

Repair of Vesicovaginal Fistulae

Sheikh Atiq-ur-Rehman,¹ Gulzar Ahmad,² Tariq Hassan,³ Anjum Sohail Ansari⁴

Abstract

Objectives: To evaluate outcome of surgical repair of VVF with transabdominal and transvaginal approaches.

Design and Setting of Study: It was a prospective study, conducted in department of surgery Bahawal Victoria Hospital Bahawalpur from Jan 2005 to Dec 2009.

Materials and Methods: All consecutive patients with VVF irrespective of age and etiology were included in this study. Patients with VVF and involvement of bladder neck were excluded. These patients were analysed for results of surgical repair by trans-abdominal and transvaginal approaches.

Results: This study included 20 patients with age range between 20 – 58 years. Etiology of VVF was observed to be trans-abdominal hysterectomy in 10 patients, transvaginal hysterectomy in 01 patient, post C-section 01 patient and obstructed prolonged labour in 08 patients. Transabdominal repair was done in 12 patients while 08 patients have undergone transvaginal repair after investigations and evaluation. We achieved

91.67% success with transabdominal repair of VVF while 100% success with transvaginal repair.

Conclusions: It is best to wait for at least 03 months after occurrence of VVF, so that inflammatory changes due to previous surgery / birth trauma may have settled completely before attempting at repair. Best results are achieved at first attempt of repair. Both approaches of surgical repair of VVF have good results.

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

Introduction

Vesicovaginal fistula (VVF) is a subtype of female urogenital fistula (UGF). VVF is an abnormal fistulous tract extending between the bladder and the vagina that allows the continuous involuntary discharge of urine into the vaginal vault.^{1,2} In addition to the medical sequelae from these fistulas, they often have a profound effect on the patient's emotional well – being.^{2,3} An accurate diagnosis is paramount before consideration of repair. A variety of methods are available to the clinician, and any excessive or suspicious vaginal discharge in a patient who recently underwent pelvic surgery or who has a history of pelvic radiotherapy should be evaluated promptly for a UGF.^{1,3,5}

The existence of VVF as a clinical entity is believed to have been known to physicians of ancient Egypt with examples present in mummies from 2000 BC.² Fistula can be simple where tissues are healthy and access is good or complicated where tissue loss is more, access is impaired or ureteric orifices are involved. True incidence of VVF is not known.^{4,7} The etiology of vesicovaginal fistula is varied and broadly categorized into congenital and acquired. Acquired fistulae are divided into obstetrical, surgical, post radiation, malignancy and miscellaneous.^{1,3,6} In developing

Rehman S.A.U.¹

Senior Registrar surgery, Surgical Unit I, Bahawal Victoria Hospital, Bahawalpur

Ahmad G.²

Professor of Surgery, Quaid-e-Azam medical college/ Bahawal Victoria Hospital, Bahawalpur

Hassan T.,³

Assistant Professor of Surgery, Quaid-e-Azam medical college / Bahawal Victoria Hospital, Bahawalpur

Ansari A.S.⁴

Associate Professor of Surgery, Quaid-e-Azam Medical College / Bahawal Victoria Hospital, Bahawalpur

countries, the predominant cause of VVF is prolonged obstructed labor (97%). VVFs are associated with marked pressure necrosis, edema, tissue sloughing, and cicatrization. The frequency of VVF is largely under reported in developing countries.^{10,12,13} In developed countries, that practice modern obstetrics have a low rate of UGFs and VVF remains the most common type. The majority of UGFs in developed countries are a consequence of gynecological surgery.^{6,8,9} Risk factors that predispose to VVFs include prior pelvic or vaginal surgery, previous PID, ischemia, diabetes, arteriosclerosis, carcinoma, endometriosis, anatomic distortion by uterine myomas, and infection, particularly postoperative cuff abscess.^{3,4,5,8}

