

# Vesicovaginal Fistula, Causative Factors and Outcome of Surgical Management: An Experience at PMC/Allied Hospital Faisalabad

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## Abstract

**Objectives:** To assess the causative factors and outcome of surgical management of Vesicovaginal fistula (VVF) in our set up. **Duration & Design of Study:** Retrospective descriptive study from January 2008 to June 2012 conducted at Department of Urology PMC/Allied Hospital Faisalabad. **Methodology:** All patients with VVF who presented in our out patient department and underwent surgical repair in our department were included in this study. The records of patients were reviewed and data was entered in a structured proforma and analyzed. After history, physical examination, relevant investigations, IVU, Cystoscopy and vaginoscopy, patients were divided into two groups. Patients with supratrigonal fistula were operated through abdominal approach and those with

infratrigonal fistula were operated through vaginal approach. The outcome of surgical procedures and post operative complications were noted. **Results:** This study included 68 patients. In 42 (61.76%) patients, cause of VVF was iatrogenic injury during hysterectomy, and 26 (38.24%) patients developed VVF due to obstetric causes. Fifty patients (73.53%) had supratrigonal fistula and eighteen patients (26.47%) were having trigonal or subtrigonal fistula. We achieved 90% and 83.33% success rate with abdominal and vaginal repair respectively. **Conclusion:** The most common cause of VVF is iatrogenic injury during hysterectomy. Both approaches of surgical repair had almost equally good results. **Key Words:** Vesicovaginal Fistula, Transabdominal Repair, Transvaginal Repair.

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## INTRODUCTION

Vesicovaginal fistula is an abnormal communication between urinary bladder and vagina which leads to continuous involuntary leakage of urine into vaginal vault. This dreadful complication has been recognized since ancient times, being noted in an Egyptian mummy dating back to about 2000 B.C<sup>1</sup>. The first successful management of VVF was achieved by John Fatio in 1675<sup>2</sup>. Sims, the father of surgery, performed successful repair of VVF in 1849 with silver wire sutures. James Marion started routine use of bladder drainage catheter in repair of VVF<sup>3</sup>.

True incidence of VVF is not known because many women do not seek medical advice for this complication and remain unreported. VVF may be congenital or acquired. The etiology of acquired VVF may be obstetric, iatrogenic, post radiation and related to malignancy. In developing

countries VVF occur mainly due to obstetric causes<sup>2,4,5,6</sup> where modern perinatal obstetric care is lacking. The situation is different in developed countries, where 90% of VVF are caused by iatrogenic injuries during gynaecological procedures or other pelvic surgeries.<sup>7,8,9</sup> The iatrogenic fistulae are seen mostly after transabdominal and transvaginal hysterectomies. VVF can also occur due to urological and gastro intestinal surgeries, illegal abortions and lower segment caesarian sections. Clinical presentation of VVF is straightforward. The woman gives history of continuous day and night leakage of urine per vagina and normal voiding does not occur. In case of ureterovaginal fistula, leakage of urine per vagina and normal act of voiding occur simultaneously. This difference is of great clinical importance for differentiation between vesicovaginal fistula and

ureterovaginal fistula<sup>4</sup>. Uncontrolled leakage of urine into the vagina with unpleasant odour, excoriation of vulva and discomfort causes serious social, mental and physical problems for the women<sup>10</sup>.

The management of VVF remains controversial as regards the surgical approach for repair. Historically there have been two operative approaches to repair the vesicovaginal fistula (abdominal and vaginal route.)<sup>4</sup>. However, lot of progress has been made with the invention of new suture materials and operative techniques. In the last few decades, VVF have been dealt with quite successfully with various rather less invasive techniques like laparoscopic<sup>11</sup> and robotic<sup>12</sup> repair, transurethral repair and laser welding. However, these techniques have their own limitations. The ultimate aim of treatment with all the options of treatment is to restore the normal anatomy and to get rid of continuous dribbling of urine.

### PURPOSE OF STUDY

The object of current study was to find the causative factors of VVF in patients presenting during this period and to evaluate the outcome of surgical repair of VVF with transabdominal and transvaginal approach in our set up.

### DESIGN AND DURATION

It was a retrospective descriptive study conducted in the department of Urology and Renal transplantation, Punjab Medical College /Allied Hospital Faisalabad from January 2008 to June 2012.

### PATIENTS AND METHODOLOGYS

#### Inclusion Criteria:

Patients included in this study were those who presented in urology out patient department during the study period with the complaint of urinary incontinence and were diagnosed to have VVF.

