Original Research Article

Vesicovaginal Fistulas - Our Institutional Experience

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Abstract

Background: Vesicovaginal fistula is a physically, socially and psychologically devastating condition. Although advances occurred in the understanding of aetiology, pathogenesis, diagnosis, and management, it still poses challenges to the treating surgeon because of the controversies regarding the optimum time of repair and the ideal surgical approach. **Materials and Methods:** This was a clinical observational study between January 2017 to June 2019 admitted in department of urology for vesicovaginal fistula repair. 22 patients with VVF detailed history was retained as aetiology, site, size and number of fistulae, clinical presentation, diagnostic modalities, and management. **Results**: In comparison to different approaches O'Connor's, vaginal approaches and laparoscopic approach had 100% success rate in management of vesicovaginal fistula, and with electro fulgeration there was a limited success of 50%. Overall success rate after surgery is 80%. **Conclusion:** vesicovaginal fistulas are socially debilitating. High rates of successful fistula closure can be achieved irrespective of aetiology by following sound surgical principles of fistula repair.

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INTRODUCTION

Vesicovaginal fistulae (VVF) are the most acquired fistula of the urinary tract. VVFs are epithelialized or fibrous communications between the bladder and vagina. The consequences of such damage are urinary incontinence. Urinary incontinence is associated with excoriation of perineal skin (ammonical dermatitis), infections, and stone formation in any available pocket either in vagina, bladder, urethra or ureter. Small fragments of stone (sandy stones) around the perineum sometimes indicate the existence of larger stone in the bladder or vagina. In extreme cases the urethra, bladder and vaginal wall can be completely eroded. However, in India, the incidence of vesicovaginal fistula varies across the states and ranges from 0.3% to 3.4%. National estimates of prevalence of non-treated vesicovaginal fistula cases range from 1.5 to 1.57 for thousand deliveries.[1,2] Vesicovaginal fistula is a physically, socially and psychologically devastating condition. Although advances occurred in the understanding of aetiology, pathogenesis, diagnosis, and management, it still poses challenges to the treating surgeon because of the controversies regarding the optimum time of repair and the ideal surgical approach. Hence our aim of study was to cases of Vesicovaginal fistula posted for surgery in our department over a one and half year period, with respect to aetiology, types, management and outcome.

MATERIALS AND METHODS

This was a clinical observational study between January 2017 to June 2019 admitted in department of urology for vesicovaginal fistula repair. 22 patients with VVF detailed history was noted as aetiology, site, size and number of fistulae, clinical presentation, diagnostic modalities, and management.

Inclusion Criteria:

All cases of primary vesicovaginal fistulas were include in the study

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Exclusion Criteria

Recurrent fistulas, VVF following ca cervix and post radiotherapy, VVF associated with uretero vaginal and urethra vaginal fistulas.

Selection criteria for abdominal repair(O'Connor's)

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

Selection criteria for vaginal repair

Trigonal fistulas and Fistulae located just proximal to bladder neck.

Selection criteria for cystoscopic fulgeration

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

Selection criteria for trans vesical approach

Supratrigonal fistulae i.e size < 1cm and which are not likely to require ureteric reimplantation. All the patients were evaluated for clinical examination, baseline investigation, ultrasonography abdomen, and CT urography. Cystoscopy was done to know the site, size and number of fistula, and the condition of surrounding mucosa. Vaginal speculum examination was done to know about vaginal capacity and mucosal integrity. Complex fistula included large fistulas, recurrent fistulas, fistulas requiring ureteric reimplantation, fistulas due to radiation. The methylene blue dye test was done when the fistula opening was not obvious on the examination. After this initial work-up, fistulae were divided into two groups, simple and complex. The route and type of surgical repairs were individualized according to the classification of fistulae and accessibility of the fistula tract. Simple fistulae were approached by vaginal route, while the complex fistulae were approached through abdominal route. All the patients were followed up initially monthly and then at 3 and 6 months. The route and type of surgical repairs were individualized according to the classification of fistulae and accessibility of the fistula tract. All the patients were followed up at least for a period of 6 months. The cure rate per repair and overall success rate of various surgical approaches were analyzed.

Surgical procedure

Bilateral DJS was done for all cases managed by abdominal approach. Interposition of vascularised flap with omentum in o`Connors approach and martius flap in vaginal approach was made mandatory in all cases except for cystoscopic fulgeration and transvesical extra peritoneal approach. All patients who were dealt by abdominal approach were allowed oral feeds after 24 hrs. 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 fulgeration were kept on per urethral drainage for 3 wks. Voiding trial was given after confirmation of bladder integrity by cystogram. Transabdominal repair was done for complex and supratrigonal fistulas. Omentum was used as interposing tissue. After repair, the bladder was drained by a suprapubic and a urethral catheter with a drain in perivesical space for 3-4 days. Catheters were removed after 3 weeks. A pack was placed in the vagina for 24 hrs. Indwelling Foley catheter was placed for 14-21 days. Recurrence of leak in post op period was considered as failure. All cases were followed up for a period of 3 months post operatively. Data was analysed by Microsoft excel, Mean +SD, frequency, percentages and descriptive tables were done.

