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Original Article

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Outcome of Surgery in Both low & High Variety of VVF

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Abstract

VVF is a dehumanizing condition and one of the most troublesome complications of pelvic surgery , obstructed labor and malignancy in women causing increased morbidity, anxiety, disability, familial disharmony even social isolation of the patient that demand prompt , proper and special care to the patient to make them dry. Various surgical techniques have been proposed for repair of VVF, depending on the cause, location and surgeon's experience through transabdominal and transvaginal route. Success rate of repair in both route are almost similar although morbidity in transabdominal route are more. To reduced morbidity laparoscopic surgery and Robotic surgery may be done. In our study we managed all patients with open procedure.

Aims and objectives: *Evaluation the success of VVF repair to make the patient dry.*

Methodology: *Retrospective study conducted on 48 patients who underwent VVF repair with age 21-63 years mean 43 years at Dhaka Medical college Hospital, Cumilla Medical College Hospital and private clinics from January 2015- November 2024. Duration of VVF was 3 months to 2 years. Post operatively all patients underwent regular follow up.*

Results: *In 42 cases (87.50%) cause were hysterectomy, Cesarean section were in 4 (8.33%) and obstructed labor in 2 cases (4.18%). Among 48 patients, 45 case (93.75%) were primary and 3 case (6.25%) was previous failed repair by gynecologist. No complex case was included. In 36 patients 75%) fistula were present at supratrigonal area and in 12 cases (25%) were placed at subtrigonal area. Size of fistula was less than 1 cm in 32 patients (66.66%), 1-2 cm in 12 patients (25%) and 2-3 cm in 4 patients (8.33%) . In 46 patients (95.33%) fistula were single and in 2 patient's (4.16%) tract was multiple. 36 patients (75%) were operated through transabdominal approach and 12 patients (25%) through transvaginal approach. Flap was used in 5 cases (10.41%) and in 43 Cases (89.58%) flap were not used. In 3 cases (6.25%) DJ stent were used and in 45 cases (93.75%) stents were not used. 46 patients (95.83%) had successful repair. 2 patients (4.16%) had recurrence. 4 patients (8.333%) had infection, 2 patients (4.16%) developed significant hematuria and 3 patients (6.25%) developed transient incontinence of urine.*

Conclusion: *Proper identification of fistulous tract with meticulous repair and good postoperative care make successful VVF repair.*

Keywords: VVF, transabdominal repair, Transvaginal repair.

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Introduction:

Vesicovaginal fistulas are one of the most troublesome complications of pelvic surgery in women. For centuries, vesicovaginal ûstula (VVF) has been presented a challenge for Urologist and a signiûcant social and hygienic problem for patients, especially when it recurs or leads to severe complications[1].It is a multidimensional morbidity that not only leads to complications such as local infections, recurrent urinary tract infections, infertility, and gynaestresia which makes sexual activity impossible, but also the continuous leakage of urine with their associated offensive odour renders the patient social outcast [2]. While worldwide, the predominant cause of VVF is obstructed labor due to poor obstetric care but in obstetrically developed countries this is usually an iatrogenic complication of gynaecological surgery, most commonly abdominal hysterectomy, occurring in one in every 1800 hysterectomies [3-5]. Generally, VVF occurs 1–6 weeks after gynaecological or obstetric surgery, while recurrent ûstula can develop within the ûrst 3 months after primary repair[2]. The proper timing for corrective surgery and the ideal type of procedure is currently controversial[7]. The early vs delayed repair of VVF has been debated. In select cases, early reconstruction is favorable.

An accurate evaluation for number, size and location of the fistula is important before embarking on repair. The diagnostic armoury include the dye test, examination under anaesthesia, Intravenous Urography, Cystography, Hysterography, Colposcopy, MRI fistulography and Cystoscopy .When VVF is large , surgical correction is indicated, with a success rate of 75– 97% in cases of ûstula resulting from surgical injury [3 – 5]. Various surgical techniques have been proposed for repair of VVF, depending on the cause, location and surgeon's experience. As most VVFs result from difûcult hysterectomies, the initial repair may be attempted trans vaginally, because this approach has less morbidity and it is more familiar to gynaecological surgeons [3]. However, the vaginal exposure has its limitations, especially when the VVF is high lying on the posterior bladder wall and the vagina severely scarred [5]. Although the morbidity of open abdominal repair is signiûcant compared with that of the transvaginal approach, abdominal surgery is usually preferred in patients with a large (> 3 m) or supratrigonal ûstula or a ûstula in close proximity to ureteric oriûces and especially in patients with multiple, complicated or recurrent VVF after transvaginal repair[9, 10].

