

## **SIMULTANEOUS APPROACH REPAIR FOR COMPLICATED/COMPLEX VESICO-VAGINAL FISTULA**

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### **ABSTRACT**

#### **Objective:**

To evaluate and ascertain the outcome of repair of complicated/complex vesicovaginal fistulae by combined abdominal and vaginal approach.

**Design:** It was an interventional / clinical trial study.

**Setting and Duration of study:** This study was conducted at Almas and Citi Medical Center Larkana between Jan: 2008 to Dec: 2011.

#### **Material and Methods:**

After routine clinical examination and investigations, patients having complicated/complex vesicovaginal fistulae were selected for repair. All patients underwent examination under anesthesia (EUA) and cystoscopy. The patients having associated colonic involvement or with preexisting malignant pelvic pathology were excluded from the study. Postoperative follow up was carried out on weekly basis for 03 to 06 months.

#### **Results:**

Our study comprises of only 12 cases having complicated/complex VVF. The mean age was 35 SD $\pm$ 3.5 years. The mean size of fistula was 3.9 SD $\pm$ 1.2 cm. The ureter and urethra were adjunct with fistula in 03(25%) and 02(%) cases respectively. All cases were treated with aforementioned method and auto-cystoplasty was carried in 08 (66.5%) cases. The uni-lateral and bilateral ureteric re-implantation was attempted in 01 (8.5%) and 02 (16.5%) cases respectively and double J stent were kept in all these cases. The mean operative time was 145 SD  $\pm$ 23 minutes. Per-operative blood was transfused in all 100% cases. The overall success was achieved in 09/12(75%) cases (Pie; 01). Postoperative recovery was uneventful in all expect 06 (50%) cases who developed adverse can sequences. These were infection (sepsis), self resolving persisting haematuria and wound dehiscence that had occurred in 01(8.5%), 04(33.5%), 01(8.5%) cases respectfully. The mean hospitalization stay was 8.5 SD  $\pm$ 2.5 days. Successful follow up was carried for 06-12 month to all except 02 (17%) cases that bump into failure. The short and long term complications like frequency/dysuria/urgency of micturation, urinary stress incontinence and complains of mild to moderate sort of dyspareunia occurred in 04 (33.5%), 02 (16.5%) and 05(41.5%) cases respectively.

#### **Conclusion:**

We conclude that simultaneous abdominal and vaginal approach permit cystoscopy and access to the vagina and bladder concurrently throughout all stages of the operation. It authorizes the surgeon to excise the fistulous tract judiciously, facilitates to develop better cleavage planes between respective tissues and execute a more satisfactory repair. We recommend a key of success is tension-free auto-cystoplasty in difficult instances.

**Key Words:** Complex VVF, Combined Repair of VVF.

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## INTRODUCTION:

Genito-urinary fistulae (GUF) have been well described as early as ancient times by Hippocrat<sup>1</sup>. The exact incidence is not yet detected but world Health Organization (WHO) estimates that about 05 million new cases have registered with maternal morbidity all around the globe. Among them obstetric fistulae (vesico-vaginal and/or recto-vaginal) attained top of it<sup>2</sup>. The causes of GUF differ in various parts of globe and between the human races. In the developing world, it occurs mostly as a result of prolonged obstructed labor versus in the industrialized world, where main basis of injury to the bladder/vagina is gynecologic surgery. The present data revealed that obstetric vesico-vaginal fistula (VVF) has vanished from the more developed countries and at least 03 million women in poor countries presented with un-repaired vesicovaginal fistulae<sup>3</sup>. The overwhelming consequences are very serious and lead to such patients in crippled life and makes outcast from society<sup>4</sup>.

The Genadry PR et al in 2007<sup>5</sup> predictably defined complicated/complex fistulae that it is greater than 04 cm and involve the continence mechanism and are associated with moderately severe scarring of the trigone and urethrovesical junction; and/or have multiple openings. Whereas, Kapoor R et al<sup>6</sup> also included post radio-therapeutic fistulae or those requiring augmented cystoplasty, fistulae with large bladder stone and fistulae with scarred vagina. The rest of fistulae are label as un-complicated/simple one<sup>6</sup>.