#### Exclusion Criteria:

Patients excluded from this study were those with fistula larger than 3cm, fistula involving the ureteric orifices, bladder neck or urethra.

#### Methodology:

All patients were evaluated pre-operatively by history and physical examination. Preliminary investigations like blood complete examination, urine analysis, blood urea, serum creatinine, blood sugar random and fasting, X. Ray chest, E.C.G, Ultrasonography abdomen and intravenous urography were done. Cystoscopy was

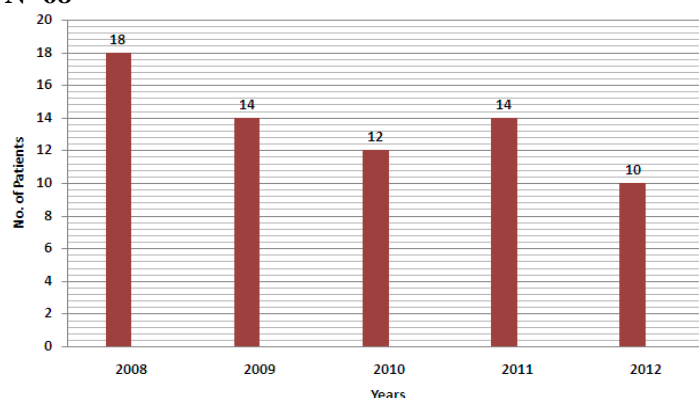
performed to evaluate the site, size and number of the fistula. Vaginal speculum examination was also done to assess the site of vaginal opening of fistula. Patients were divided into two groups on the basis of the site of fistula. If fistula was situated at trigone or between trigone and bladder neck on cystoscopy and in lower 1/3 of vagina on speculum examination, vaginal route of repair was opted. If fistulous defect was supratrighonal on cystoscopy and at vaginal vault on speculum examination, the transabdominal route of repair was opted. Free drainage of bladder through Folley catheter was ensured in post operative period. Post operative antibiotic cover was given. Any complications arising in the post operative period were treated accordingly. Patients were discharged when their condition was satisfactory.

Records of the patients were reviewed and data entered in a structured proforma. Data was recorded on etiology, site, size and number of fistula, surgical approach, time of surgery, number of blood transfusions and duration of hospital stay. Post operative complications like wound infection, prolonged ileus, clot retention, haematuria and failure of repair were noted. Leakage of urine in post operative period was taken as failure and the success was considered as closure of fistula and patients becoming continent.

### RESULTS

The total number of patients in our study was 68. Year wise distribution of patients is shown in Figure-1

**Figure-1**  
**Year wise distribution of patients from 2008 to 2012**  
**N=68**



The age range of patients with VVF was between 17-53 years with mean age of 32 years (Table-1).

**Figure-2**  
Showing age range of the patients



Various age groups and number of parity of the patients is given in (Table-1), Figure-2

**Table-1**  
Distribution of patients according to age and parity  
N=68

**Patients Data**

Age group	Number	Parity	Number
<20	9	0	15
21-30	40	1-2	30
31-40	10	3-4	13
41-50	6	5-6	7
>=50	3	>=6	3

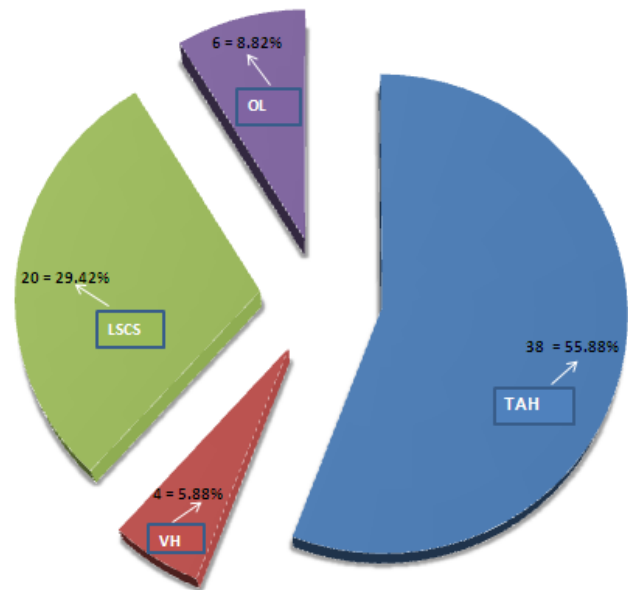
Forty two (61.76%) patients were having gynecological surgery as etiological factor (Figure-3). Out of these, in 38 (55.88%) patients transabdominal hysterectomy and in four (5.88%) patients transvaginal hysterectomy was the causative factor.

