

Surgical Management of VVF-Experience Analysis from a Tertiary Care Centre in Eastern India

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Abstract

Introduction-Vesicovaginal fistula (VVF) is the most common acquired fistula of the urinary tract with most common etiology now being hysterectomy in developed nation. The objective of this study is to review our experience in the management of VVF over the last 5 years (2014- 2019), with an emphasis on causes, means of surgical treatment & their outcomes, and to determine the risk factors for poor outcomes.

Materials and methods-A retrospective study done with a total 41 VVF cases operated between 2014-2019. All medical records were reviewed, and the etiology of fistula, time to presentation, prior treatment, clinical findings on admission, means of treatment and outcomes were noted. Fistula was approached differently depending upon host factor, fistula characteristics and patient factor. Patient with associated ureteric involvement required additional ureteric reimplantation procedure. At the end of the repair interposition flap were put in all patients. The mean operative time was 124 ±14.7 min and none of our patient required blood transfusion.

Results-Most common cause in our patients was transabdominal hysterectomy. Out of total 41 patients, 38 (92.7%) patient reported complete closure. The success rate of laparoscopic and transvesical approach were 100% each whereas for transabdominal and transvaginal were 95.5% and 77.7% respectively. Success rate for supratrigonal vs trigonal were 97% and 77.7%, simple vs complex were 96.7% and 80% and primary vs recurrent were 94.6% and 75% respectively.

Conclusion-VVF is a major cause of morbidity and therefore, a public health concern in our country. In our region it is more frequently associated with transabdominal hysterectomy. Laparoscopic and transvesical approach have better results than convention transabdominal and transvaginal approach in this study. Fistula etiology, characteristics, time to surgery and recurrence determine the outcome of surgery.

Key word: Genitourinary fistula, vesicovaginal fistula (VVF), Martius flap, Modified O'Conor repair.

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Abbreviations:

VVF- Vesicovaginal fistula

LSCS- Lower segment caesarean section

TAH- Transabdominal hysterectomy

TLH- Total laparoscopic hysterectomy

VH- Vaginal hysterectomy

Ca cx- Carcinoma cervix

SSI- Surgical site infection

I. Introduction

Vesicovaginal fistula (VVF) is the most common acquired fistula of the urinary tract and has been known since ancient times.¹ They are most often acquired as a result of a surgical intervention for an unrelated problem and consequently considerable emotional and psychologic distress often accompanies the diagnosis and subsequent treatment. Previously the most common etiology was obstetric complications but now it has been shifted to gynecological/urological/other pelvic surgery. Hysterectomy is the most common procedure that

comprises 75% of fistulae.² Despite its significant impact, there is no consensus on the optimal approach to treat VVF. Choice of therapy is based largely on expert opinion and surgeon experience.

We report our experience of 41 cases treated in our institute during 2014 to 2019 with different etiology most commonly due to previous hysterectomy (abdominal> vaginal=TLH). The objective of this study is to review our experience in the management of vesicovaginal fistula over the last 5 years (2014- 2019), with an emphasis on causes, means of surgical treatment & their outcomes, and to determine the risk factors for poor outcomes.

II. Materials and Methods

A retrospective study done in our department of urology, NilratanSircar Medical college, Kolkata(WB) with a total 41 patients withvesicovaginal fistula who were operated herein between 2014-2019. All medical records were reviewed, and the etiology of fistula, time to presentation, prior treatment, clinical findings on admission, means of treatment and outcomes were noted.The mean age of our patients was 38.5years, range 23–50 years. The interval between the onset of leakage and final surgical correction range 1month to 16months.

Vaginal assessment was done to inspect and palpate the vaginal opening of the fistula. Cystoscopy was done to establish the location of the fistula and assess its proximity to the ureteric orifices. An excretory urography was performed in all patients to exclude ureteric involvement. All supratrigonal fistula were approached through transabdominal route and all trigonal fistulae were approached through transvaginal route. Transabdominal approach may be modified O’Conor(mc), transvesical or laparoscopic repair. Some patients with ureteric involvement required additional ureteric reimplantation procedure. At the end of the repair interposition flap (omental flap in transabdominal approach and Martius flap in transvaginal approach) were put in all patients. None of our patient required blood transfusion.

Patient discharged with an indwelling urethral catheter, which ensures continuous drainage of the bladder and proper healing. Suprapubic cystostomy tube was not placed routinely except in one case who had developed vesicocutaneous fistula. Anticholinergics and laxatives were used routinely to prevent bladder spasms and unwanted constipation. Appropriate prophylactic antibiotics are generally given as per protocol. A retrograde cystogram was performed under antibiotic coverage in all cases at completion of 3 weeks postoperatively before removal of per-urethral catheter to confirm fistula closure. Catheter removal was deferred for 1 week in cases who had leakage in cystogram. Patients were warned to avoid the use of tampons and refrain from sexual activity for at least 12 weeks postoperatively.Early mobilization and ambulation were encouraged.All except 6 patients are still in follow up. The follow-up period was range 3–57 months.Preferred therapeutic results after a follow-up of at least three months were judged and fistula was labeled as healed if there is total absence leakage of urine through vagina with intact continence mechanism after the surgery and it was labeled as failed if there is persistence of leakage of urine through vagina after surgical treatment.