To reduced the morbidity of the abdominal approach, a laparoscopic repair of VVF has been used, which is primarily associated with similar success rates, minimal surgical trauma and lesser morbidity, thus allowing more rapid convalescence .Laparoscopic VVF dissection and intracorporeal suturing are technically challenging and difficult. Robotic assistance in complex laparoscopic procedures has overcome the technical difûculties of the laparoscopic approach, even in challenging cases of recurrent VVF. Using the technological advantages of robotic technology with increased degrees of freedom leading to improved dexterity and absence of fatigue, three-dimensional [3-D] vision with improved depth perception, motion scaling, tremor ûltration, higher magniûcation, and surgeon's ergonomic position in a longstanding and time-consuming operation, it is possible to perform a repair of VVF laparoscopically, respecting the basic surgical principles of ûstula reconstruction [11]. Due to lack of proper instruments and facilities, we are now using open procedure.

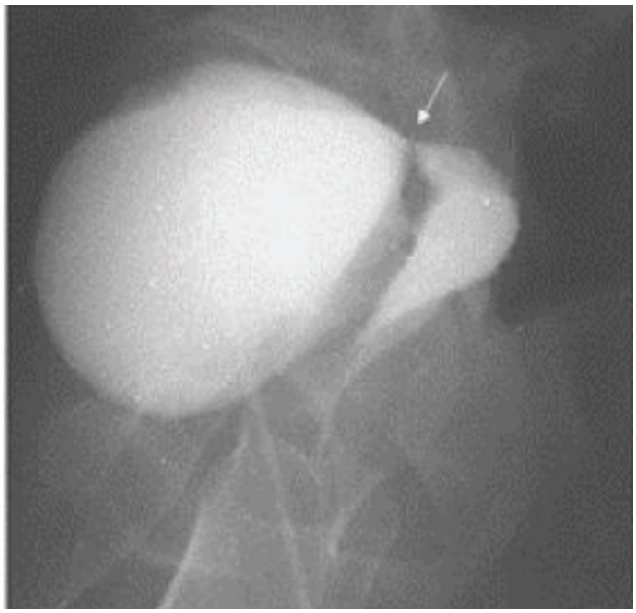

Fig.-1: *Cystography*

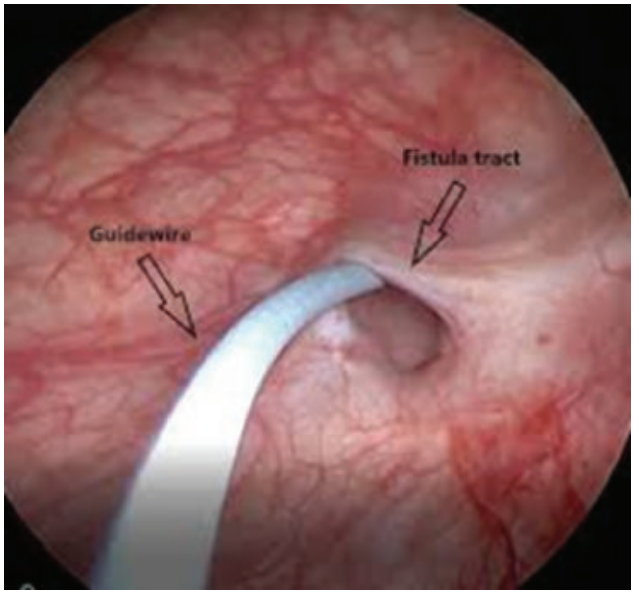

Fig.-2: *Cystoscopic findings of Fistulous opening*

Materials and methods:

This retrospective study was conducted on 48 patients who underwent repair of Vesicovaginal fistula. Age of the patients were 21-63 years mean 43 years. Repair of Vesicovaginal fistula were done at Dhaka Medical college Hospital, Cumilla Medical College Hospital and some private clinics .Duration of this study was from January 2015- November 2024. Duration of VVF was 3 months to 2 years among patients of these study. Post operatively all patients underwent regular follow up.

All patients were evaluated preoperatively by history, physical examination, serum creatinine, ultrasonography of abdomen and intravenous urography. A cystoscopy was performed and the following details were noted – the location, size and numbers of the fistulas, distance from the ureteric orifices, condition of the mucosa around the fistulous opening, thickness of fistulous septum (assessed by inserting a finger trans-vaginally while performing cystoscopy and palpating the fistula). Three swab test with methylene blue was done wherever the diagnosis was uncertain. Vaginal speculum examination was done to assess the vaginal capacity and vaginal mucosal integrity. For all practical purposes, a vagina admitting 3 fingers comfortably was considered adequate. Patients with urinary tract infection were treated with antibiotics for 2 weeks preoperatively. All fistulas at a distance less than 1 cm form ureteric orifice were stented with ureteric catheters. All fistulas involving any of the ureteric orifices, bladder neck fistulas, ureterovaginal fistula, vesico-uterine fistula, fistula after radiotherapy/malignancy, diabetes and hypertensive patients were excluded.