The uncontrolled leakage of urine into the vagina is the hallmark symptom of patients with UGFs. Increased post-operative abdominal, pelvic, or flank pain; prolonged ileus; and fever should alert the physician to possible urinoma or urine ascites and mandates expeditious evaluation. Recurrent cystitis or pyelonephritis, abnormal urinary stream, and hematuria also should initiate a workup for UGF.^{7,11,13} The time from initial insult to clinical presentation depends on the etiology of the VVF. A VVF secondary to a bladder laceration typically presents immediately. Approximately 90% of genitourinary fistulas associated with pelvic surgery are symptomatic within 7 – 30 days postoperatively.^{5,6} An anterior vaginal wall laceration associated with obstetric fistulas typically (75%) presents in the first 24 hours of delivery.^{12,13} The frequency, etiology and presentation of VVF differ from country to country and within various regions of the same country.^{3,4} The first successful management of VVF was achieved by John Fatio in 1675, while Sims, the father of surgery, performed VVF repair successfully in 1849 with silver wire sutures. The management of VVF remains controversial as regard to time and surgical approach.^{1,2,9,14,15}

The purpose of the study was to evaluation of outcome of surgical repair of VVF with transabdominal and transvaginal approaches.

Material and Methods

It was a descriptive case series study, which was conducted in surgical units of Bahawal Victoria Hospital Bahawalpur, from 1st January 2005 to 31st December 2009. Twenty patients were enrolled in the study. Sampling technique was purposive non-probability type. All patients of any age and etiology leading to

VVF were included in the study. Patients who had large VVF and involving the urinary bladder neck and urethra which require urinary diversion were excluded from study.

All the variables regarding age of patient, the history of previous operation, place of operation (periphery / private or tertiary care hospital), Period of presentation with symptoms and signs of VVF, attempt to repair the VVF before presentation to surgical units were noted on proforma. Patients admitted with VVF were subjected to routine laboratory investigations and ultrasonography abdomen for upper urinary tract and other abdominal viscera, excretory urography was required in few patients. Cystoscopic examination was performed in every patient with suspected VVF under intravenous sedation for visualization of exact site and size of VVF and its relation to ureteric orifices and bladder neck. In cases with suspicion of ureteric injury or sonographically obstructed ureter, retrograde ureteric catheterization attempted to localize site of obstruction and retrograde urography was obtained. The ureteric catheter was retained in cases of ureterovaginal fistula if obstruction was bypassed successfully. Retrograde urography was performed to check correct placement of retrograde catheter. At the time of cystoscopy, speculum examination of vagina was also done for localization of vaginal opening of fistula, so as to decide route of repair. If fistula was sited at trigone or between trigone and bladder neck on cystoscopy and in lower 1/3 rd of vagina on speculum examination, vaginal route of repair was opted. If fistulous defect was large, supratriangular, with or without ureteric involvement on cystoscopy and at vaginal vault on speculum examination then transabdominal route of repair was operated. The minimum time lapse between occurrence of fistula and repair was 03 months. This allowed maturation of tissues and fistula tract, settling of inflammation and recovery from previous surgical catabolism. Although this long time from the occurrence of fistula causes much social embarrassment to fistula patients.

In every VVF repair, postoperative care was very important because negligence in postoperative management can easily distort what the surgeon has achieved at operation. Free drainage of cystostomy and per urethra catheters was of utmost importance. Vital Signs records were maintained along with urine output record. Adequate intravenous fluid replacement in first few days was mandatory to maintain adequate urine output. Early mobilization in bed and oral clear liquids were allowed as soon as bowel starts functioning. Post

operative antibiotics cover was aimed at Gram negative organisms and anaerobes. Vaginal packs, if any were removed after first 24 hours. Irrigation of urinary bladder with normal saline may be required in some cases due to haematuria. The cystostomy was removed on 14th post-operative day. The patients were observed for 24 – 48 hours after removal of cystostomy, for any complaints. Patients were discharged with advice of fortnightly follow up for 03 months and then three monthly.

Results

This study was conducted in surgical units, Bahawal Victoria hospital Bahawalpur, from January 2005 to December 2009. Total number of patients enrolled in our study was 20. The age range of patients with vesicovaginal fistula was between 20 – 58 years with mean age of 39 years. Eleven patients (55%) were having gynaecological surgery as etiological factor. Out of these, 09 patients (45%) had transabdominal hysterectomy done at periphery in less than ideal circumstances and skills. One patient (5%) developed VVF after transabdominal hysterectomy at tertiary care units. One patient (5%) developed VVF after transvaginal hysterectomy. One patient (5%) developed VVF after caercean section at periphery hospital. 8 patients (40%) developed VVF due to obstetrical reasons of prolonged obstructed labour (Table 1). Non-qualified health workers at villages or suburban areas mishandled these patients. One of these patients had instrumental delivery and developed VVF.