No doubt that repair of complicated/complex fistulae is a marathon process and is challenge for fistulae surgeon. Traditionally, various methods of treatment for vesico-vaginal fistulae (VVF) repair were described. Although, with all the options of treatment, the ultimate strategy of treatment is the restoration of anatomy but none of them offer comprehensive approach to complicated / complex fistulas. The minimal invasive methods like transurethral repair<sup>7</sup>, laser welding, closure with fibrin glue<sup>8</sup>, laparoscopic<sup>9</sup> and robotic repair<sup>10</sup> are accessible and being tried well on uncomplicated fistulas but requires larger studies for its sustaining. Whereas, all-inclusive modality existing is the conventional surgery. Customarily, there are 02 surgical

approaches via abdominal and vaginal route and have being frequently practiced for VVF repair. Generally, it is said that the vaginal route is first choice of the gynecologists where as urologists are familiar with abdominal approach only. But fact of matter is that today, urologist plays not only a vital role in evaluation of almost all cases of VVF but is also well-known with both approaches. Since the majority of these cases come up with gynecologists, therefore, it is bit natural that the initial repair of a fistula is performed by these surgeons. The gynecologist often refers the patient to or call the urologist for evaluation and subsequent repair when, the fistula is complicated/complex one. In spite of these well described methods, unfortunately, some repair remains technically challenging both for gynecologists and urologists in difficult instance. Even in modern surgical era, a number of patients undergo repeated operations without cure owing to its complexity. Therefore, we design simultaneously combined abdomino-vaginal approach for ample exposure and dissection of the upper and lower genital tract related structures. The aim of our study was to evaluate and ascertain the outcome of complicated/complex VVF repair via this simultaneously abdominovaginal approach.

## SETTING AND DURATION:

This study was conducted at Almas and Citi Medical Center Larkana between jan: 2008 to Dec: 2011.

## DESIGN:

It was an interventional / clinical trial study.

## PATIENTS/METHODS:

The criterion for selection of the patients and screening workup included complete history, clinical examination and investigation like complete blood count and biochemistry, ultrasound, examination under anesthesia (EUA), cystoscopy for assessment of fistulous tracts and to determine its proximity or relation with ureteric orifices. The patients having complicated/complex fistulae were included into the study for simultaneously approached for repair. Patients with simple/un-complicated fistulae, small bladder capacity, associated with colonic involvement and with preexisting malignant pelvic pathology were excluded from the study.

Postoperative follow up was carried out weekly and then fortnightly basis for 06-12 month.

### TECHNIQUE OF REPAIR:

All cases were attempted in the semilithotomy position with the thighs well flexed. The patients were also kept under reasonable degrees of trendelenburg position. This simultaneous access offers access to the vagina and bladder during the entire operation without change of position or drapes. Prior to repair cystoscopic examination carried out for the final review of the fistulous tracts and insertion of ureteric catheters in some cases where fistula was presented near to ureter. These ureteric catheters were kept in-situ during the surgery so as to identify and avoid the unexpected injury of the ureters. Both labia majora were sutured with respective thigh and further, a weighted speculum or lateral retractors were used as required. This was found to give quite adequate vaginal exposure. The stenotic vagina if presented was incised at 12 o'clock position and that lead the approached to fistula tract generously. Then, stay sutures were placed on either side of the fistulous tract as an aid to dissection. If possible, the fistula was circumcised widely and tried to separate from the bladder. All scar tissue and epithelial lining of the vagina and fistulous tract along with adjacent poorly nourished tissue were excised. The vaginal incision is left open for a while and foleys catheter was removed. Then, via lower abdominal approach, the bladder was entered via extraperitoneally through a midline incision without changing position. Then fistulous tract dissected in a direction transverse to the vaginal incision to avoid overlapping of suture lines during closure via intraperitoneally. The bladder is separated from the vagina widely till free mobilization of both structures was achieved. Sometimes or as appropriate, further dissection carried on again from the vaginal side. This step is facilitated by having an assistance apply counter traction on the bladder flaps from the above. What so ever, with combination of these 02 routes whichever side was feasible, all scared tissues were dissected and epithelial lining of the fistulous tract was excised till free mobilization of both structures has been achieved. Then, the vagina was closed from