The primary repair of fistula was delayed by at least 12 weeks to provide sufficient time for infection and inflammation to subside. The recurrent fistulas were repaired after 3 months. In the preoperative period, vaginal douching with betadine was done 48 h before the surgery. In the postoperative period, a betadine pack was kept and it was removed after 24 h.

Table-I

Variables

Variables	Number of patients
Total patients	48
Age (range, Median)	21-63 years mean 43 years
Causes	
Hysterectomy	42
Cesarean section	04
Obstructed labor	02
Location of fistula	
Supratrigonal area	36
Subtrigonal area	12
Type of fistula	
Primary	45
Recurrent	03
Size of fistula	
Less than 1 cm	32
1-2cm	12
2-3cm	04
Multiplicity	
Single	46
Multiple	02
Route of operation	
Transabdominal	36
Transvaginal	12
Flap	
Used	05
Not used	43
DJ stent	
Used	03
Not used	45

Surgical Technique

A preoperative cystoscopy was done, in the lithotomy position, fistula identified and guide wire was placed and secured in the fistulous opening.

Transabdominal approach: Traditionally, the abdominal approach has been indicated in patients who have VVF with supratrigonal fistulous opening, or those who require additional intra-abdominal procedures, or simultaneous urological procedures, such as ureteric reimplantation or augmentation cystoplasty. All operation were done transvesicaly. In the transvesical approach, the bladder is opened and the VVF is accessed from inside the bladder, allowing excision of the VVF, dissection between the bladder and vagina, and closure of vagina and bladder separately with 4/0 Vicryl, ensuring watertight, tension-free, multilayer closure. Then bladder anterior wall repaired with keeping catheter in situ.

Fig: 3 : *Transabdominal VVF repair*

Vaginal approach: Most VVFs are accessible via a transvaginal approach especially subtrigonal , small fistulous tract opening . The Latzko technique used to repair VVF. The technique consists of a circumferential ellipsoid incision around the VVF, with wide mobilization of the vaginal epithelium in all directions. The vaginal epithelium around the VVF site is excised and the fistulous tract is closed with 4/0 Vicryl with tensionless and watertight fashion. Before we start the procedure we insert a ureteric catheter. To ensure bladder drainage, we place urethral catheter.

Martius bulbocavernosus fat graft may be interposed between the bladder and vagina to help prevent re-fistulisation .The Martius flap is derived from the labial fat pad. The flap can be tunneled under the labia minora to the site of fistula reconstruction. A Penrose drain at the end of the procedure is essential to avoid hematoma collection.

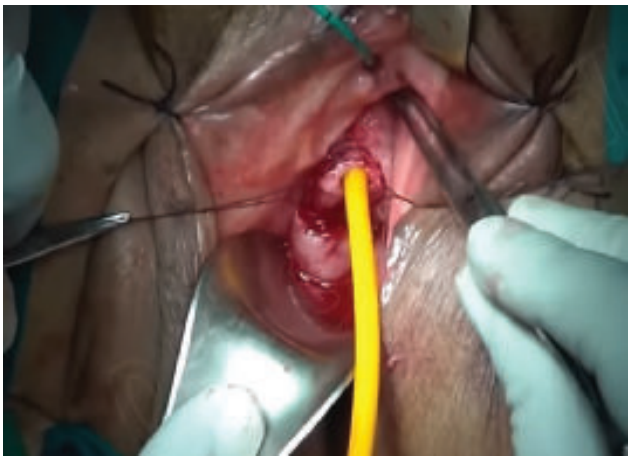

Fig. 4: *Transvaginal operative technique*

Fig. 5: *Transvaginal VVF repair*

Results:

Total 48 patients were included in this retrospective study. In 42 cases (87.50%) cause were hysterectomy, Cesarean section were in 4 (8.33%) and obstructed labor in 2 cases (4.18%). Among 48 patients, 45 case (93.75%) were primary and 3 case (6.25%) were previous failed repair by gynecologist. No complex case was included. In 36 patients (75%) fistula were present at supratrigonal area and in 12 cases (25%) were placed at subtrigonal area. Size of fistula was less than 1 cm in 32 patients (66.66%), 1-2 cm in 12 patients (25%) and 2-3 cm in 4 patients (8.33%). In 46 patients (95.33%) fistula were single and in 2 patients' (4.16%) tract were multiple. 36 patients (75%) were operated through transabdominal approach and 12 patients (25%) through transvaginal approach. Flap were used in 5 cases (10.41%) and in 43 Cases (89.58%) flap were not used. In 3 cases (6.25%) DJ stent were used and in 45 cases (93.75%) stents were not used. 46 patients (95.83%) among 48 had successful repair in both

approach.1 patient (2.77%) developed recurrence that was operated through transabdominal approach with successful repair in 35 patients (97.22%) and another 1 patient (8.33%) repaired through transvaginal route developed recurrence with successful repair in 11 patients(91.66%). 4 patients (8.33%) had infection, 2 patients (4.16%) developed significant hematuria and 3 patients (6.25%) developed transient incontinence of urine.

