

VVF Repair in Prone Jack Knife Position- Our Experience

N Anil Kumar¹, Konda Reddy², Ravinder Singh³, Narendranath L⁴,

Amit Kumar⁵, Goutham Krishna Reddy M⁶

¹ Professor and HOD, Department of Urology, svims, tirupati.

² Assistant professor, Department of urology, svims, tirupati.

³ Senior Resident, Department of Urology, svims, tirupati (Corresponding author)

⁴ Senior Resident, Department of Urology, svims, tirupati

⁵ Senior Resident, Department of Urology, svims, tirupati

⁶ Senior Resident, Department of Urology, Svims, tirupati

Abstract

Introduction: Vesico-vaginal fistula (VVF) is most common type of uro genital fistula¹ and is a physically, socially and psychologically devastating condition. Although advances occurred in the understanding of etiology, 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. The objective of our study was to review cases of VVF referred to our department over a 4-year period, with respect to etiology, types, trans-vaginal approach using martius flap as interposition flap in prone jack knife position and its outcome.

Material and methods: This was a retrospective observational study between January 2016 to february 2020 which reviewed patient charts undergoing VVF repair in prone jack knife position with trans-vaginal approach using martius interposition flap at our Institute SVIMS, Tirupati for etiology, site, size and number of fistulae, clinical presentation, diagnostic modalities, and management.

Key words : VVF-Vesicovaginal fistula, SPC – Suprapubic cystostomy.

Results: A total of 35 women underwent VVF repair. Out of All 35 cases of VVF, 20 were approached trans-abdominally while trans-vaginal route was used in 15 cases.

1) Trans-vaginal approach in prone jack knife position yields good result for trigonal, small Fistulas.

2) Complications are less in Trans-vaginal approach as peritoneum is not opened and need for spc is also excluded.

3) Mean operative time and mean hospital stay were significantly lower in trans-vaginal approach in prone jack knife compared to other approach.

Conclusion: Genitourinary fistulae are socially debilitating. High rates of successful fistula closure can be achieved irrespective of etiology by following sound surgical principles of fistula repair.

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I. Introduction

Vesicovaginal fistula (VVF) is an abnormal communication between the bladder and the vagina. The etiology and incidence of the urogenital fistula varies geographically. In developed countries, these fistulae are typically related to gynecological surgery, pelvic pathology or radiation therapy². In contrast, urogenital fistulae in the developing countries like India are usually associated with child birth³. It is a disastrous condition that affects the women physically, psychologically, emotionally, and economically. VVF has been known since antiquity, the earliest case of VVF dates back to 2050 BC. Dr. James Marion Sims, the father of American Gynecology, succeeded in repairing VVF with silver wires after subjecting slaves to repeated experimental attempts.

VVF creates a social stigma for the affected women and retards their overall development. Affected women, in their prime productive period of life, lose the potential for growth and excellence in the society. Although it is a well-reported

relatively common condition, not many established guidelines and well-conducted management trials are available in the literature. This study aims to address the current trends in the management of trans-vaginal VVF repair in prone jack knife position and its outcomes.

II. Materials And Methods

This was a retrospective observational study between January 2016 to february 2020 which included patients undergoing VVF fistula repair by trans-vaginal martius interposition flap in prone jack knife position and by trans-abdominal approach at our Institute SVIMS, Tirupati . All the patients were evaluated for history, clinical examination, baseline investigation, ultrasonography abdomen, and CT urography. Cystoscopy was done to know the site, size and number of fistulae and the condition of surrounding mucosa. Vaginal speculum examination was done to know about vaginal capacity and mucosal integrity. After this initial work-up, fistulae were divided into two groups, simple and complex⁴. Complex fistula included large fistulas, recurrent fistulas, fistulas requiring ureteric reimplantation, fistulas due to radiation /genitourinary tuberculosis. 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. Vesico-vaginal fistulas were approached either by