either route with vicryl No. 01 interrupted sutures where as base of bladder was closed via transvesical approach with vicryl No. 3/0 interrupted suture, exercising care to avoid overlapping of the sutures lines. The omentum was interposed between two suture lines in all cases. The remaining posterior and anterior part of urinary bladder was repaired via extravesical approach with vicryl No. 2/0 interrupted suture.

The neoureterocystostomy was made with vicryl No. 04 interrupted sutures, wherever ureter was involved in fistula tract and double J stent was inserted. Two drains extraperitoneally and intraperitoneally were left behind and the peritoneum and abdomen was closed in layers. The bladder was drained with 22F (03 ways) foley catheter and at the end of procedure, 02 inch gauze, lubricated with antiseptic ointment was tightly packed into the vagina for a period of 48 to 72 hours. All patients were discharged to go home after 7-10 days postoperatively. Postoperatively, foleys catheter and JJ stent was removed at 02 and 06 week respectively.

### STATISTICAL ANALYSIS:

The numerical data has analyzed, using a commercially available SPSS version 11.5. Mean and S.D were calculated for continuous variables like age, size of fistula, operative time and hospital stay in days. Frequency (percentage) was calculated for categorical variables of fistula like cause, site/location, and involvement with ureter/urethra, success/fail and complication rate. The chi-square test and Fisher test when appropriate were used to determine any statistical significance and  $P$  value  $<0.05$  was considering significant.

### RESULTS:

The demographic profile of all patients is given in Table 01. Our study comprises of only 12 cases having complicated/complex VVF. These were due to obstetrical trauma and recurrent fistulae that accounts for 07(58.5%) and 05(41.5%) cases respectively. The mean age was 35 SD $\pm$ 3.5 years. The mean size of fistulae was 3.9 SD $\pm$ 1.2 cm. The site/locations of these fistulas were also shown in Tab: 1. Non-pliable vagina with extensive fibrosis and poor vaginal capacity were presented in 03 (25%) and 02 (16.5%) cases respectively. All cases were treated with

aforementioned method. The uni-lateral and bilateral ureteric re-implantation was attempted in 01 (8.5%) and 02 (16.5%) cases respectively and double J stent was kept in all these cases. Auto-cystoplasty was carried in 08 (66.5%) cases via rotator flap achieved from antero-superior wall of urinary bladder to bridge the gap of large fistulae. The mean operative time was  $145 \pm 23$  minutes. Per-operative blood was transfused in all 100% cases. The overall success was achieved in 09/12(75%) cases (Pie; 01). The success rate with or without auto-cystoplasty was achieved in 07/8(87.5%) and 2/4(50%) respectively. Statistically significant difference was found between these two groups ( $P < 0.05$ ). Postoperative recovery was uneventful in all expect 06 (50%) cases who developed adverse sequences (chart: 01). These were infection (sepsis), self resolving persisting haematuria and wound dehiscence that had occurred in 01(8.5%), 04(33.5%), 01(8.5%) cases respectfully. The mean hospital stay was  $8.5 \pm 2.5$  days. We had come across with 03 (25%) failures of cases (Pie; 01). Of them, the recurrent mean size of fistulae was  $1.1 \pm 0.2$  cm. Initially, follow up was carried on weekly and then fortnightly for 06-12 month except 02 (17%) cases that bump into failure. Short term insignificance consequents like frequency/dysuria/urgency of micturation had occurred in 04 (33.5%) cases (chart: 01). These were subsided with conservative treatment. The long term complications were urinary stress incontinence and complain of mild to moderate sort of dyspareunia that had occurred in 02 (16.5%) and 05(41.5%) cases respectively (chart: 01).