Table 1: Etiology of VVF

Etiology	No of Patients	% age
Transabdominal Hysterectomy	10	50
Transvaginal Hysterectomy	01	5
Post-C section	01	5
Obstructed labour	08	40

Eleven patients having urinary incontinence (obstetrical or gynaecological etiology) presented to us from one month to one year after occurrence of the event. One patient presented after 3 years of previous two failed repairs by gynaecologist. Delayed presentation was due to previous failed repairs and disappoint-

ment from cure by surgical means. Five patients (25%) were referred to surgical units after unsuccessful repair by gynaecologists. The size of fistula recorded in our study was between 0.8 – 4.5cm. Majority of patients were having fistula of > 2 cm size. After evaluation, 12 patients (60%) were found to have supratriangular (high) fistulae and were offered transabdominal, trans-vesical repair. Eight patients (40%) were having sub-triangular or triangular fistulae proximal to bladder neck and were offered repair by vaginal route. We have achieved 100% success rate by per-vaginal route. Although the preferred approach by the general surgeon is trans-abdominal trans-vesical, we achieved 91.67% success by this route with one failure (8.33% acceptable failure rate). The catheter drainage was continued upto 10 days on average in vaginally repaired fistulae while 14 – 18 days in abdominally repaired fistulae. Postoperative complication developed in these patients were shown in (Table 2).

Table 2: Post-operative Complications.

Complications	Transabdominal Repair	Transvaginal Repair
Lower abdominal pain	3	1
Prolonged ileus	4	0
Bladder spasm	6	3
Hematuria / clot retention	1	1
Recurrence	1	0

Discussion

The occurrence of vesicovaginal fistula is almost obsolete in developed countries while still a reasonable size of population faces the problem in under developed nations. The obstetrical causes are commonest etiological factor in third world causing destruction of bladder base and urethra with compression against pubic bone during prolonged obstructed labor, instrumental deliveries or handling by untrained birth attendants.^{2,10,24} Vesicovaginal fistula in developed countries mostly occurs after pelvic surgery i-e Abdominal hysterectomies, which occur in 0.05 – 0.5 / 100 cases.^{4,14,16} The obstetric etiology of VVF in developing countries is almost 70 – 95%. In Pakistan studies conducted at different centres have shown that 53.3%–

89.4% cases of VVF are due to complication of difficult labor.^{12,13} In our study the cause of VVF was abdominal and vaginal hysterectomy in 11 (55%) patients and obstructed labour in 08 (40%) patients and one patient developed VVF after the C-section. The causative factors are performance of hysterectomies in periphery by non qualified persons with own learned techniques, leading to increased number of post-hysterectomy VVF patients. This study mainly stressed over comparison of outcome following the repair with abdominal or vaginal route after the diagnosis of VVF, whatever may be the cause. In diagnosis of VVF, it was important to confirm that discharge was urine and leakage was extra-urethral. Although past history and clinical presentation gives clue to the diagnosis but gynaecologists claim dye test as an investigation of choice.^{7,17,18} In our study diagnostic test was examination under sedation including cystoscopy and speculum examination of vagina. Ureteric involvement only considered when patient is having normal voiding along with incontinence and ultrasonography showing hydroureter. Ureterovaginal fistula has been associated with VVF in 10% of cases.^{6,14} Three – swab test has its limitations and not recommended, the examination is best carried out by direct inspection.¹⁹ We confirm ureterovaginal fistula by retrograde ureteric catheterization and urography. The size of VVF was approximately between 08 mm to 45 mm. Almost similar measurements between 05 mm – 35 mm have been reported in National and Internationally conducted studies.^{5,8,18} Age of patients affected by VVF vary greatly between country to country and even in different regions of same country.^{10,16} Our study observed age range between 20 to 58 years (mean age 39 Years). The timing of repair after the occurrence of VVF is the most controversial aspect of repair surgery of VVF.^{11,15,20} This contentious aspect of fistula management for shortening of waiting period is of both social and psychological benefit to what are always very distressed patients.^{16,21} One must not trade these issues for compromise to surgical success. Although early repair is now being advocated by some authors, but most would agree that 8 – 12 weeks after VVF occurrence is the earliest appropriate time to repair. Pressure from patients for earlier repair should be resisted and 08 weeks is minimum time allowed between attempt at repair and VVF occurrence.^{3,6,22} In our study minimum time lapse was 03 months. As first attempt is best, with success rate ranging from 45 – 97%.^{1,16} Surgeons involved in fistula repair management must be capable of both vaginal and abdominal