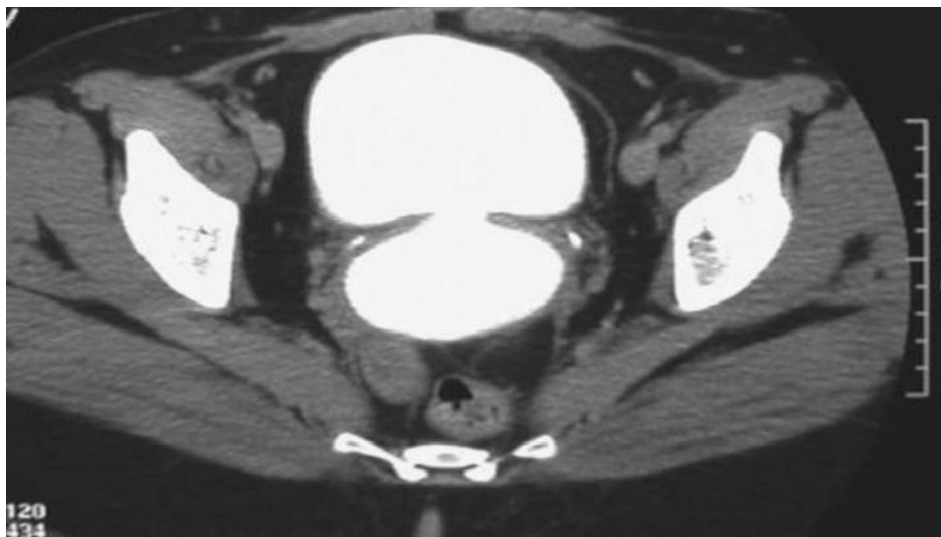
1. Transabdominal repair – classical O'Connor (BIVALVING) / trans-vesical
2. Transvaginal repair.

Transabdominal repair was done for complex and supra-trigonal fistulas. Omentum was used as interposing tissue. After repair, the bladder was drained by a supra-pubic and a urethral catheter with a drain in perivesical space for 2-3 days. Catheters were removed after 3 weeks.

The transvaginal route was preferred for simple and small trigonal fistulas. Martius flap was used as interposing tissue.

PROCEDURE

- Betadine gauze pack was placed in the vagina for 24 hrs. Cystoscopy was done before procedure for all cases.
- Patient then put in prone jack knife position (Figure 1). Retraction done using vaginal speculum. Infant feeding tube passed through VVF. (Figure 2).
- Circumferential incision made on anterior vaginal wall over fistula and mobilization of anterior vaginal wall flap done all around, thereby isolating the VVF tract. An inverted U shaped flap was raised next to fistula . Initial layer closure of bladder performed. The perivesical fascia is closed and suture line is perpendicular to initial suture line.
- Martius flap (based on superior vascular pedicle) then raised ,mobilized and tunnelled to be used as interposition flap. The vaginal flaps are then advanced and approximated (Figure 3) without overlapping.
- Vaginal packing done.
- Vaginal packs were removed on 1st post operative day. Anticholinergics were given. Puc removed after 3 weeks of normal dye study.