Twenty six (38.24%) patients developed VVF due to obstetric reasons. Out of these, 20 patients underwent lower segment caesarian section and 6 patients were mishandled by traditional birth attendants (Table-2), figure-3.

**Table-2**  
Number of patients with different etiologies of VVF (n=68)

Etiology of Vesicovaginal Fistulae	No of patients	Percentage
Transabdominal hysterectomy	38	55.88%
Vaginal hysterectomy	4	5.88%
L.S.C.S	20	29.42%
Obstructed labour (home delivery)	6	8.82%

**Figure-3**  
Distribution of patients with different etiologies of VVF (n=68)



TAH= Total Abdominal Hystrectomy: 38=55.88%  
VH= Vaginal Hysrectomy: 4=5.88%  
L.S.C.S= Lower Segment caesarian section: 20= 29.42%  
O.L= Obstructed Labour: 6=8.84%

The size of fistula recorded in our study was between 0.5cm-3cm. Majority of patients had fistula size between 1-2 cm (Table-3). Eight (11.76%) patients had 2 fistulae and 60 (88.24%) patients had single fistula.

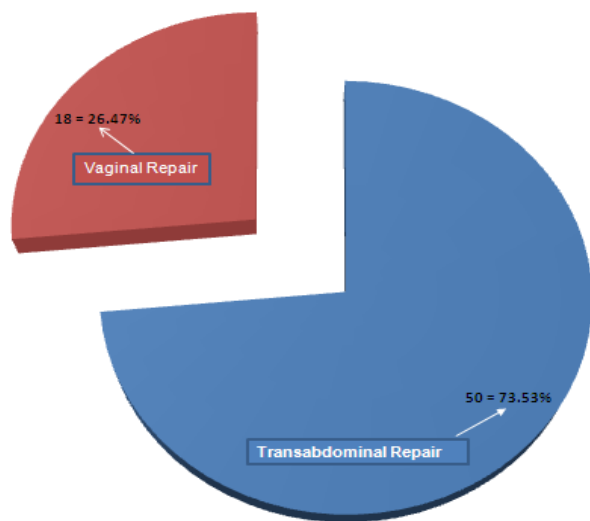
**Table-3**  
Showing fistula data

Site	N=68	Size	N=68
Supratrigonal	50	< 1cm	15
	73.53%		=22.06%
Infratrigonal	15	1-2cm	48
	22.06%		=70.59%
Close to Ureteric Orifices	3	>=3cm	5
	4.41%		=7.35%

Fifty (73.53%) patients were found to have supratrigonal (high) fistula and were managed through transabdominal approach (Table-3). Eighteen (26.47%) patients were having subtrigonal or trigonal

fistula which were repaired through vaginal route (Figure-4).

**Figure-4**  
**Distribution of patients operated through transabdominal and transvaginal approach.**



**Transabdominal Repair:** 50=73.53%

**Vaginal Repair:** 18= 26.47%

Mean operative time was 145 minutes (range 110-175minutes) for abdominal repair and 95minutes (range 80-125minutes) for vaginal repair. Statistically significant difference was observed between these two groups in this regard ( $p < 0.05$ ).

Per-operative blood transfusion was required in 3 (16.66%) patients with vaginal repair and in 40 (80%) patients with abdominal repair. Statistically significant difference was found between these two groups ( $p < 0.05$ ).

The hospitalization time after vaginal repair was 5-7 days and after transabdominal repair it was 8-12 days.

Complications noted in immediate post operative time (Table-4) were wound infection in 5(10%) patients with abdominal repair and 1(5.5%) patients with vaginal repair. All patients recovered with conventional methods of conservative treatment of infection. Among the patients with abdominal repair, 7(14%) patients developed prolonged ileus which recovered conservatively within 72-96 hours after surgery. No patient with vaginal repair developed this complication.

Eight (16%) patients with transabdominal repair and 3(16.66%) patients with transvaginal repair had clot

retention on first or second post operative day. This was dealt with gentle active flushing with normal saline.

Repair through transabdominal route failed in 5(10%) patients and success rate was 90%. Among the patients with vaginal repair 3(16.67%) patients had failed the repair and success rate was 83.33% (Table-4).

