



## Surgical repair of Vesico-Vaginal fistula: Vaginal route versus abdominal route.

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**ABSTRACT... Objective:** To determine outcomes and complications of vesico-vaginal fistula repair via vaginal and abdominal route. **Study Design:** Cross Sectional study. **Setting:** Department of Urology and Kidney Transplantation, Pir Abdul Qadir Institute of Medical Sciences Gambat. **Period:** January 2020 to December 2020. **Material & Methods:** Patients having vesicovaginal fistula irrespective of age and fulfilling our inclusion criteria were included in the study using non-probability consecutive sampling technique. Patients having very large fistula, fistula involving neck of urinary bladder, failure of previous operation, patients with malignancy or co-morbidities were excluded from the study. Vaginal and abdominal approaches were used for fistula repair depending upon the level of fistula. Those operated via vaginal route were kept in trans-vaginal group and those operated via abdominal route were assigned trans-abdominal group. **Results:** Total 35 cases were studied having age 16-45 years with mean age of 32.6 ± 4.2 years. Transvaginal fistula repair was done in 37.1% and transabdominal repair was done in 62.8% cases. Most common cause of VVF was previous gynecological surgery in 77% cases. Success rate was 100% in transvaginal fistula repair as compared to 95.4% success rate achieved in transabdominal repair of fistula. **Conclusion:** Trans abdominal and transvaginal route both are good approaches but Transvaginal route of fistula repair is associated with high success rate than transabdominal route with minimum complications and better outcomes but it needs expert surgeon.

**Key words:** Surgical Repair, Transabdominal Repair, Transvaginal Repair, Vesicovaginal Fistula.

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## INTRODUCTION

An abnormal communication between two or more epithelial surfaces is called fistula. According to an estimate three million women worldwide have untreated vesicovaginal fistula and most of them are in Asia and South Africa, while 30,000-130,000 cases are reported annually in Africa.<sup>1</sup> Vesicovaginal fistula is an abnormal communication tract between urinary bladder and vagina causing involuntary dribbling of urine into vagina.<sup>2</sup> Urinary incontinency, scalding and odor is troublesome for women and embarrassing. There are two main types of vesicovaginal fistula, congenital and acquired. Acquired fistula are divided into further subtypes like surgical, obstetrical, due to malignancy and post radiation therapy.<sup>3</sup> In underdeveloped countries >90% fistulas are due to obstetrical issues.<sup>4</sup> In UK

and other developed countries it is caused due to complications encountered in pelvic and gynecological surgeries.<sup>5</sup> When vesicovaginal fistula is easily accessible and containing healthy tissue, it is called simple fistula. Fistula having difficult access, more tissue loss or involving ureteric orifices, is called complicated fistula.<sup>6</sup>

Its incidence, presentation and etiology is variable in different countries and in different regions of same country.<sup>7</sup> First successful vesicovaginal fistula (VVF) repair was done by John Fatio in 1675.<sup>8</sup> Sims (known as father of surgery) performed VVF repair in 1849 using sutures made of silver wire.<sup>9</sup> James Marion introduced use of urinary bladder drainage catheter in fistula repair.<sup>10</sup> Most of the times fistula occur in normal operative circumstances. It can be prevented by

wide dissection of urinary bladder from vagina and cervix in correct plane and recognizing intraoperative bladder damage and proper repair meanwhile. There should be proper surgical exposure, adequate mobilization of vagina proper excision of fistula tract, tension free repair of urinary bladder and grafting is done when it is needed.<sup>11</sup>

## MATERIAL & METHODS

Sample size was calculated using WHO sample size calculator. Consecutive sampling technique was used for selection of the patients. Written consent was taken from all the cases in study group. Approval from ethical review board of the institution was taken as well. According to inclusion criteria patients having uncomplicated vesico-vaginal fistula isolated or with ureteric fistula, irrespective of age and cause of fistula, were included in this study. According to exclusion criteria those having very large fistula, or fistula involving urethra, urinary bladder neck or whole posterior wall of bladder who require urinary diversion were not included in this study.

Most of the patients with fistula developed after gynecological or obstetrical reasons presented with in one month to one year period after the event. There were three patients who were having this problem for more than five years. Patients in study group were admitted in the urology ward of study institute and all necessary baseline laboratory investigations as complete blood count, renal function tests, liver function tests, urine complete examination, ultrasonography of abdomen. Excretory urographic studies were done when ultrasonography showed hydro nephrosis or urinary obstruction of ureter. Cystoscopy of urinary bladder was done in every patient under intravenous sedation to see size and site of the fistula and speculum examination of vagina was also done meanwhile to see vaginal opening of fistula to plan route of repair of the fistula.