RESULTS

A total of 22 women underwent Vesicovaginal fistula repair in our department between January 2017 to June 2019.

Table 1: Demographic details of patients in study

Mean age (years)	35(19-55)
Mean parity	2.3 (2–5)
Mean symptomatic period (month)	6.3 (3–11)
Mean diameter of fistulas (mm)	6 (3–14)
Mean size of the fistulas (mm)	15 (5–20)

The mean age of the patients was 35 years (19-55) with the majority of patients in 31 to 40 age group. The mean symptomatic period was 6.3 months (range 3–11). Fistula size varied between 5 mm and 20 mm (average 15) and the diameter of fistular orifices varied between 3 mm and 14 mm (average 6)

Table 2: Etiology of Vesicovaginal fistulas

Etiology	Number of patients	Percentages
Post gynaecological surgery (TAH+Myomectomy)	17	77.2
Obstetric(VD+LSCS)	5	22.8

17 (77.2%) out of 22 case were post gynaecological surgery, most commonly following total abdominal hysterectomy(16 cases)and 1 case following myomectomy and 5 (22.8%) case following obstetric cause mostly following 3 cases following LSCS and 2 following vaginal delivery

Table 3: Clinical presentation and location of fistula

Clinical presentation	Number of patients	Percentages
Leakage with normal voiding	8	36.4%
Continuous leakage	14	63.6%
Location		
Supratrigonal	16	72.7%
Trigonal	6	27.2%

14(63.6%) out of 12 patients presented with continuous leakage of urine per vagina and 8 patients has associated normal voiding with leak per vagina. 16 patients had fistulous location in the supra trigonal region constituting about 72.7% of total cases.

Table 4: Surgical approach in present study

Surgical approach	Number of patients	Percentages
cystoscopic fulgeration	2	9.1
Vaginal approach	4	18.2
Trans vesical extraperitoneal	2	9.1
O Connors trans peritoneal	12	54.5
Laparoscopic	2	9.1
Ancillary procedure		
Ureter neo cystostomy	3	13.5%
Augumentation	0	0

18 cases were managed by abdominal route and constitutes 81.8% of total no of cases, out of 2 case managed by endoscopic fulgeration recurrence is seen in 2 cases which were managed by trans vaginal route ,1 out of 2 cases treated by trans vesical extra peritoneal approach had recurrence, which was managed by O'Conner's technique later and 1 out of 2 case of laparoscopic approach were converted to open in same sitting and 1 case of recurrence was managed by open O'Connor's method in other sitting Out of 22 cases only 3 cases managed by abdominal approach required ureteric reimplantation as ancillary procedures and in 3 cases 1 case required bilateral ureteric re implantation, none of the cases required bladder augmentation.

Table 5: Comparison between various approaches

	Open ocoonors	laparoscopic	vaginal	Transves extra peritoneal	Endo.fulg.	Total
Number of patients	12	2	4	2	2	22
Mean Hosp. stay in days	11	4	5	6	3	Na
Spc	+	-	-	+	-	Na
Puc	+	+	+	+	+	Na
recurrence	Nil	Nil	Nil	1	1	2(9.1%)
Infection	3(25%)	Nil	1	Nil	Nil	4(18.1%)
Bladder spasms	5(41%)	Nil	1	Nil	nil	6(27.2%)
dyparunia	Nil	Nil	1	Nil	Nil	1(4.5%)
Post op ilieus	2(16.7%)	Nil	Nil	Nil	Nil	2(18.2%)
Success%	100	100	100	50	50	80

In comparison to different approaches O'Connor's ,vaginal approaches and laparoscopic approach had 100% success rate in management, Trans extra peritoneal approach and with electro fulgeration there was a limited success of 50% and about 41% patients developed bladder spasms in post-operative period, about 16.7 % of patients treated by O'Connor's approach developed paralytic ileus**.** Overall success rate is 80%.