Failure of the repair was noted during first week after repair.

**Table-4**  
**Complications with transabdominal and transvaginal repair**

Complications	Transabdominal repair		Transvaginal repair	
	Patients	Percentage	Patients	Percentage
Wound infection	5	10%	1	5.5%
Prolonged ileus	7	14%	0	0%
Clot retention/haematuria	8	16%	3	16.66%
Failure of repair	5	10%	3	16.66%

## DISCUSSION

Different studies in Pakistan have labelled obstructed labour as the most common cause of VVF<sup>2,4</sup> Similarly, many international studies have shown obstructed labour to be the etiology of VVF. in underdeveloped countries<sup>6,13,14</sup>. In present study 26 (38.23%) patients developed VVF due to obstructed labour. This indicates improvement in perinatal care in our setup and early referral of the patients to hospital. In 42(61.76%) patients of our study the cause of VVF was iatrogenic injury during gynecological surgery. Out of these 42 patients, 38 were operated for total abdominal hysterectomy and 4 patients underwent vaginal hysterectomy (Table-2). These results of our study are in sharp contrast to the results of various studies cited above in which cause of VVF is obstructed labour. However, these results are in line with many other studies<sup>3,10,15</sup>.

In developed countries majority of the series show iatrogenic injuries during pelvic surgery as the most common cause of VVF<sup>7,8,9</sup>. The most common cause of VVF in our study is total abdominal hysterectomy done in private hospitals in periphery by those persons who had not taken proper training in this field of surgery.

The timing of repair after occurrence of VVF is the most controversial aspect of repair of VVF. Time allowed in different studies vary between three to six months<sup>3</sup>. In our study minimum time lapse before the repair of VVF was three months. There has been a lot of debate over the merits and demerits of vaginal and abdominal repair of VVF<sup>16</sup>. It is difficult to prove the superiority of one method on the other. Vaginal route of repair has less morbidity, less hospitalization time, less need for blood transfusion and avoidance from laparotomy. However, vaginal route can be adopted only for low lying fistulae. For high fistulae adequate exposure is not possible through this route and abdominal approach is more convenient for those fistulae. We divided the patients into two groups depending on the cystoscopic findings and location of fistula. Patients having supratrigonal fistula were operated through abdominal approach and those having trigonal or infratrigonal fistula were dealt with through vaginal route. Per operative blood transfusion was required in 3 patients (16.66%) with vaginal repair but in 40(80%) patients with abdominal repair. This probably reflects the fact that much more dissection is required in abdominal repair than in vaginal repair. Statistically significant difference was found between the two groups ( $p < 0.05$ ). This is similar and in accordance with other studies<sup>2,4</sup> but is in sharp contrast to Rafia b et al<sup>17</sup>, who had not given transfusion in any of their cases. It may be because of that their series comprises of cases only with vaginal repair.

Drainage with urethral Foley catheter was continued upto 10-12 days in our study. Similarly various studies report catheter removal on 14th day of repair. The hospital stay was 5 to 7 days after vaginal repair and 8-10 days after transabdominal repair of fistula. Almost similar report is given in study by Sheikh A.R et al<sup>4</sup>.

Comparing the complications during vaginal and abdominal repair, no significant difference was noted (Table-4). All these are almost comparable and in accordance with other studies<sup>4,15</sup>.

In our study success rate is 90% with abdominal repair and 83.33% with vaginal repair. Statistically no significant difference was observed regarding the success rate between the two surgical approaches. The success rate with vaginal repair claimed in different studies varies from 83% to 100% and with abdominal repair from 86% to 100%<sup>3,4,10</sup>. Results of our study are comparable to these studies.

Although our success rate is comparable to other studies<sup>18</sup> presented world wide but is not similarly favourable with Nargis et al<sup>19</sup> and Memon Gu et al<sup>20</sup>, who got success rate 67% and 69% respectively with vaginal approach. These were results of their first attempt which became 90% after the second repair.

We have achieved high success rate because we limited ourselves with small to moderate size fistulae (Table 2) and followed the basic rules for fistula repair as described by Romic1 et al<sup>21</sup>.

## CONCLUSION

The most common cause of VVF is hysterectomy done in periphery. There is no significant difference in outcome of repair through vaginal and abdominal approach. Supratrigonal VVF are best treated through trans abdominal approach and infratrigonal VVF are best treated through vaginal approach.

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