

Original Article

Repair of Vesicovaginal Fistula: Experience of 30 Cases and Analysis of Outcome Predictors

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Abstract:

Female genital fistula is a serious medical condition in which a perforation develops most commonly between bladder and vagina (VVF). Although the majority of genitourinary fistulas can be closed surgically, the successful closure depends on many factors. In this retrospective study, the records of 30 women with a mean age of 23.8 years were assessed; 13% of the VVF occurred after abdominal hysterectomy, 67% after Caesarean section, and 20% after difficult vaginal delivery. Six (20%) women had previous repair. The median duration of the VVF was 5.9 months. Of the 30 patients of VVF, 24 were high and 6 were low. Twenty seven had single fistula opening and 3 had two fistulous openings. An abdominal approach was used in 24 patients and vaginal approach in 6 patients. At a mean follow up of 24 months, the VVF was cured in 90% patients. In conclusion, surgical correction of the VVF is more successful when done earlier, probably in the first 6 months. Abdominal approach seems to be more successful technique and recurrent VVF being associated with lower success rates than primary repair. High variety also has good result.

Key words: Genitourinary Fistula, VVF.

Introduction:

Female genital fistula is a serious medical condition in which a perforation develops either between most commonly bladder and vagina (VVF), between rectum and vagina (Recto-vaginal fistula) or combination of both¹. Prolonged and obstructed labour was long considered to be the leading cause of vesicovaginal fistula in woman in developing countries. In developed countries iatrogenic VVF as a complication of many still procedures, comprising up to 90% of the VVF of those countries². In Egypt as well as in other countries obstetric trauma was considered the leading cause of VVF. In an important report, Mahfouz, a pioneer of obstetrics and gynaecology, reported on almost 1000

cases of VVF, most of them were caused by pressure necrosis during difficult prolonged or obstructed vaginal deliveries. In the last three decades, obstetric trauma has become less important as a major cause of iatrogenic VVF^{3,4}.

Female genital fistula is no longer prevalent in the developed world, but remains as a common public health concern in developing countries. There are no good estimates of the burden of fistula, but the most recent estimates of its prevalence range from one to two million worldwide based on reviews by Stanton et al. and Adler et al⁵⁻⁸. Although the majority of genitourinary fistulas can be closed surgically, the likelihood of successful closure depends on the characteristics and severity of the fistula, skill of the surgeon and probably, surgical methods used⁹. Many fistula surgeons have developed their own methods through experience, thus, perioperative procedures vary widely across surgeons and facilities¹⁰. Few studies have examined the comparative effectiveness of different perioperative interventions related to the surgical management of genitourinary fistulas^{11,12}. One aspect of surgical repair of in particular, the route of repair undertaken, is of critical research interest, as the abdominal (versus Vaginal) approach may be associated with longer term hospitalization, urinary infection and increased blood loss^{13,14}.

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Recommendations vary with regard to whether a vaginal or abdominal surgical approach should be used for fistula repair. Vaginal approaches are generally thought to be appropriate for any fistula located between the bladder and the vagina, with some fistula surgeons claiming to be able to repair all fistulas by the vaginal route¹⁵⁻¹⁷. However, abdominal approaches are also often considered to be most appropriate for complex fistulas, with published indications for an abdominal route of repair including a small capacity or poorly compliant bladder which requires bladder augmentation; fistulas involving or close to the ureteric orifice (particularly if ureteric re-implantation is required); vaginal stenosis or other factors inhibiting adequate vaginal exposures of the fistula; size; trigonal or supra-trigonal location; intracervical location; and concomitant abdominal pathology. However, the choice of surgical approach remains, to some extent, a matter of surgeon's preference or training and experience of the surgical team^{13,16,18-20}. The aim of the present study was to assess factors possibly affecting success of surgical correction of VVF.

Materials and Methods:

This was a retrospective study and it included 30 patients with VVF who had complete records between 2013 and 2015 done by a single surgeon in different hospitals. At the time of diagnosis all patients had a local examination and basal biochemical profile (complete blood count, serum creatinine and urine analysis). The IVU and ultrasonography of kidney, ureter and bladder region were used for documentation of reno-ureteric configuration. An ascending cystogram with anteroposterior and lateral view was taken. The three gauze test with methylene blue instilled in the bladder to detect fistulae undetected on cystogram. Urethrocystoscopic examination at the time of surgery was a routine step. In the evaluation of the patient records, the duration of the VVF, the cause and any previous repair were all documented. The duration of urethral catheter drainage and use of ureteric stent and duration were recorded. The site and the number of fistulous openings were also recorded. The VVF was considered "Low" when the fistulous opening was below the inter-ureteric ridge, "high" when above this line and a fistula at the bladder neck was considered as a separate entity. The approach (Abdominal or vaginal) was recorded and the use of an interposition flap was checked.

In the abdominal approach we used a midline infra-umbilical incision and transvesical approach, while in a vaginal approach we identified the fistula opening using an Auvurd weighted vaginal retractor, insertion of

a small caliber Foley catheter in the fistulous tract and complete excision of the tract, with a two layer closure of the bladder and vaginal mucosa. Discharge data were reviewed and only those patients who were reported continent were considered as a success.

A univariate analysis was used to assess individual variables, with the chi-squared test; those variables significant on univariate analysis were considered in a multivariate analysis, using logistic linear regression. In all tests, significance was indicated at $P < 0.005$.

