

Original Research Article

# A clinical study of various presentations and different modalities in management of vesico-vaginal fistula

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## Abstract

**Background:** Vesicovaginal fistula (VVF) is an abnormal opening between the bladder and the vagina that results in continuous and unremitting urinary incontinence. It is the most distressing complications of gynecologic and obstetric procedures.

**Materials and methods:** It was a prospective study conducted at Gandhi Medical College and Hospital in Department of Urology from February 2014 to July 2015 for a period of 18 months. All cases were subjected to clinical examination, ultrasonography, IVP, cystoscopy, vaginoscopy, and cystogram for confirmation of diagnosis. All cases were managed surgically by different modalities and results were analyzed.

**Results:** Our study included the patients in the age group of 18 to 56 years. 22 patients presented with continuous urine leak with voiding and 13 patients presented with voiding in addition to incontinence of urine. Out of 35 cases 25 were secondary to Gynecological surgeries and 10 were of Obstetric fistulas.

**Conclusion:** The diagnosis of VVFs has traditionally been based on clinical methods and dye testing. The best chance of a successful repair is at the first attempt. The arguments about the most appropriate route for repair continue and are not clarified by the publications so far. However, the role of interposition grafts at both abdominal and vaginal repairs is viewed positively.

## Key words

Vesico-vaginal fistula, Management, IVP, USG, Vaginoscopy, Cystoscopy, Cystogram.

## Introduction

Vesicovaginal fistula (VVF) is an abnormal opening between the bladder and the vagina that results in continuous and unremitting urinary incontinence [1-12]. It is the most distressing complications of gynecologic and obstetric procedures [13-29]. Present study focused on various presentations and different modalities in management of vesico-vaginal fistula.

## Materials and methods

This was a prospective study conducted at Gandhi Medical College and Hospital in Department of Urology from February 2014 to July 2015 for a period of 18 months. A total 35 vesico-vaginal fistula cases were studied in detail as per proforma. A pre-operative waiting period of 3-6 months was followed after development of fistula. All cases were subjected to clinical examination, ultrasonography, IVP, cystoscopy, vaginoscopy, and cystogram for confirmation of diagnosis. All cases were managed surgically by different modalities and results were analyzed. Bilateral DJS was done for all cases managed by abdominal approach. Interposition of vascularised flap with omentum in O'Conors approach and martius flap in vaginal approach was made mandatory in all cases except for cystoscopic fulguration and transvesical extra peritoneal approach. All patients who were dealt by abdominal approach were allowed oral feeds once peristalsis has set in. All surgically managed patients by open o'connors and transvesical extra peritoneal were kept on SPC malecot's catheter and perurethral foleys catheter drainage and laparoscopic, vaginal and cystoscopic fulguration were kept on per urethral drainage for 3 weeks. Voiding trial was given after confirmation of bladder integrity by cystogram. Recurrence of leak in post-operative period was considered as failure. All cases were followed up for a period of 3 months post-operatively.

## Inclusion criteria

All cases of primary vesico-vaginal fistulas were included in the study.

## Exclusion criteria

- Recurrent fistulas.
- Vesico-vaginal fistula following ca cervix and post radiotherapy.
- Vesico-vaginal fistula associated with uretero vaginal and urethro vaginal fistulas.
- Vesico-vaginal fistula due to tuberculosis.

## Selection criteria for abdominal repair (O'Conors)

- Supratrigonal fistulas.
- Fistulae located near to ureteric orifices that might require ureteric reimplantation.

## Selection criteria for vaginal repair

- Trigonal fistulas.
- Fistulae located just proximal to bladder neck.

## Selection criteria for cystoscopic fulguration

- Fistulae of size <5 mm.
- Fistulas with oblique tract.

## Selection criteria for transvesical approach

Supratrigonal fistulae i.e. size < 1 cm and which are not likely to require ureteric re-implantation.

## Results

Our study included the patients in the age group of 18 to 56 years. 22 patients presented with continuous urine leak with voiding and 13 patients presented with voiding in addition to incontinence of urine. Out of 35 cases 25 were secondary to Gynecological surgeries and 10 were of Obstetric fistulas (secondary to obstructed labour and LSCS).

Size of fistula was varying from 0.5 to 5 cm. 25 were supratrigonal and 10 were trigonal.

25 cases were managed by abdominal route and constitutes 71% of total no of cases, out of 4 case managed by endoscopic fulgaration recurrence is seen in 2 cases which were managed by trans vaginal route ,1 out of 3 cases treated by trans vesical extra peritoneal approach had recurrence, which was managed by O'Connors technique later and 1 out of 5 cases of laparoscopic approach were converted to open in same sitting and 1 case of recurrence was managed by open O'Connors method in other sitting (**Table – 1**).