approaches. As the arguments of earlier intervention and success rate have little merit as both approaches have their place.^{20,23} Vaginal repair is applied where access is good, tissues are sufficiently mobile.^{4,5,14} Abdominal repair is done where access is poor per vaginally and fistula cannot be brought down and concurrent involvement of ureter is there.^{10,12,14,24} Overall most surgical fistulae likely to require abdominal repair while obstetrical fistulas are dealt satisfactorily by vaginal route. The transvaginal approach to close VVF is of advantage, avoiding an abdominal incision and reducing post-operative morbidity. The transvaginal approach is more amenable to an early repair and is accompanied by a 90% or higher success rate.¹⁴ There is increasing tendency for earlier repair instead of delayed. It is important to follow the principals of fistula surgery to achieve success. Early treatment with good technique regardless of approach guarantees a high success rate. The success of VVF repair should be regarded as disappearance of fistula. Vaginal repair success rate claimed in different studies is 66.7% to 95%.^{5,24,25} Success rate after abdominal repair of VVF is reported to be 85% to 100% in different studies.²⁴ In our study we have practised both types of approaches with 100% success rate with vaginal repair and 91.67% with transabdominal repair of VVF. Transvaginal approach is suitable for smaller fistula and fistula located in lower vagina. The transabdominal approach is appropriate for larger fistula, relapsing fistula and fistula located higher in bladder or when there is concomitant ureterovaginal fistula. Abdominal repair can be extraperitoneal or intraperitoneal with or without omental graft.^{3,5,6,14,18} The nature of surgical approach should be decided by the location of fistula, the functional importance of the area and the degree of surgical exposure during corrective procedure.^{5,7,24} It is difficult to prove the superiority of one surgical technique over another due to fistula etiology, location, and clinician's expertise. Each fistula is unique. Surgeon will often be required to individually vary their approach and technique. The concept of using healthy tissue is tension free closure and reinforcing the closure in high – risk situation will ensure success.^{13,25} Adequate uninterrupted bladder drainage is required in both vaginal and abdominal repairs. Drainage by urethral Foley's catheter was continued upto 10 – 14 days in our study. The duration of bladder drainage reported in various studies is 06 – 42 days with mean duration of 15.8 days.^{9,10,13,24} The follow-up period in our study was on average 24 months (12 – 36 months). Different studies have variable

period of follow-up from 07 months to 35 months.^{10,12,19,22,25} Cure rates should be considered in terms of closure at first attempt. On average one might anticipate 80% cure with 10% failure rates.^{8,11,16} It is clear that maternal mortality and obstetric fistula due to prolonged obstructed labour are closely related. One might look on the vesicovaginal fistula as being “Near Miss” maternal death.

Conclusion

Supra trigonal VVF are best treated with transabdominal transperitoneal, transvesical approach. This approach helps to treat concomitant UVF if any. It provides wide exposure of fistula site and better dissection of tissues and repair. Vaginal approach has best results in fistulae at trigone or below and proximal to bladder neck without ureteric fistulae. Fistula surgery should be performed by the General Surgeon, Urologist or Gynecologist who is routinely performing such operations. A well – intentioned occasional fistula surgeon is NOT justifiable. The results of VVF repair are achieved best at first attempt, so no stone should be left unturned before the repair is performed, in order to make the patient dry of persistent urinary incontinence. A successful attempt of repair will help fistula patient to be integrated in social activities as routinely as before the occurrence of the disabling event of Vesico-Vaginal Fistula

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