CYSTOGRAM SHOWING VVF



Fig1: Prone jack knife position



Fig 2 : Fistula between bladder and vagina

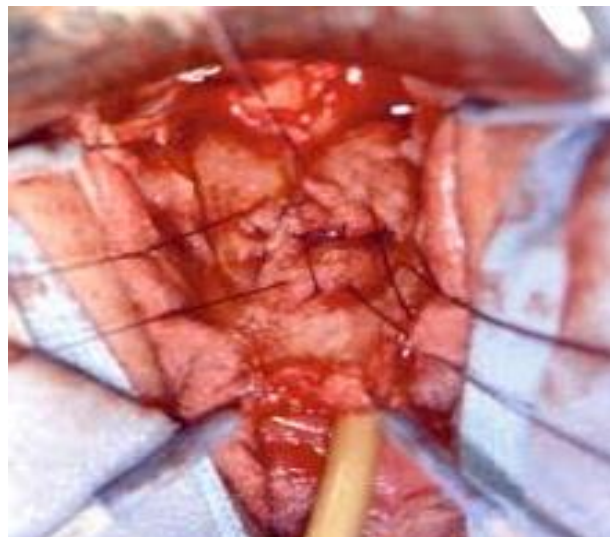


Fig 3 : Repair using martius flap

III. Results

A total of 35 women underwent vesico-vaginal fistula repair at our institute between January 2016 to february 2020. The mean age of the patients was 39 years (19-58) with the majority of patients in 31 to 40 age group. Out of All 35 cases of VVF, 20 were approached trans-abdominally while trans-vaginal route was used in 15 cases. Obstetric trauma (60%) was the most common cause of genitourinary fistulae followed by gynecological surgeries (40%) in our study. Obstetric trauma and gynecological surgeries were leading causes for Vesico-vaginal fistula. Out of 35 vesicovaginal fistula repaired 15 fistulae which were simple and accessible through vagina underwent trans-vaginal repair with a martius interposing flap. 20 patients needed trans-abdominal approach with 8 of them undergoing classical O'Connor procedure and remaining 12 patients being treated trans-vesically. In both approaches omentum was used as interposing tissue. When trans-vaginal and trans-abdominal routes were compared, mean operative time and mean hospital stay were significantly lower in trans-vaginal compared to trans-abdominal. Further no patient in trans-vaginal approach required blood transfusion. There was one failure in trans-vaginal and no failure in trans-abdominal route. Mean operative time was 90 minutes in trans-vaginal route and 124 minutes in Trans-abdoimnal approach.

IV. Discussion

An overall prevalence of genitourinary fistula has been estimated at 0.2-2% in different societies.⁵ Vesico-vaginal fistulae (VVF) remain the most common variety, with more than 80% of cases worldwide resulting from obstructed labor.^{6,7} In our study obstetric causes were found in 21 cases followed by gynaecological causes in 14 cases. Conservative treatment of VVF by bladder drainage has been described in the literature.⁸ In our series conservative measures were not helpful which could be due to the fact that most patients reported late after the development of the fistula. Poverty, illiteracy and social stigma are the main factors for patients not to seek consultation until the later stages of fistula development. Vesico-vaginal fistulas were repaired successfully when delayed repair was undertaken after 3–6 months to allow any inflammation and edema to settle down.^{4,9} Some authors have suggested early closure of fistulas as it reduces patient's morbidity.¹⁰ VVF were repaired after 2-3 months in our institute, svims tirupati. However regular follow up and cystoscopy to assess the local conditions is fundamental in selecting the earliest date for repair. In our institute fistula repair is done once local conditions are favourable as dictated by cystoscopy. The route of surgery, i.e. abdominal, vaginal or combined, is decided on according to the preferences and expertise of the operating surgeon. The vaginal route was preferred for the benefits of low complications, minimum blood loss, rapid post-operative recovery and shorter hospital stay. Abdominal repair was reserved for complex fistulae, high on the bladder wall, as well as supratriangular, ureterovaginal and vesicouterine fistulae. The use of interposition flap improves the chances of good outcome.^{10,11,12} In abdominal repair omentum is the tissue of first choice. It enhances the blood supply, protects the suture line and closes the dead space. In our institute optimal results were obtained with use of Martius flap in vaginal approach as interposing tissue. In our study, a total of 35 women underwent vvf repair. 20 patients were repaired trans-abdominally while 15 patients were repaired trans-vaginally with martius interposition flap in prone jack knife position at our institute between January 2016 to february 2020. The success rate was 100% for 20 VVF repaired trans-abdominally, out of 15 VVF repaired transvaginally, 14 were successful with a success rate of 93.3%. These are similar or superior to the results reported elsewhere. Sharma¹³ reported 25 patients who underwent omental flap placement of which 21 were successful. Wein et al¹⁴ used the transvesical approach with interposition of peritoneum or omentum in 34 patients, of whom 30 had successful repair. O'Connor¹⁵ used a suprapubic transvesical approach for 42 patients, with successful repair in 37. Patil et al¹⁶ used a gracilis in 18 patients, with success in 13 cases. Eilber et al²⁰ used trans-vaginal approach in 207 patients with 97% success rate. A retrospective analysis of 26 patients undergoing transabdominal VVF repair with omental or peritoneal flap interposition, 16 of which had complex VVF, has been reported by Altaweel et al. which showed a 100% success rate with a maximum follow-up of 73 months. Pshak et al. studied 49 patients with benign VVF, of which 25 had recurrent VVF, undergoing transvaginal repair and .and reported a 100% cure rate even without the use of tissue interposition. Gousse et al. evaluated the use of interposition flaps among 29 patients with benign etiology and 8 patients with malignant etiology. They showed a 100% success rate when the interposition flap was used, as compared to 63% success rate when a tissue flap was not used. The use of interposition flap improves the chances of good outcome. It enhances the blood supply, protects the suture line and closes the dead space. It causes rapid recovery and shorter hospital stay. In our institute optimal results were obtained with Martius flap in vaginal approach as interposing tissue.

