

Original Article

Comparison of Out Come of Vesico-Vaginal Fistula Repair with and Without Omental Patch

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Objective: to evaluate the outcome of vesicovaginal fistula repair with and without interposition of omental patch.

Study Design: Case Series Study

Place and Duration: This study was carried out at Department of Urology & Renal Transplant center Bahawal Victoria Hospital Bahawalpur, from July 2008 to July 2010

Materials and Methods: Fifty patients having large size trigonal and supratrighonal vesicovaginal fistula were included in this study. Those patients in whom urethra, rectum are involved and those having vesicovaginal fistula due to radiation or malignancy were excluded from the study. All these patients were admitted from outdoor of Urology department. After getting complete history and investigation the diagnosis was made. Patients were divided into two groups. In group A, vesicovaginal fistula repair was done by interposition of omental patch between urinary bladder and vagina in group B, vesicovaginal fistula repair was done without interposition of omental patch. The result of both these group were compared.

Results: Fifty patients were included in this study. Ages of these patients were between 20-70 year. Size of the fistula was between 3cm to 6cm. 44 (88%) patients having vesicovaginal fistula alone and 6(12%) patients were having vesicovaginal fistula along with ureterovaginal fistula. 42(84%) patients having vesicovaginal fistula due to surgical and 8(16%) patients due to obstetrical causes. Success in group A was 96% and in group B 84%.

Conclusion: Those patients having large vesicovaginal fistula at trigonal or supra trigonal region, repair should be done through abdominal route and omentum should interposed between bladder and vagina to achieve maximum favorable result.

Key Words: Vesicovaginal fistula, omental patch, O' Connor technique, repair

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Introduction

The urogenital fistula is a devastating condition and it is part of the history of mankind. It has been described since 2050 BC as a large vesicovaginal fistula and laceration of the perineum, which is most likely due to birth trauma.¹

Despite the advances in medical care, the vesico-vaginal fistula (VVF) continues to be a distressful problem particularly in some poor and undeveloped countries that do not have an adequate obstetric assistance. Nonetheless, urogenital fistula is a worldwide problem even in wealthy countries where it is mainly related to hysterectomy.

A small vesico-vaginal fistula that is without infection, has a good surrounding tissue, and without

ureteral involvement, radiotherapy, and previous surgery is successfully handled by vaginal or abdominal approach or can be treated by indwelling catheter or fulguration of fistulous orifice.^{2,3} On the other hand, complex fistulas are a big challenge, and the first surgery is usually the best time to solve the problem.

Complex vesicovaginal fistulae repair may need tissue interposition like peritoneum, Martius flap, omentum, etc. It can be proceeded through with vaginal or abdominal approach and depends on the surgeon's experience and local factors like, size, location, and previous radiotherapy.

Recently, several reports have been designed supporting new procedures to vesico-vaginal fistula repair.^{4,5} New procedures are justified when it is easily reproducible, similar, or more effective than previous

approaches providing better surgical outcomes with early patient recovery and lower costs. Traditionally, VVF repair has been described by vaginal or abdominal approach with more than 90% cure rates.⁶

Principles of surgical repair of VVF include optimal tissue condition (adequate vascular supply and freedom from infection, inflammation, necrosis and malignancy), option of complete excision of fistulous tract, a tension-free, water-tight, multilayered closure with avoidance of overlapping suture lines, interposition of healthy vascularised tissue between the bladder and vaginal suture lines and continuous postoperative bladder drainage. Transabdominal repair described by O'Connor adheres to these guiding principles.⁷

The omentum which is usually used for interposition, has an abundant vascular supply and lymphatic drainage. It provides the suture lines with a vascular graft, replacement tissue and a mechanism for absorption of debris increasing the chance of success of the repair⁸ while successful repair is scarred without omental inter-positional graft.

In complicated cases, a combined transabdominal and transvaginal approach has been reported.⁹ The abdominal approach has enjoyed reproducible and durable success from 94-100%.^{9, 10} The aim of this study is to demonstrate that use of traditional approaches are possible and reasonable to treat any sort of vesico-vaginal fistula. We present a series of patients with complex vesico-vaginal fistulae to demonstrate that it is possible to reconstruct the urogenital tract with good results using "old" procedures like O'Connor's technique. Different approaches are adopted for repair of vesico-vaginal fistulas with variable success rates but repair through transabdominal approach with omental patch is time tested and common practice in our setup.