**Table 1: Patient Demographics**

Patient characteristics	Numbers of patients
Total number of patients	12
Mean age (in years)	$31 \pm 3.5$
Mean fistula size	$3.9 \pm 1.2$ cm
Mode of presentation via	
<i>Referred</i>	08 (66.5%)
<i>Out- patient clinic</i>	04 (33.5%)
Locations fistulas	
<i>Trigonal and supra-trigonal</i>	08 (66.5%)
<i>Trigonal and ureters</i>	02 (16.5%)
Ureteric involvement	03 (25%)
Poor vaginal capacity/fibrosis	05 (50%)

## DISCUSSION:

Although, last few decades witnessed that considerable progress and standardization has occurred in the outcome of uncomplicated VVF repair surgery but yet it doesn't solved a practical confront for repair about complicated/complex one. Undoubtedly, the morbidity of un-complicated fistula is low either with abdominal or vaginal route repairs and reflects to more successful results. The world literature<sup>1,3,5,7-11</sup> exposes that depending on the clinical perspective, surgeons should use the approach with which they feel most comfortable to prevent failure disaster. Nevertheless, this matter-of-fact may not be anticipated when the extent of fistula is enlarged or associated with urethral or ureteric involvement. It is more so problematic, when fistulas allied with compromised operative fields where surrounding tissues are considerably scarred or stenotic vagina which is less distensible and difficult to expose. Hence, the differences of opinion exist in regard to route and technique of complicated/complex fistulas repair. In this context, Zhishun XU<sup>12</sup> and Lee RA<sup>13</sup> have recommended similarly combined abdomino-perineal approach for complicated/complex fistulae but these authors accomplished first vaginal repair in the lithotomy position and then changed it to the supine one and execute a trans-abdominal repair. They expressed merely a disadvantage that burden for the patients is relatively greater than those who underwent either vaginal or abdominal approach. While, we have employed simultaneously approach barely in semilithotomy position and that was not changed at all. This integrated approach not only offers the dual route access without change of position but also permits coincident access to the urethra, vagina, urinary bladder and as well as to lower ureters. No difficulty was experienced during surgery rather we had followed all the well mentioned principles of repair relative easily. Its prime advantage is that it facilitated us the better excision of fibrotic tissue and to get adequate mobilization of the vagina and bladder via 02 sites. More so, eventually it helps to accomplished tension free cooptation of healthy tissue and also provides the access to

ureter. We realized that this maneuver is rather convenient and put us forward to achieve better results.

In our study, although the obstetric trauma remains the main cause but recurrent fistulae also leads to second most and accounts for 07 (59.5%) and 05 (41.5%) cases respectively. The prevalence of former cases is similarly (59.6%) reported from India<sup>14</sup> and rather low to other published data from developing countries<sup>3-6,8,11,14-16</sup> except northern Nigeria<sup>17</sup>, where obstetric fistulae reported very high and accounts for 84.1%-100%. As a matter of course, it may be due to lack of proper obstetric care, late referrals and arrivals at hospitals and poor infra-structure system in developing countries that worsening the situation of an obstructed labor and eventually lead some cases into fistula<sup>1</sup>. Additionally, these studies are comprises with complicated and un-complicated cases together. Mumtaz<sup>11</sup> and Tariq<sup>18</sup> published a series and were reporting post surgical cause of fistula in 58% and 84% their cases respectively. This statement from developing country is neither in accordance to present study nor matched with other globally available data<sup>3-6,8,13-17,19-22</sup>. Even though, we could not found any good reason and justification from their study. The former authors<sup>11</sup> confessed that otherwise obstructed labor is leading cause but they justified that patients with post surgical fistula have got better opportunities to access for repair and thus they co-opted with them. The later authors<sup>18</sup> may be defensible on their selection criteria. Although, universal incidence of recurrent fistulae has reported only 10% cases<sup>19-21</sup> but it is quite more evident (41.5%) in our study. This state of affairs may be explained on the basis that in our back-ward areas, fistula surgeons are working in an un-appropriate equipped medical institute with lack of modern facility and with more so un-trained staff.