In case of ureteric obstruction or ureteric injury retrograde ureteric catheter was passed and retrograde urography was done to check correct placement of the catheter. In case of ureterovaginal fistula ureteric catheter was

retained. Vaginal route of repair was used in those cases having vaginal opening of fistula at trigone or between bladder neck and trigone. Transabdominal route was used in case of large fistula defect or supra-trigonal opening seen on cystoscopy and in vaginal vault seen on speculum examination. Minimum time between fistula occurrence and surgical repair was six months and this wait was done to let fistula mature, for settling of inflammation and patient may recover from previous surgery. In abdominal repair, trans-peritoneal, trans-vesical approach was used. Extra-peritoneal trans-vesical approach was not used in any case. In all cases of VVF repair per urethra catheter and free drainage of cystostomy are very important in post-operative period.

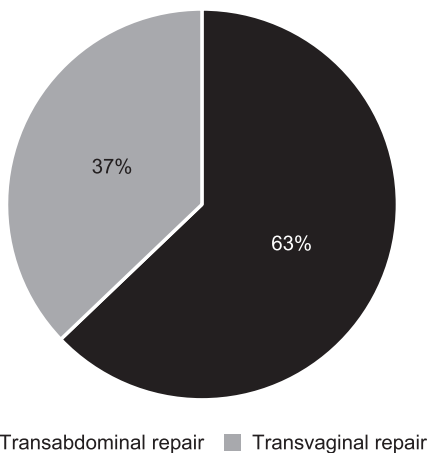
Following the surgery vital signs monitoring done and input-output monitoring was done, intravenous fluid replacement, good antibiotic coverage and oral liquids were encouraged after the start of bowel movements. Vaginal packs were removed after 24 hours. In few patients urinary bladder irrigation was done 24-48 hours due to hematuria. Anticholinergic drugs were started in few patients to prevent spasm of urinary bladder. Cystostomy was clamped on 7<sup>th</sup> post-operative day and removed after 10 days of surgery. Pelvic drains were removed after 48-72 hours after the surgery. After removal of the urethral catheter patients were monitored for 24-48 hours for any complaint. Follow-up was fortnightly for three months and then three monthly for a year.

## RESULTS

Total 35 cases were divided into two groups. Those with low level fistula proximal to bladder neck, in 13(37.2%) cases, were placed in one group and trans-vaginal repair was done in these patients (trans-vaginal group). While other group was containing 22(62.8%) cases with supra-trigonal (high) fistula and trans-abdominal repair of fistula was done in these cases (trans-abdominal group). In trans-abdominal group age distribution of the cases was as following, 5(22.7%) cases between 15-25 years, 9(40.9%) cases between 26-35 years and 8(36.4%) cases were between 36-45 years of age with mean age of  $32.6 \pm 4.2$  years. In trans-vaginal group 4(30.7%) cases were between 15-

25 years, 06(46.2%) cases between 26-35 years and 03 (23%) cases were having age 36-45 years with mean age of  $30.3 \pm 3.4$  years.

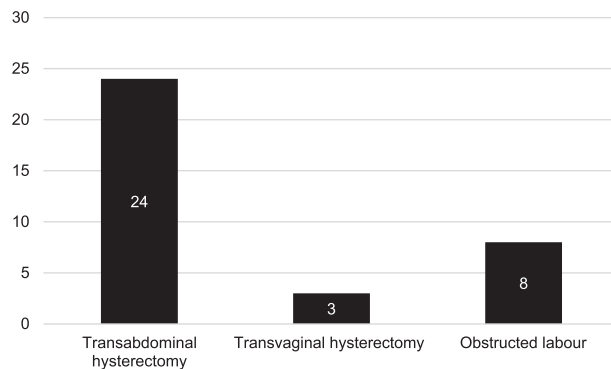
Characteristics	Trans-vaginal Group (n=13)	Trans-abdominal Group (n=22)	Total (n=35)
<b>Age (years)</b>			
15-25	04 (30.7%)	05 (22.7%)	09 (25.7%)
26-35	06 (46.2%)	09 (40.9%)	15 (42.8%)
36-45	03 (23%)	08 (36.4%)	11 (31.4%)
<b>Etiology of Fistula</b>			
Trans-abdominal hysterectomy	08 (61.5%)	16 (72.7%)	24 (68.6%)
Trans-vaginal hysterectomy	02 (15.4%)	01 (4.5%)	03 (8.6%)
Obstructed labor	03 (23%)	05 (22.7%)	08 (22.8%)



**Figure-1. Types of vesicovaginal fistula repair done in study group.**

Etiology of VVF was transabdominal hysterectomy done previously in 24(68.5%) cases, transvaginal hysterectomy was done in 03(8.6%) and history of obstructed labor was present in 08(22.8%) cases. Previous gynecological surgery was major cause of VVF among the patients. 07(20%) cases were referred to our department for VVF repair after unsuccessful attempt of repair by gynecologists. 03(8.6%) cases developed VVF after transabdominal hysterectomy in a tertiary care hospital, similarly 05(14.2%) cases developed VVF after transvaginal hysterectomy

in tertiary care hospital.