Materials and Methods

Fifty patients who had trigonal or supratrigonal vesicovaginal fistula, having fistula size of >3 cm, were included in this study. All those who had fistula due to radiation, carcinoma, or involving bladder neck were excluded from the study. All these patients were admitted from urology outdoor of Bahawal Victoria Hospital Bahawalpur. Diagnosis was made by careful history, complete physical examination, routine laboratory investigations, excretory urography and endoscopic examination. Retrograde pyelography and dye test by using methylene blue dye were used in suspected cases of associated ureteric injuries. Prophylactic antibiotics such as Cephadrine and Gentamycin were given and continued till the removal of catheters. Sitz bath and vaginal douches were given in the morning of surgery.

These patients were divided in two groups; In group A, vesicovaginal fistula were repair with interposition of omental patch.

In group B included those patients in which vesicovaginal fistula repair was done without interposition of omental patch.

General anesthesia was used in all these patients. Vesicovaginal fistula was repaired through transabdominal and transperitoneal route. Abdomen was opened through previous scar. Rectus sheath was cut and rectus muscles were split in the mid line. Peritoneal cavity was entered and the pelvic organs were examined. Bladder opened and incised from dome along posterior wall up to fistula site. Ureteric openings were identified; 5Fr feeding tubes were passed in both ureter. The bladder was dissected from vaginal wall up to 1-2 cm below the fistula opening.

In group A, Bladder and vagina were closed separately with Vicryl 3/0 and omentum was interposition posterior to the bladder and anterior to the recently closed vaginal repair. In group B the Bladder and vagina were closed separately With Vicryl 3/0 without interposition of omentum. After vaginal repair the ureteric tubes mobility was checked before closure of bladder. These Ureteric tubes were brought out through bladder and abdominal wall as ureteric stent. Bladder was closed in two layers. And those patients who also have ureterovaginal fistula, uretero-neocystomy was done in these patients along with vesicovaginal fistula repair. Per urethral Foleys catheter was also passed and fixed. Drain placed in abdomen. Abdomen closed with vicryl No.1. Iodine soaked gauze was placed in the vagina and removed after 24 hour.

Results

Fifty patients were included in our study. We reviewed our series of female urogenital fistulae that had been treated over a period of 2 years. The age of these patients were between 20-70 years. 6(12%) patients were between 20 to 29 years of age, 4(8%) were between 30 to 39 years of age, 30(60%) patients were between 40 to 50 years of age and only 2(4%) patients were above 60 year of age.

Out of these 50 cases 44(88%) patients were having vesicovaginal fistulae only and 6(12%) patients having ureterovaginal along with vesicovaginal. Out of these 44 patients 10(22.73%) patients were having trigonal type, 30(68.18%) patients were having supratrigonal type and 4(9.09%) patients were having mixed type vesicovaginal fistulae as shown in **Table no. I.**

Table I: Frequency Distribution of the Patients according to the Site of Fistula (n=50)

Site of fistula	No. of patients	Percentage
Vesico vaginal	44	88%
fistula	10	22.73%
Trigonal	30	68.18%
Supratrigonal	4	9.09%
mixed		
Vesico vaginal +urethrovaginal	6	12%

In majority of these patient's vesicovaginal fistula occurred after hysterectomy. 40(80%) patients presented with vesicovaginal fistula after abdominal hysterectomy and 2(4%) patients after vaginal hysterectomy, 2 (4%) patients after cesarean hysterectomy, and 6 (12%) patients presented with cesarean section as shown in **Table no. II.**

Table II: Frequency Distribution of Patients according to the cause of the Fistula (n=50)

Causes	No. of patients	Percentage
Surgical	42	84%
Abdominal hysterectomy	40	80%
Vaginal hysterectomy	2	4%
Obstrectical	8	16%
C section hysterectomy	2	4%
Cesarean section	6	12%

Table III: Complication Difference between Two Groups

	Group A	Group B	p value
Infection	2	1	<0.05
Incontinence	3	4	<0.05
paralytic ileus	2	3	<0.05
Failure	1	4	<0.05

Our analysis of the complications among both groups showed that in group A patients, infection occurred in 2(8%) patients. Hemorrhage and ureteric injury occurred in none of patient. Urge and stress incontinence occurred in 3(12%) patients. Paralytic ileus occurred in 2(8%) patients. Failure of fistula repair occurred in 1(4%) in group A. In group B infection occurred in 1(4%) patient. Urge and stress incontinence occurred in 4(16%) patients. Paralytic ileus occurred in 3(12%) patients. Failure of fistula repair occurred in 4(16%) patients as in **Table no.III.**

There is statistically significant difference ($p<0.05$) between group A and group B regarding infection (group A more than group B), incontinence (

group B more than group A) , paralytic ileus (group B more than group A) and failure of fistula repair (group B more than group A).