V. Conclusion

Genitourinary fistulae are socially debilitating. Surgical treatment of Genito-urinary fistulae depends on size and location of fistula. Trans-vaginal repair was preferred in small, trigonal fistulas. High rates of successful fistula closure can be achieved irrespective of etiology by following sound surgical principles of fistula repair.

Trans-vaginal approach in prone jack knife position yields good result for trigonal, small Fistulas. Complications are less in Trans vaginal approach as peritoneum is not opened and need for spc also excluded. Mean operative time and mean hospital stay were significantly lower in Trans-vaginal approach in prone jack knife compared to other approach.

TYPE	ETIOLOGY	NO. OF CASES	%
VVF	Obstetric trauma	21	60
	Gynaecological surgeries	14	40

Table-1 Etiology of VVF

Type			
vvf	Trans-abdominal	Trans-vaginal	
Total (35)	20	15	

Table-2 Approach of repair

Method of repair	No. Of patients	failures
Transabdominal classical O'Connor (bivalving) with omental flap	8	0
Transabdominal transvesical with omentum	12	0
Transvaginal layered closure with martius flap	15	1
TOTAL	35	1

Table-3 Method of repair

	Trans-abdominal	Trans-vaginal	P value
Mean operative time	124 minutes	90 minutes	<.0001
Mean hospital stay	8 days	6 days	<.0001
Blood transfusion	2	–	

Table-4 Trans-abdominal vs Trans-vaginal

Author	No. Of patients	Success rate (%)	Approach
Eisen et al ¹⁷ (1974)	29	90	Abdominal
Persky et al ¹⁸ (1979)	7	86	Abdominal -6 Vaginal-1
O connor ¹⁵ (1980)	42	88	Abdominal
Wein et al ¹⁴ (1980)	34	88	Abdominal
Sharma ¹³	25	84	Abdominal
Evans et al ¹⁹ (2001)	37	76	Abdominal
Patil ¹⁶	18	72.2	Vaginal
Eilber et al ²⁰ (2003)	207	97	Vaginal
Present study	35	100-Abdominal 93.3-vaginal	Abdominal Vaginal

Table-5 success rate of vvf repair

References

- [1]. Goyal NK, Dwivedi US, Vyas N, et al. A decade's experience with vesicovaginal fistula in India. *Int Urogynecol J* 2007; 18: 39–42.
- [2]. Moir JC. Vesico-vaginal fistulae as seen in Britain. *J Obstet Gynaecol Brit Commonw* 1973; 80: 598–602.
- [3]. Rathee S, Nanda S: Vesicovaginal fistula: a 12-years study. *J Indian Med Assoc* 1995; 93:93–94.
- [4]. Priyadarshi V, Singh JP et al Genitourinary Fistula: An Indian Perspective. *J Obstet Gynaecol India*. 2016;66:180–4.
- [5]. Thomsons JD: Vesicovaginal and urethrovaginal fistula; in Rock JA, Thomson JD (eds): *Te Linde's Operative Gynecology*, 8th ed. Philadelphia, Lippincott, 1997,1175–1205.
- [6]. Hilton P, Ward A. A. Epidemiology and surgical aspects of urogenital fistula: a review of 25 years' experience in Southeast Nigeria. *Int Urogynecol J Pelvic Floor*. 1998; 9:189–94.
- [7]. Nawaz H, Khan M, Tareen FM, et al. Retrospective study of 213 cases of female urogenital fistulae at the department of urology and transplantation civil hospital Quetta, Pakistan. *J Pak Med Assoc*. 2010;60:28–32.
- [8]. Davis RJ, Miranda S: Conservative treatment of vesicovaginal fistula by bladder drainage alone. *Br J Urol* 1992; 70: 339.
- [9]. Fearl CL, Keizur LWA. Optimum time interval from occurrence to repair of vesicovaginal fistula. *Am J Obstet Gynecol* 1969; 104: 205–208.