**Figure-2. Causes of vesicovaginal fistula among the patients in study group.**

Common postoperative complications reported after VVF repair were urinary bladder spasm and lower abdominal pain reported in 5(14.3%) and 4(11.4%) cases respectively. Mean duration of hospital stay was  $3 \pm 1.5$  days. Mean duration of surgery was  $65.4 \pm 15.7$  minutes.

Post-operative Complications	Trans-abdominal Repair (%=N/35)	Trans-vaginal Repair (%=N/35)	P-Value
Prolonged ileus	03 (8.5%)	00 (00%)	<0.01
Lower abdominal pain	04 (11.4%)	02 (5.7%)	
Hematuria or clot retention	02 (5.7%)	01 (2.8%)	
Urinary bladder spasm	05 (14.3%)	02 (5.7%)	
Recurrence	01 (2.8%)	00 (00%)	

**Table-I. Frequency of post-operative complications after VVF repair.**

In our study size of fistula was between 1-4cm. In most of the cases size of fistula was >2cm. Success rate was 100% in transvaginal fistula repair as compared to 95.4% success rate achieved in transabdominal repair of fistula.

**DISCUSSION**

Prevalence of vesicovaginal fistula in developed countries is very rare but in developing and underdeveloped countries it is still very common. There is a huge number of cases in our country which are untreated. Gynecological or obstetric

causes are very common risk factors of developing VVF in developing countries. Urinary bladder injury during gynecological surgeries or cesarean section is a common complication and often not treated well or sometimes missed or delayed treated. Obstructed labor is also an important risk factor of VVF.<sup>10,11</sup> Ojewola et al did transabdominal repair of VVF and reported success rate of 92.1% among those undergoing first time repair and success rate was 95.6% among those having failed previous repair via transvaginal route.<sup>12</sup> Bodner et al conducted study to see outcomes of VVF repair using transabdominal and transvaginal approaches and reported 97.8% success rate of vesico-vaginal fistula repair using transvaginal route while majority of the fistula (60%) were simple, 36% were complex and 4% fistula were complicated in their study.<sup>13</sup>

A study conducted in Turkey by tatar et al in which VVF repair was done by transabdominal approach in 65% cases, transvaginal approach used in 25% cases and laparoscopic repair was done in 10% cases. In their study major presenting complaint was urinary incontinence in 80% cases and constant leakage of urine from vagina in 20% cases and they concluded that vaginal route of repair should be first choice because it is associated with minimum complications.<sup>14</sup> Malik et al stated that choice of route of repair depends on type and location of fistula and on the training and skills of the surgeon.<sup>15</sup> A similar study conducted previously in Peshawar reported that in majority of cases cause of VVF was iatrogenic injury during hysterectomy in 67% cases while obstetric cause was found in 33% cases. In their study 78% patients were having supra-trigonal fistula while 22% cases were having fistula at trigonal or infra trigonal level.<sup>16</sup> In our study gynecological surgery was a major risk factor found in 68.5% cases and obstetric cause was found in 31.5% cases. Supra-trigonal (high) fistula was present in 22(62.8%) cases so Transabdominal repair of VVF was done while in 13(37.2%) cases low level fistula was present proximal to bladder neck so transvaginal repair was done in these patients. A study conducted in India by Kumar et al included 58 patients and reported obstructed labor a cause of VVF in 68.96% cases while hysterectomy was

cause of fistula in 29.31% cases and success rate of transvaginal route was 84.12% according to their results.<sup>17,18</sup> These results are different from our study where gynecological etiology was main cause of VVF. In our study success rate was 100% in transvaginal repair of fistula.

A study conducted in Faisalabad by Ali et al reported obstetric fistulas in 66.7% and non-obstetric fistulas in 33.3% cases. They determined success rate of 93.3% by primary repair of VVF by Transabdominal and transvaginal route combined.<sup>19</sup> A study conducted in UK concluded that there is no difference in success rate of VVF repair done via any one of two approaches transabdominal or transvaginal approach and transvaginal approach is more cost effective than transabdominal approach.<sup>20</sup> Low level simple fistulas have high success rate than high level or complicated fistulas. Fistulas of large size are difficult to repair and have high recurrence rate. Skills of surgeon and developed setups play important role in outcomes of fistula repair.<sup>21</sup>

## CONCLUSION

Gynecological etiology is a major cause of vesicovaginal fistula development in our community. Primary repair of fistula done via transabdominal or transvaginal approach has great outcomes but transvaginal route has higher success rate and less complications than transabdominal route.



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**AUTHORSHIP AND CONTRIBUTION DECLARATION**

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2	M. Shahid Bhatti	Topic selection and data collection, Abstract and recording.	
3	Illahi Bux Brohi	Data analysis, Data collection, Found additional literature for information, Data composing.	