The success of VVF has been regarded as closure of fistulae and patients becomes continent. In this background, we already presented a study (repair of vesico-vaginal fistulae, Abdominal versus vaginal route) Rasheed<sup>23</sup> in 2011, consisting with un-complicated cases only. The selection criteria were design by our proposed simple algorithm, based on small size fistulae and

more so not associate with connected pathology. We had pursued the basic rules mentioned for fistula repair as well described by Romics I<sup>24</sup> in 2002 and interposed either omentum or peritoneal flap between two suture lines in all of our cases, who underwent for abdominal repair as recommended in various studies<sup>6,8,11</sup> and 19-25 by distinguish scholars from all around the globe for enhancing success rate. Thus and overall we as well authenticated with remarkable achievement. This has given us courage to deal our difficult cases. Therefore, we designed another parallel component of study consisting with complicated/complex fistula. Unfortunately, in present series, beside our all efforts and adopting mentioned rules<sup>24</sup>, we were unable to get such triumph and attained success only in 9(75%) cases and stumbled to failures with 03(25%) cases. The causes of failure in our series were that among them 01(8%) case developed infection and sepsis at repair site and in remaining 02 cases distal vaginal defect was wide enough and vesicourethral angle was badly destroyed. We own up that in these cases, the repair was little bit pacified. Therefore, our results are not in accordance to other updated studies<sup>11,14,21-22,25</sup>. Our success rate is favorably comparable to Ockrim JL<sup>26</sup> in 2009 and Naru T<sup>27</sup> in 2004 who presented success rate 75% and 79.5 to 83.8% respectively. The former scholars also elaborated surgical factors relevant to success/failure repair and concluded that complex (VVF) fistulae were challenging and a quarter of these required more than one attempt. While, likewise lower success rate of later study has been justified by relevant authors on their first attempt and it went up with their subsequent second attempt. Moreover that, our results seems better when we compare with Husain A in 2005<sup>28</sup>, who has reported only 63% and 61% success rate with primary and recurrent vesicovaginal fistulas repair respectively. Unfortunately, our study is also not similarly favorable with Zhishun XU in 2005<sup>11</sup> and Sujata in 2008<sup>29</sup> who reported 100% success rate for their complicated cases of VVF. Although, these scholars also came up with same simultaneous abdomino-vaginal approaches for their complicated cases but former author<sup>11</sup> supported the distal vaginal

defect with bulbocavernosus muscle flap from vaginal site. Whereas, the later authors<sup>29</sup> not only presented a very small series comprises of merely 04 complicated cases but were also prepared augmented cystoplasty with ileum. Instead, we patch up with auto-cystoplasty to those fistulae having large posterior gap 08 (66.5%). The flap was set from antero-superior wall of urinary bladder to bridge the gap. These cases had rather wide hole that otherwise was enables to co-opted. Beside all that, we have interposed only omentum from abdominal site that probably may not be properly placed at such a low level. The Roy KK and <sup>14</sup> commented that higher failure rates are seemed with excessive scarring presented due to previous failed attempts and law of diminishing returns is evident in persistent fistula repair. we<sup>23</sup> were and are also agree with same opinion of Garthwaite M<sup>30</sup> that regardless of the technique used in surgery, the first attempt of VVF repair has the highest chance of success, making it imperative that surgery is well planned and performed by a experienced surgeon.