III. Results

A total of 41 patients with VVF underwent different operative procedures. The mean age was 38.5years (range 23-50). Most common cause in our patients was transabdominal hysterectomy which include 34 cases(82.9%). Other causes were laparoscopic hysterectomy in 2 cases(4.9%), vaginal hysterectomy in 2 cases(4.9%), LSCS in 1 case(2.4%), obstructed labour in 1 case(2.4%), and 1 patient(2.4%) had history of radical hysterectomy for cancer cervix.37 patients had primary VVF and rest 4 had recurrent VVF.32 patients had Supratrigonal fistula and 9 patients had trigonal fistula. Associated conditions with VVF were ureterovaginal fistula in 3 and ureteric stricture in 1 patient (complex fistula). Out of total,4 patients had multiple fistulae.Mean fistula size was 1.5cm (range 6mm to 3.5cm).

Most of our patients (n=22) underwent transabdominal modified O’Conor repair followed by transvaginal repair in 9 patients, laparoscopic repair in 7 patients (although 3 were converted to open), transvesical repair in 3 patients. 4 patients required ureteric re-implantation along with VVF repair.Omental interposition given in the patients who underwent laparoscopic, transabdominal and transvesical.Martius flap given in the patients who underwent transvaginal repair. Mean time to surgery was 4.5 month (range 1month to 16months).The mean operative time was 124 ±14.7 min and none of our patient required blood transfusion.

Out of total 41 patients,38(92.7%) patient reported complete closure and 3(7.3%) patients had failure. Out of total 22 patients who underwent transabdominal modified O’Conorrepair, 21(95.5%) reported complete closure and 1(4.5%) had failure. Out of total 9 patients who underwent transvaginal repair 7(77.7%) reported complete closure and 2(22.3%) reported failure. The patients who underwent laparoscopic (including the lap converted to open) and transvesical repair, the closure rate was 100%. Five patients complaining of irritative LUTS postoperatively, 1 patient had postoperative SSI which was managed conservatively, 1 patient developed vesicocutaneous fistula which was managed by prolonged per-urethral drainage catheter.

The mean follow up time was 18.7 months. Only 35 patients reported in follow up. On enquiring all the patients who are in follow up, 32/35 patients were sexually active& continent, but 3 patient complaining of dyspareunia (possibly because of transvaginal repair).

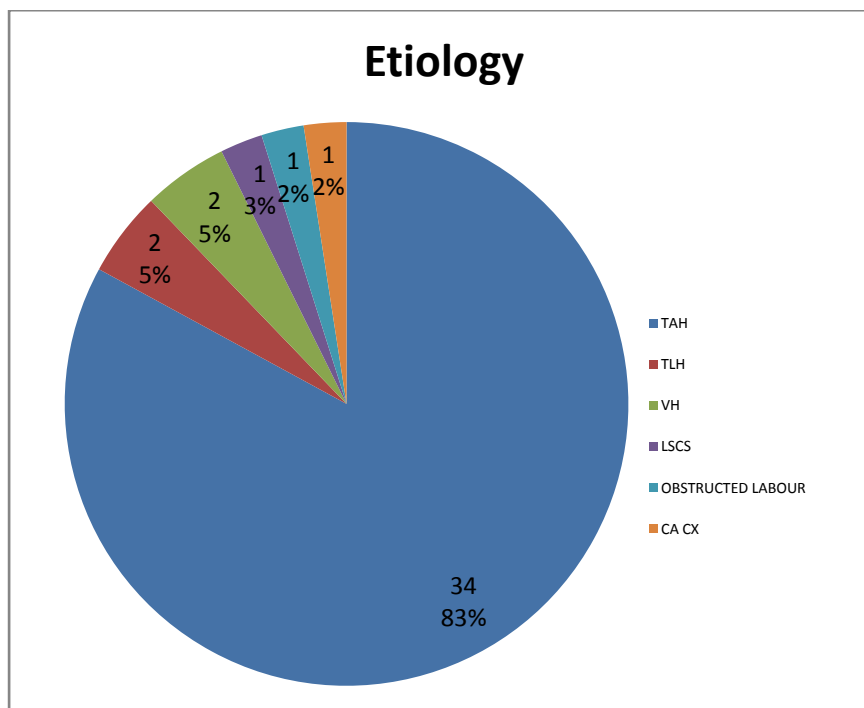


Table-1 Characteristics of fistula

Parameters		Number (n=41)	Percentage (%)
Site	Supratrigonal	32	78
	Trigonal	09	22
Nature	Simple	31	75.6
	Complex	10	24.4
Type	Primary	37	90.3
	Recurrent	04	09.7