Results:

The duration of the VVF until treatment was < 6 months in 25 (83.3%) patients and > 6 months in 5 (16.70%) patients. On urethrocystoscopic examination 24 VVF (80%) were high, 6 VVF (20%) were low and none was at the bladder neck. Six (20%) cases had previous repair and 24 (80%) cases were for first time. Twenty seven (90%) patients had single fistulous opening and 3 (10%) patients had two fistulous openings. An abdominal approach was used in 24 (80%) patients and no interposition of omental or peritoneal flaps was used. Vaginal approach was used in 6 (20%) patients.

The urethral catheter was left in situ for 21 days in 16 (53.3%) cases, for 28 days in 13 (43.3%) cases and > 28 days in 1 (3.3%) case. In 9 (30%) patients ureteric stents were used and in 21 (70%) patients without stent.

Based on discharge date and follow up visits, the success rate was 90% and failure rate was 10%. We considered the following variables to be important risk factors and available for all patients, a history of previous repair, duration of the VVF until treatment (more than or less than 06 months), position of the VVF on urethrocystoscopy (high, low, at bladder neck), number of fistulous opening (single vs multiple), approach of surgery (abdominal vs vaginal), duration of the urethral catheterization (21 days, 28 days & more than 28 days) and ureteric stenting.

In a univariate analysis, previous repair, the duration of VVF until treatment, position of fistulous opening and surgical approach had a significant effect on the success of surgery, with $P = 0.033$, 0.014 , 0.033 and 0.033 respectively. Table I shows the results of the univariate analysis. Among those variables significant on univariate analysis, only previous repair and site of fistula had a significant effect in the multivariate analysis using logistic linear regression (Table II).

Table-I: Univariate analysis of local variables affecting the success of VVF repair.

Variables	Failed(n=3) No (%)	Success (n=27) No (%)	Total(n=30) No (%)	P value
Previous repair				
Yes	2(66.7%)	4(14.8%)	6(20.0%)	0.033 ^s
No	1(33.3%)	23(85.2%)	24(80.0%)	
Time of surgical intervention				
< 6 months	1(33.3%)	24(88.9%)	25(83.3%)	0.014 ^s
> 6 months	2(66.7%)	3(11.1%)	5(16.7%)	
Site of fistula				
High	1(33.3%)	23(85.2%)	24(80.0%)	0.033 _s
Low	2(66.7%)	4(14.8%)	4(20.0%)	
Fistulous openings				
Single	3(100.0%)	24(88.9%)	27(90.0%)	0.543 ^{ns}
Multiple	0(0.0%)	3(11.1%)	3(10.0%)	
Approach				
Vaginal	2(66.7%)	4(14.8%)	6(20.0%)	0.033 ^s
Abdominal	1(33.3%)	23(85.2%)	24(80.0%)	
Ureteric stents				
Yes	1(33.3%)	8(29.6%)	9(30.0%)	0.894 ^{ns}
No	2(66.7%)	19(70.4%)	21(70.0%)	
Catheter duration (days)				
21 days	1(33.3%)	15(55.6%)	16(53.3%)	0.677 ^{ns}
28 days	1(66.7%)	11(40.7%)	13(43.3%)	
> 28 days	0(0.0%)	1(3.7%)	1(3.3%)	

ns = not significant, s= significant, p value < 0.05 considered as a significant level

Table-II: Multivariate analysis, using logistic linear regression

Variables	Regression estimate, β	SE	Exp. B	P value
Previous repair	0.311	0.121	0.415	0.016 _s
Time of surgery	-.209	0.141	-.260	0.152 ^{ns}
Site of fistula	-.310	0.137	-.413	0.033 ^s
Surgical Approach	0.197	0.126	-.171	0.130 ^{ns}

SE, Exp.B stands for
ns = not significant, s= significant, p value < 0.05 considered as a significant level

Discussion:

In one study it was found that the leading cause of VVF was obstetric trauma where the mean age of patients was 15.5 years²¹. In another study from Ethiopia 40%

of patients in the study cohort of 193 were teenagers and 95.3% of the VVF resulted from obstetric trauma²². In the current study, the leading cause of VVF was also obstetric trauma & mean age of patients was 23.8 years.

Waldijk tried immediate closure by different techniques of repair got success rate of 95.2% and 86.8% in a study by Gessesew and Mesfin²³.

Chapple C and Turner-Warwick R stated that the success of surgical correction of VVF was compromised by tissue ischemia, radiation and recurrence²⁴. None of our patients had previous pelvic irradiation but 6 (20%) patients had previous failed repair of VVF elsewhere. Previous VVF repair was a significant factor affecting the outcome of surgery both in uni & multivariate analysis. Another important factor was long median duration of the VVF. < 6 months duration group had a success rate of 88.9% & > 6 months group had 11.1%, might be due to prolonged defunctioning of the bladder.

While an abdominal approach is considered by some to be the reference treatment for simple & complex VVF, other consider the vaginal route as a routine approach for repair, considering the morbidity of the abdominal route. However, Eilber et al. concluded that the approach chosen for VVF repair should be that with which the surgeon is most comfortable²⁵⁻²⁷. Our study clearly showed that the surgical approach affected the outcome of surgery and vaginal approach was associated with greater failure rates than abdominal approach. In our study another factor affected the outcome, that was position of the fistulous opening, high varieties had higher success rate.

Conclusion:

Surgical correction of the VVF is more successful when done earlier, probably in the first 6 months. Abdominal approach seems to be more successful technique and recurrent VVF being associated with lower success rates than primary repair. Fistulous opening at high in position also has good result.

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