Table II: *Outcome of Repair*

Successful repair	46 (95.83%)
	35- Transabdominal route (97.22%)
	11–Transvaginal route (91.66%)
Recurrence	02 (4.16%)
	1 patient- Transabdominal route (2.77%)
	1 patient- Transvaginal route (8.33%)

Table III: *Complications*

Infection.	04 (8.33%)
Hematuria	02(4.16%)
Transient incontinence of urine	03(6.25%)

Discussion:

Our present study showed that VVF were results mainly from surgical intervention. Iatrogenic injury may occur during caesarean section or any pelvic surgery specially hystrectomy. VVFs are still present in Bangladesh from obstetric causes although the rate from obstructed labour are decreasing. Obstetric VVFs result from prolonged neglected obstructed labour, where sustained pressure leads to schaemia and necrosis due to compression of the bladder base and anterior vaginal wall between the foetal head and symphysis pubis [12]. In our present study we found that 42 patients (87.50%) of VVF were resulted from simple hysterectomy. VVFs after hystrectomy result from inadvertent bladder injury or tissue devitalisation due to extensive dissection or haematoma formation.

Various methods of genital fistula repairs have been described. Literature is robust with transabdominal, transvaginal, laparoscopic and robotic approaches of VVF repair and yet none is considered to be the "best" [11-13]. The most important factor is the preference and experience of the surgeon although adjuvant factors like size, location and history of previous surgeries have an impact on the choice of approach[14]. In our series also, we found these factors important in affecting the outcome.

The transvaginal route is now the preferred route of fistula approach. The vaginal approach is a less invasive approach. There is decreased requirement of analgesics, shorter hospital stay, relatively lower costs and does not require sophisticated or expensive material and allows high cure rate [15]. It is indicated for subtrigonal, small and single fistula with capacious vagina. Majority of patients now preferred vaginal approach to abdominal laparotomy. There is also an obvious advantage of cosmetic difference.

Abdominal repair is performed transvesically and there is an inherent increased morbidity associated with a cystotomy and bowel manipulation. Also, as the bladder is opened, there are increased bladder spasms and discomfort postoperatively. We repaired non-complex supra-trigonal , large size and multiple fistula with a high success rate through trans abdominal route.

Repair of VVF can be a difficult surgical challenge that may require the interposition of various tissue flaps and grafts to buttress the repair. The Martius flap is an excellent flap and can be viewed as the vaginal equivalent of the omentum used in transabdominal repair. Other flaps that can be harvested to buttress the repair of complex VVF include labial flap[16-18]. We used Martius flap in 5 patients (10.86%).

In our study 46 (95.83%) patients showed successful repaired in both route and they were dry with high satisfaction. Our results was comparable with the results of other authors. Paul Hilton et al showed 93.5% women reported being fully continent, and had no clinical evidence of either urethral or extra-urethral urinary leakage [19]. Hillary et al. showed that the success rate for the transvaginal repair (90.8%) and transabdominal repaired (83.9%)[20]. Kapoor et al. in their series, have preferred the transvaginal route for simple fistulae and the transabdominal route for complex fistulae and achieved successful outcome. Vaginal repair success rate claimed in different studies is 66.7% to 95% and Success rate with abdominal repair of VVF is reported to be 85% to 100% in different studies[22]. In our study we also used both route depending on location, size and number of fistula. Success rate in our retrospective study in transabdominal route was 97.22% and in transvaginal route was 91.66%. Outcome of repair in both route in our study near same to study conducted by other Authors.

In our study 4 patients (8.333%) had infection, 2 patients (4.16%) developed significant hematuria and 3 patients (6.25%) developed transient incontinence of urine. All complications were managed accordingly.

Ethics declarations

Conflict of interest disclosure

We have no conflict of interest.

Ethical approval

Ethical approval were taken from IRB of Cumilla Medical College.

Informed consent

Informed consent and consent for publication were obtained from the individual included in the study. All authors had access to the data and a role in writing the manuscript.

Conclusion:

Whether the approach is vaginal or abdominal, the outcome of surgical reconstruction is good .The transvaginal approach is less invasive and achieves comparable success rates. Proper identification of fistulous tract with meticulous repair and good post operative care make successful repair.

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