgery with a Foley catheter has a high success rate, reduced morbidity, minimal blood loss, and short hospital stay. We postulate that the vaginal approach should be preferred over the abdominal approach for the repair of all vaginally accessible VVF, both of obstetrical and gynecological origin.

Conflict of Interest

The authors declare that they have no competing interests.

Ethical Approval

The study was approved by the Institutional Ethics Committee.

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