Discussion

Vesicovaginal fistula is a condition with profound impact on the physical and emotional well being of the patients due to continuous soiling and odour. Recurrent urinary tract infections and damage to the vaginal wall are the complications of vesicovaginal fistula which makes intercourse impossible.¹¹

In the current study patients age ranged from 20 years to 70 years with mean age of 35 years. Hanif MS et al¹² in their study from Karachi reported mean age of 35 years which is comparable to our study.

Worldwide, prolonged, obstructed labor is the leading cause of VVF. This, however, is an uncommon occurrence in the developed world, largely due to the availability of advanced obstetric practice.¹³

In the developed world approximately 90% of VVF are secondary to accidental injury to the bladder during surgery. High-risk procedures include hysterectomy (75% of cases)¹⁴ as in our study (84%) and urological or lower gastrointestinal pelvic surgery (~2%).

When Emergency caesarean section done in very late stage of obstructed labor then ischemic tissue injury has already taken place may lead to VVF. This is the reason why 12% vvf are due to c section¹⁵ which is comparable to our study in which 12% VVF are due to caesarean section and 4% VVF are due to cesarean-section hysterectomy.

In our study 44(88%) patients having vesicovaginal fistula alone and 6 (12%) having vesicovaginal along with ureterovaginal fistula compared to Lee and colleagues found that 10 of 53(19%) patients with a ureterovaginal fistula along with VVF.⁹ Controversies remain on the timing and route of repair of genitourinary fistula since it started a century ago.¹² Depending on the site, size, time of onset and the cause, different surgeons adopt different approaches for the repair of these fistulas. Mostly training and experience of the surgeon is the main determinant and the best approach is probably the one in which the surgeon is most experienced.

Most gynecologists seem to favour the transvaginal repair¹⁶ while urologists prefer the transabdominal repair.⁷ The transvaginal repair, being a less invasive repair has obvious advantages in terms of cosmetics and patient comfort. But surgeon performing repair through vaginal route need to preserve the vaginal length and adequate diameter along with complaint tissue. Elkins et al. reported 50% of ginatresia after correction of fistula larger than 4.0cm and in these cases, fistula repair reduces vaginal length and prevent

future sexual activity.¹⁶ 25% of cases underwent vaginal repair present some degree of dyspareunia postoperatively. In addition to, disadvantage of this approach is the limited access when fistula is large size and supratrigonal and suture will not stay when vaginal tissue is not healthy due to leakage of urine. That's why we did not use vaginal route to repair fistula in 10 patients in which vesico vaginal fistula was at trigonal area, due to large size, close to ureteric orifice and excoriation of vaginal vault.

We adopted transabdominal approach because most of the cases had complex or supratrigonal fistulae and in our department we mostly use this approach

The abdominal approach, however, has its strengths in the optimal exposure of the fistula as well as intraoperative assessment of complex fistulae or cases with concomitant ureteral obstruction. These may ultimately require interposition of omentum or even ureteric re-implantation or urinary diversion. This is seen in 6 of the cases in our series.

There are some golden rules on vesico-vaginal fistula repair, which seems to increase the success rate. We believe that VVF should preferably be close with multiple layers without tension and using tissue interposition. The greater omentum is commonly used when the abdominal approach is chosen.

The omentum which is usually used for interposition has an abundant vascular supply and lymphatic drainage. It provides the suture lines with a vascular graft, replacement tissue and a mechanism for absorption of debris increasing the chance of success of the repair.

In our study, in those patients in whom omentum was interposed between vagina and bladder success rate is 96% which is comparable to the result of Evans et al¹⁷ in their retrospective review of 37 cases, which were performed using omental patch, success rate was 100%⁵ also comparable to the result of Nesrallah LJ¹⁸ evaluated the success rate of trans abdominal O, Connor, s procedure to be 100%.