In addition to the VVF repair, anti-refluxing neoureterocystostomy has made in 3(25%) those patients where ureter was also mixed up with situation. We re-implanted it easily as there was no problem of ureteric length. All these cases were saluted with JJ stenting for 8-12 week. Similarly, to carry on adjuvant procedure along with VVF repair is not rare and has been well reported internationally<sup>31-35</sup>. In this context, fascinatingly, Fichtner j<sup>35</sup> have used new term ureterovesicovaginal fistulas and warranted for its mistaken, if the ureterovaginal component of these fistulas has overlooked. Furthermore, in some difficult instances many scholars from distinguish centers of world<sup>36-37</sup> are either constructing Mitrofanoff<sup>36</sup> or making urinary diversion of ureter to sigmoid part of colon<sup>37</sup>. Anyhow, we did not have a need for such conversion, because we excluded such thorny cases from our study.

Postoperative recovery was uneventful in all expect 06 (50%) cases that had developed adverse sequences. These were infection (sepsis), mild persisting haematuria and wound dehiscence which occurred in 01(8.5%), 04(33.5%), 01(8.5%) cases respectfully. The self resolving postoperative

haematuria was minor and related to outsized dissection of urinary bladder. It did not create any problem and was controlled with irrigation. All patients were keen and actively participated in follow up except 02 (17%) who had failed to restore fistulae. The possible factors for their loss of follow up are might be disparity with gloominess and undue need to travel long distance for failure. It is conceivable that all were gone to else where; otherwise certainly, they would have come back. Short term insignificance consequences, frequency/dysuria/urgency of micturation were observed in 04 (33.5%) cases. These Symptoms as anticipated were subsided with conservative treatment of 3-6 week.

We encounter with the long term complications like was urinary stress incontinence and complain of mild to moderate sort of dyspareunia occurring in 02 (16.5%), and 05(41.5%) cases respectively. Although, these results are in accordance to other published studies<sup>6,12,14,21</sup> and were managed accordingly but the intensity of obstacle gradually reduced over 01 to 02 year. These are the cases to whom either trigone/urethra was involved or their vagina was already non pliable and fibrotic. In this context, various surgical techniques like retropubic urethrolisis, pubovaginal sling, and omental graft has been well described by Carey MP<sup>38</sup> in 2002 and Browning A<sup>39</sup> in 2006 for managing post VVF repair urinary stress incontinence. Whereas, Roy KK<sup>14</sup> in 2006, used dynamic external oblique aponeurosis sling at juxta urethral fistula to reduce the chance of stress incontinence. However, at this stage of protocol of repair, we did not go through with these additional surgical techniques.

Though, our study regarding complicated /complex fistula has documented judicious success but is dependent on many potential and process-related factors. We agree with the viewpoint of Lewis LW, 2006<sup>3</sup> that the possession of surgical skills is not enough; rather numerous other tribulations like poor infra-health care system are associated with it. In this context, Lewis LW in 2006<sup>2</sup> stated that VVF is continually ruining the lives of women of developing countries and general public and the world medical community still remain largely unaware of this problem. The



Carey MP in 2002<sup>38</sup> also expressed that fistula patients are at the bottom of the heap socially, sexually, economically, politically, and medically. More so, they are not on top priority of the health-care systems. This situation is a mark of shame on the world medical community and demands urgent and sustained action. We also emphasized for proper obstetric care and establishment of fully equipped health institute with experts and trained staff to prevent such disaster. In this circumstance, Jeffrey L<sup>40</sup> in 2002 declared that the best treatment of obstetrical fistula is prevention and goals of modern medicine only be achieved with access to sound obstetrical care.

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#### CONCLUSION:

We conclude that simultaneously abdominal and vaginal approach should not be viewed as a replacement technique but should rather be considered as complementary add-on to improve the access in difficult instances. It permits cystoscopy and surgical access to the vagina and bladder concurrently throughout all stages of the operation. It authorizes the surgeon to excise the fistulous tract judiciously, facilitates to develop better cleavage planes between respective tissues and execute a more satisfactory repair. We found key of success is making a tension-free auto-cystoplasty.

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Submitted for publication: 03-05-2013

Accepted for publication: 20-08-2013