DISCUSSION

In developed countries, iatrogenic injury during the gynaecological surgery (mainly the hysterectomy) is the common cause. Hysterectomy per se accounts for the vast majority of bladder (2.9 %) or ureteric injuries (1.8 %) and subsequent fistula formation .[3,4] Pelvic malignancy, pelvic irradiation, obstetrical infection, trauma, and foreign body erosion are other common risk factors .[5] The close anatomical relationship of the bladder, vagina, and uterus makes the reproductive tract susceptible to fistula formation during complicated childbirth and gynaecological surgery. The mean age of the patients was 35 years (19-55) with the majority of patients in 31 to 40 age group. The mean age of presentation in earlier studies such as Kapoor *et al*[6], Mallikarjun *et al*, [7] and Tariq *et al*[8] was 32 yrs and 35 yrs respectively which correlates with our studies ,and the peak age of presentation is between 31-40 yrs in our study constituting 60% of total patients which correlates with the earlier reports of R.K.Mathur *et*

al constituting 56% in the age group between 20-40 yrs.[9] The peak incidence of vvf in this age group might be due to the increased no. of hysterectomies for benign diseases and LSCS being performed in this young reproductive age group. In our study Fistula size varied between 5 mm and 20 mm (average 15) and the diameter of fistular orifices varied between 3 mm and 14 mm (average 6) which are comparable with the reports of Razi *et al* and Dalala *et al* who reported the mean fistula size of around 2.9 cm this is explained by the occurrence of smaller fistulas following hysterectomy .[10,11](table-1) 17 (77.2%) out of 22 case were post gynaecological surgery, most commonly following total abdominal hysterectomy(16 cases)and 1 case following myomectomy and 5 (22.8%) case following obstetric cause mostly following 3 cases following LSCS and 2 following vaginal delivery.(Table-2) 63.6 % of our patients presented with continuous leakage of urine with no normal voiding and only and 8 patients had leakage of urine with normal voiding pattern ,the amount of leakage varies depending on the size and location of fistula, patients with small fistulas may void normal amounts of urine and notice only slight position dependent drainage, patients with fistulas located high up in bladder may have leakage only at maximal bladder capacity, and patients with large fistula may have continuous leakage per vagina and may not void tranurethrally.(table-3) 16 of our patients had fistula located in supratrigonal region constituting around 72.7% of total cases and 27.2% of cases had trigonal and infratrigonal fistulas these results were comparable with that of Tariq *et al* and Rabbani *et al* with 68% and 75% respectively out of 44 and 56 patients.[8,14] Kapoor *et al* reported almost equal incidence of supratrigonal and trigonal fistulas with around 53% in supratrigonal group, this may be explained by the more common incidence of supratrigonal fistula with hysterectomy and relatively more incidence of trigonal and infratrigonal fistula with obstetric procedure.[6] In 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* reported a success rate of 73% with success in 11 patients out of 15 ,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.1 cases with recurrence were subsequently repaired by trans vaginal approach in another sitting. Trans vesical extra peritoneal approach out of the 2 cases repaired by this approach 1 case recurred which was managed at a later date by O'Connor's technique with approaching success rate of 50% 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 thee approach. (table-4)

4 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 Eilben *et al* and Lee at al 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 dyparunia might be due to vaginal luminal narrowing following surgery. Our study comparable with series presented by Kapoor *et al* where 10 patients out of 48 had dysparunia, the cause for the symptom in our study might be due to the vaginal luminal narrowing following surgery.[6](table-5) A total of 12 cases were successfully managed by this Open ocoonors approach with 100 % success rate and omental interposition was done in all cases and uretero neocystostomy was done in 5 cases ,a similar reports with similar success were published respectively, while earlier studies by o'conor *et al* reported a success rate around 88%.[18] 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,4 patients developed paralytic ilieus in the post op period which is explained by omental and bowel manipulation in this approach, and bladder spasms occurred in 53% of patients which might be due to irritation of trigone by malecots catheter kept for supra pubic drainage.[19] 2 cases were managed with this laparoscopic approach accounting for a success rate of 100% a similar success rate was reported by Naga raj *et al* 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 comparision.[20] A larger trial involving a larger cohort is lacking for this approach. Out of 22 patients 2 developed paralytic ilieus in post- op period accounting for 18.2 %,all patients belong to the oconors 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 Tariq *et al* who reported around 10%.[8] Our over all success rate was around 80% which were comparable with Tancer *et al*,[21] R.K.Mathur *et al*[9] who reported there 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* 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[22] These findings re-emphasize the need to establish more fistula centers in our country, and also train more surgeons to manage the centers, in view of the fact that fistula repair . It is therefore necessary for the postgraduate and the residents should be made to undergo mandatory postings in the designated fistula hospitals for a period of time that is sufficient for the required exposures and skills acquisition.

CONCLUSION

Vesicovaginal fistula is a frustrating condition not only for the patient but also for the treating surgeon. In our population, obstetric and iatrogenic injuries remain the leading cause. Accurate and timely diagnosis, adherence with basic surgical principle, and repair by experienced surgeon provide the optimum chance of cure.

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