In those patients in which omentum was not placed success rate is 84% which is comparable to the study from eastern part of Nepal which reported 82% successful closure.¹⁹ But success rate is much higher than Evans et al¹⁷ who reported success rate of about 63% and Uprety DK et al¹⁹ study reporting success rate of 56%. Failure rate is 16% comparing to Nawaz H et al²⁰ reported a failure rate of 12.03% in their series from Balochistan, Pakistan.

Conclusion

Vesicovaginal fistula is the most common type of urinary fistula and iatrogenic injury is the leading cause of this fistula. Those patients in whom

vesicovaginal fistulae are at trigonal or supra trigonal regions, repair should be done through abdominal route and omentum should interposed between bladder and vagina to achieve maximum success in results.

References

- 1 Derry DE .Note on five pelvis of women of the eleventh dynasty in Egypt. J Obstet Gynaecol Br Emp 1935; 42 :490-93
- 2 Davits RJ ,Miranda SI.Conservative treatment of vesicovaginal fistula by bladder drainage alone.Br J Urol 1991; 68:155-56.
- 3 Stovski MD, Ignatoff JM, Blum MD, Nanninga JB, O'Connor VJ, Kursh ED. Use of electrocoagulation in the treatment of vesicovaginal fistula. J Urol 1994; 152:1443-44
- 4 Hemal AK, Kolla SB, Wandhwa P. Robotic reconstruction for recent supra-trigonal vesicovaginal fistulas. J Urol 2008; 180:981-85
- 5 Cohen BL, Gousse AE. Current techniques or vesicovaginal fistulas repair: surgical pearls to optimize cure rate. Curr Urol Rep 2007;8:413-18
- 6 Eilber KS, Kavalier E, Rodriguez LV, Rosenblum N, Raz S. Ten-year experience with transvaginal vesicovaginal fistula repair using tissue interposition. J Urol 2003; 169: 1033-36
- 7 O'Connor VJ, Jr. Review of experience with vesicovaginal fistula repair. J Urol 1980; 123: 367-9.
- 8 Turner-Warwick R. The use of the omental pedicle graft in urinary tract reconstruction. J Urol 1976;116:341-7.
- 9 Lee RA, Symmonds RE, Williams TJ. Current status of genitourinary fistula. Obstet Gynecol 1988;72:313-9.
- 10 Nanninga JB, O'Connor VJ Jr. Suprapubic transvesical closure of vesicovaginal fistula. In : Buchsbaum HJ, Schmidt JD, editors. Gynecologic and obstetric Urology. WB Saunders Co: Philadelphia; 1993. p. 365-9.
- 11 Singh O, Gupta SS, Mathur RK. Urogenital Fistulas in Women, 5-year Experience at a Single Centre. J Urol 2010;7:35-39.
- 12 Hanif MS, Saeed K, Sheikh MA. Surgical Management of Genitourinary Fistula. J Pak Med Assoc 2005;55:280-284.
- 13 Hilton P. Vesico-vaginal fistula in developing countries. Int J Gynaecol Obstet 2003;82:285-95
- 14 Tancer ML: Observations on prevention and management of vesicovaginal fistula after total hysterectomy. Surg Gynecol & Obstet 1992 ;175:501
- 15 Buckspan MB, Simha SS, Klotz PG. Vesicouterine fistula: a rare complication of cesarean section. Obstet Gynecol 1983; 62: 64-66.
- 16 Elkins TE. Surgery for the obstetric vesicovaginal fistula: a review of 100 operations in 82 patients. Am J Obstet Gynaecol 1994; 170:1108-20.
- 17 Evans DH, Maydar S, Politano VA et al. Interposition flaps in trans-abdominal vesicovaginal fistula repairs. Are they really necessary. Urology 2001; 57:670-74.
- 18 Nesrallah LJ, Srougi M, Gittes RF. The O'Connor technique: the gold standard for supra-trigonal vesicovaginal fistula repair. Urology 1999;161:566-8.
- 19 Uprety D, Babu S, Sharma M, Jha M. Obtetric genitourinary fistula in eastern part of Nepal. Asian J Obstet Gynecol 2001; 6: 36-8.
- 20 Nawaz H, Khan M, Tareen FM, Khan S. Retrospective study of 213 cases of female urogenital fistulae at the Department of Urology & Transplantation Civil Hospital Quetta, Pakistan. J Pak Med Assoc 2010;60:28-32.