**Table – 1:** Surgical approach.

Surgical approach	No. of patients (%)
Cystoscopic fulgaration	4 (11.4%)
Vaginal approach	6 (17.1%)
Transvesical extraperitoneal	3 (8.5%)
O'Connors trans peritoneal	17 (48.5%)
Laparoscopic	5 (14.2%)

Out of 35 cases only 6 cases managed by abdominal approach required ureteric re-implantation as ancillary procedures and in 6 cases 1 case required bilateral ureteric re implantation, none of the cases required bladder augmentation (**Table – 2**).

**Table – 2:** Ancillary procedures.

Ancillary procedure	No. of patients (%)
Ureter neo cystostomy	6 (17.1%)
Augumentation	0

There were 4 recurrence cases out of which 2 were managed by trans vaginal route and 2 by open O'Coonors technique, 31% of patients had bladder dysfunction in form of bladder spasms which were treated by anticholinergics and 6 patients had abdominal wound infection which were treated by antibiotics and dressings, and 5 patients had paralytic ileus in post op period

which was managed by naso gastric aspiration and electrolytes correction (**Table – 3**).

**Table – 3:** Complications.

Complication	No. of patients (%)
Recurrence	4 (11.4%)
Infection	6 (17.1%)
Bladder spasms	11 (31.4%)
Dyspareunia	1 (2.8%)
Post-operative ileus	5 (14.2%)

In comparison to different approaches o'connors and vaginal approaches had 100% success rate in management of vesicovaginal fistula, and with electro fulgaration there was a limited success of 50%, about 30% patients developed bladder spasms in post-operative period, about 30% of patients treated by o'coonors approach developed paralytic ileus (**Table – 4**).

## Discussion

The mean age of presentation in earlier studies such as Kapoor, et al. [30]; Mallikarjun, et al. [31]; and Tariq, et al. [32] was 32 years, 32 years and 35 years respectively which correlates with our studies mean age of presentation was around 34.6 years, and the peak age of presentation was between 20-40 years in our study constituting 60% of total patients which correlates with the earlier reports constituting 56% in the age group between 20-40 years (**Table – 5**).

The peak incidence of vesicovaginal fistula in this age group is explained by the increased no. of hysterectomies for benign diseases and LSCS being performed in this young reproductive age group. The most common cause of vesicovaginal fistula in our study was gynecological surgery constituting around 72% of cases which correlates with the earlier studies as gynecological procedures being the most common cause as reported by Eilben, et al. [33]; Shah, et al. [2]; Tariq, et al. [32] of 91%, 64%, and 84% respectively and other reports of Lee, et al. [9] and Goodwin, et al. [34] also shared similar experience (**Table – 6**).

**Table – 4:** Comparison between various approaches.

	<b>Open o'Coonors</b>	<b>Laparoscopic</b>	<b>Vaginal</b>	<b>Transves. extra peritoneal</b>	<b>Endo. fulg.</b>	<b>Total</b>
No. of patients	17	5	6	3	4	35
Mean Hosp. stay in days	10	5	5	7	3	NA
SPC	+	-	-	+	-	NA
PUC	+	+	+	+	+	NA
Recurrence	Nil	1 (+1conversion)	Nil	1	2	4 (12%)
Infection	5 (30%)	Nil	1	Nil	Nil	6 (17.4%)
Bladder spasms	10 (58.8%)	Nil	1	Nil	Nil	11 (31.4%)
Dysparunia	Nil	Nil	1	Nil	Nil	19 (3%)
Post op ilieus	5 (29.4%)	Nil	Nil	Nil	Nil	5 (14.2%)
Success%	100	60	100	66	50	88.5

(+ catheter kept, - catheter not kept)

**Table – 5:** Age incidence.

<b>Study</b>	<b>Mean age in years</b>
Kapoor, et al. [30]	32
Mallikarjun, et al. [31]	32
Tariq, et al. [32]	35
<b>Present study</b>	<b>34.6</b>

**Table – 6:** Etiology of vesico vaginal fistula.

<b>Study</b>	<b>Gynec procedure (%)</b>	<b>Obstetric procedure (%)</b>
Eilber, et al. [33]	91	5
Shah, et al. [2]	64	36
Tariq, et al. [32]	84	16
Lee, et al. [9]	82	8
Goodwin, et al. [34]	74	26
<b>Present study</b>	<b>72</b>	<b>28</b>

While the other earlier studies such as Gupta, et al. [35], Kapoor, et al. (2007) [30] contradict with our study with obstetrical procedures being most common cause of vesicovaginal fistula with 70% and 59.6% respectively, this may be explained due to the increased availability of better obstetric care [36-41].

### **Surgical approach**

#### **Cystoscopic fulgeration**

There was around 50% success rates in this group of patients who were carefully selected preoperatively with fistula size of less than 0.5 mm and with oblique tracts, Stovsky, et al. [23] reported a success rate of 73% with success in 11 patients out of 15 and Falk and Orkin, et al. [42] reported a success rate of 80% with success of 8 out of 10 patients, there was a lacking of larger trials on this technique for comparison and further a larger group of patients are required to assess the success rate of procedure, 2 cases with recurrence were subsequently repaired by trans vaginal approach in another sitting.