Table-2 Results w.r.t. surgery performed

Approach	Number(n)	Therapeutic Results	
		Complete closure	failed
Transabdominal(modified O'Conor)	22	21(95.5%)	1(4.5%)
Transvesical	03	03(100%)	0
Laparoscopic	04	04(100%)	0
Lap. converted to open	03	03(100%)	0
Vaginal	09	07(77.7%)	02(22.3%)

Table-3 Results w.r.t. characteristics of fistula

Parameters		Number (n=41)	Therapeutic Results	
			Successful	Failed
Site	Supratrigonal	32	31(97%)	01(3%)
	Trigonal	09	07(77.7%)	02(22.3%)
Nature	Simple	31	30(96.7%)	01(3.3%)
	Complex	10	08(80%)	02(20%)
Type	Primary	37	35(94.6%)	02(5.4%)
	Recurrent	04	03(75%)	01(25%)

Table-4 Post-operative complication

Complications	Numbers	Management
Failure/Recurrence	03	One Mx successfully, rest 2 lost to F/U
Urgency	04	Mx conservatively
Urge incontinence	01	Mx conservatively
SSI	01	Mx conservatively
Vesicocutaneous fistula	01	Mx conservatively
Dyspareunia	03	Not satisfied with conservative Mx

IV. Discussion

Vesicovaginal fistula although a rare condition but it is the most distressing complication of obstetrics and gynecological surgery which cause devastating medical, social, psychogenic and hygienic consequences.³ Now the etiology has been shifted from obstetric complication in past to gynecological surgery at present.⁴ Hysterectomy is the most common procedure that comprises 75% of fistulae.² Other rare etiology include urological surgery, GI surgery, caesarean section, obstructed labour(in developing country) , malignant disease and pelvic irradiation.^{5,6,7} In our study of 41 cases, transabdominal hysterectomy was the most common cause of fistula comprising of 34 cases(82.9%), other causes found were laparoscopic hysterectomy in 2 cases(4.9%), vaginal hysterectomy in 2 cases(4.9%), LSCS in 1 case(2.4%), obstructed labour in 1 case(2.4%), and radical hysterectomy in 1 case(2.4%) which was done for malignancy. Eilber et al in their study found the cause of VVF as, abdominal hysterectomy in 83%, vaginal hysterectomy in 8%, radiation in 4%, other in 5%.⁸ Harris et al reported the incidence of fistula after hysterectomy to be 0.1-0.2%.⁹

The timing of VVF repair is a debatable issue. The main principle behind it is to reduce tissue edema, inflammation and to attain optimal pliable tissue before definitive surgery.^{10,11} O'Connor recommended a waiting period of 3-6months. In our study the mean time to definitive surgery was 4.5 month (range 1month to 16months).



Fig 1: Preoperative cystourethrogram showing VVF and leakage of Contrast in vagina



Fig 2: Postoperative cystogram after 3 weeks showing complete closure of fistula

VVF can be managed conservatively or surgically. Many author reported that the conservative treatment only successful in small fistula of size 3-5mm in diameter.^{12,13} In our study fistula size was >6mm hence all the patients treated surgically. The approach to repair depends upon the surgeon preference and fistula characteristics like location, size, need for adjuvant procedure and time of surgery.¹⁴ In our series transvaginal repair was done for trigonal fistula and transabdominal repair done in supratrigonal fistula and the patients with simultaneous ureterovaginal fistula or ureteric stricture in which ureteric reimplantation was done. In our series 92.7% patient reported complete closure which is comparable to a meta-analysis done by Barbara et al.² In our study the most common procedure done was Transabdominal modified O'Connor with success rate of 95.5%. The success rate for laparoscopic and transvesical route were 100% , although number of patient were less in both the case. In case of vaginal route the success rate is 77.7% which is comparable to series done by Tancer et al¹⁵ The surgical outcome very much depends upon the site(supratrigonal or trigonal), nature(simple or complex) , type(primary or recurrent) , cause of fistula. The fistula was categorized as complex when there is simultaneous ureteric involvement or recurrent fistula, or severe fibrosis or reduced bladder capacity/ vaginal length, according to classification described by Goh¹⁶. Out of 3 patients who developed failure, one had primary trigonal fistula, second one had recurrent trigonal fistula, third one had primary suratrigonal fistula with severe fibrosis around the fistula. In our series the outcomes were good in simple, supratrigonal, and primary fistula as compared to complex, trigonal, and recurrent fistula.

V. Conclusion

Vesicovaginal fistula is a major cause of morbidity and therefore, a public health concern in our country. Embryological proximity of genitourinary tract makes urinary tract prone to injury in any pelvic surgery. In our region it is more frequently associated with transabdominal hysterectomy. Successful closure of the fistula requires an accurate and timely diagnosis and repair using procedures that exploit basic surgical principles. Although number of patients were less but laparoscopic and transvesical approach seems to have better outcome than conventional transabdominal and transvaginal approach. Interposition of pedicle flap helps to prevent recurrence. Etiology of fistula, prior treatment, size, type and character of fistula, time to surgery and means of treatment are the primary determinant of positive or negative outcomes.

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