#### **Transvesical extra peritoneal approach**

Out of the 3 cases repaired by this approach 1 case recurred which was managed at a later date by o'connor's [21] technique with approaching success rate of 66% the cause for failure might be the absence of vascularised tissue interposition graft, in carefully selected patients with small simple fistulas this approach may be attempted with addition of autologous bladder flaps for interposition that might improve the success rate, but further a larger cohort is required to assess the efficacy of this approach [43-53].

6 case were treated successfully with vaginal approach 1 patient developed wound infection in

post op period which was managed conservatively and 1 patient complained of dysparunia in the follow up period post operatively, the overall success rate of this approach in our study is 100% which correlates with other studies as reported by Tancer, et al. [43]; Iselin, et al. [19]; and Eilben, et al. [33]; Lee, et al. [9] reported success rate around 98%, this might be explained due to mandatory interposition of vascularised flap (martius labial fat pad) during repair. The cause for dysparunia might be due to vaginal luminal narrowing following surgery (**Table – 7**).

**Table – 7:** Vaginal approach.

Study	Success (%)
Eilben, et al. [33]	97
Iselin, et al. [19]	100
Tancer, et al. [43]	100
Lee, et al. [9]	98
<b>Present study</b>	<b>100</b>

A total of 17 cases were successfully managed by this approach with 100 % success rate and omental interposition was done in all cases and uretero neocystostomy was done in 6 cases, a similar reports with similar success were published by Blandy, et al. [44]; Lee, et al. [9]; Dalela, et al. [37]; Shelbai and Hashish [46] in 25, 37, 26 and 20 cases respectively, while earlier studies by O’conor, et al [21]. and Wein, et al. [45] reported a success rate around 88%. And Gupta et al reported a success rate of 90%. Around 30% of patients in this group developed operative site wound infection which was treated conservatively with antibiotics and dressings, 5 patients developed paralytic ileus in the post op period which is explained by omental and bowel manipulation in this approach, and bladder spasms occurred in 50% of patients which might be due to irritation of trigone by malecots catheter kept for supra pubic drainage (**Table – 8**).

Comparison of laparoscopic approach was as per **Table – 9**. 5 cases were managed with this

approach and in 1 case developed recurrence post operatively and 1 case was converted to open surgery for inability to progress due to adhesions accounting for a success rate of 60% a similar success rate was reported by largest series by Shah, et al. [2] of 15 cases, a similar conversion rate of 30% was also reported which correlates with this study, a higher success rate was reported by Das Mahapatra, et al. [49]; and Nagaraj, et al. [48] which is around 90-100%, which do not correlate with the present series which may due to requirement of increased learning curve of the procedure and requirement of a larger cohort for comparison. A larger trial involving a larger cohort is lacking for this approach, other smaller series by Atiemo, et al., and Gozen et al. [47] reported a success rate of 100% with 4 and 3 cases respectively.

**Table – 8:** O’Conors approach.

Study	Success (%)
Blandy, et al. [44]	100
Lee, et al. [9]	100
Dalela, et al. [37]	100
Shelbai and Hashish [46]	100
Wein, et al. [45]	88
<b>Present study</b>	<b>100</b>

**Table – 9:** Laparoscopic approach.

Study	Success (%)
Shah, et al. [2]	60
Nagaraj, et al. [48]	85
Das Mahapatra, et al. [49]	90
Gozen, et al. [47]	100
<b>Present study</b>	<b>60</b>

### Complications

Out of the 5 patients who were treated by vaginal approach 1 patient developed dysparunia post operatively accounting for 20% which were comparable with series presented by Kapoor, et al. [30] where 10 patients out of 48 had dysparunia, the cause for the symptom in our study might be is the vaginal luminal narrowing following surgery.

Out of 35 patients 5 developed paralytic ileus in post- op period accounting for 14.5 %, all patients belong to the o'conors approach group this may be explained due to early instigation of oral diet and bowel manipulation involved in the approach, this rate was comparable with earlier studies of Agarwal, et al. [39] and Tariq, et al. [32] who reported around 10%.

Our overall success rate was around 88% which were comparable with Persky, et al. [13] and Tancer, et al. [43], R.K. Mathur, et al. [50] who reported their success rate around 90% ,this success rate is due to mandatory interposition of omental flap in oconors approach and martius flap in vaginal approach, and appropriate pre operative evaluation and selecting an optimal approach, and other reports by Blaivas, et al. [51] and Keetal, et al. [52] was little higher around 96% which does not correlates with our study which might be due to inclusion of cystoscopic fulgeration and laparoscopic approach in our study.

## Conclusion

The diagnosis of VVFs has traditionally been based on clinical methods and dye testing. The best chance of a successful repair is at the first attempt. The arguments about the most appropriate route for repair continue and are not clarified by the publications so far. However, the role of interposition grafts at both abdominal and vaginal repairs is viewed positively. Adjuvant techniques are needed for complex fistulas. Measures for prevention must include universal education, improvement in the status of women, and improved and accessible medical services.

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