- [10]. Kumar S, Kekre NS, Gopalakrishnan G. Vesicovaginal fistula: an update. *Indian J Urol*. 2007; 23:187–91.
- [11]. Wong MJ, Wong K, Rezvan A, et al. Urogenital fistula. *Female Pelvic Med Reconstr Surg*. 2012;18:71–8.
- [12]. Garthwaite M, Harris N. Vesicovaginal fistulae. *Indian J Urol*. 2010; 26:253–6.
- [13]. Sharma SK: Pedicled omental graft in repair of large, difficult vesicovaginal fistula. *Inter Gynecol Obstet* 1980; 17: 556–559.
- [14]. Wein AJ, Carpincello VL, and Murphy JJ: Repair of vesicovaginal fistula by suprapubic transvesical approach. *Surg Gynecol Obstet* 1980; 150: 57–60.
- [15]. O'Connor VJ: Review of experience with vesicovaginal fistula repair. *J Urol* 1980; 123: 367–369.
- [16]. Patil U, Waterhouse K, Laungani G. Management of 18 difficult vesicovaginal and urethrovaginal fistulas with modified Ingleman Sundberg and Martius operations. *J Urol* 1980; 123: 653–656.
- [17]. Eisen M, Jurkovic K, Altwein JE, et al. Management of vesicovaginal fistulae with peritoneal flap interposition. *J Urol* 1974;112:195–8.
- [18]. Persky L, Herman G, Guerrier K. Non-delay in vesicovaginal fistula repair. *Urology* 1979; 13: 273–275.
- [19]. Evans DH, Madjar S, Politano VA et al. Interposition flaps in transabdominal vesicovaginal fistula repair: are they really necessary? *Urology* (April) 2001; 57: 670–674.
- [20]. Eilber KS, Kavalier E, Rodriguez LV, et al. Ten-year experience with transvaginal vesicovaginal fistula repair using tissue interposition. *J Urol* 2003; 169:1033–6.
- [21]. Mandal AK, Sharma SK, Vaidyanathan S, et al. Ureterovaginal fistula: summary of 18 years' experience. *J Urol* 1990; 60: 453–456.
- [22]. Lee RA, Symmonds RE. Ureterovaginal fistula. *Am J Obstet Gynecol* 1971; 109: 1032–1035.
- [23]. Goodwin WE, Scardino PT. Vesicovaginal and ureterovaginal fistulas: a summary of 25 years of experience. *J Urol* 1980; 123: 370–374.
- [24]. Weems WL. Combined use of bladder flap and transureteroureterostomy: report of a case. *J Urol* 1970; 103: 50–52.
- [25]. Higgins CC. Ureteral injuries during surgery: a review of 87 cases. *JAMA* 1967; 199:82–88.
- [26]. Blandy JP, Badenoch DF, Fowler CG, et al. Early repair of iatrogenic injury to the ureter or bladder after gynecological surgery. *J Urol* 1991;146: 761–5.
- [27]. Rao MP, Dwivedi US, Datta B, et al: Post-cesarean vesico-uterine fistula – Youssef's syndrome: our experience and review of published work. *ANZ J Surg* 2006; 76: 243–245.
- [28]. Karram MM. Lower urinary tract fistulas. In: Walters MD, Karram MM, editors. *Urogynecology and reconstructive pelvic surgery*. 3rd ed. Philadelphia: Mosby Inc; 2007. p. 450–9.
- [29]. Jozwik M, Jozwik M: Spontaneous closure of vesicouterine fistula: account for effective hormonal treatment. *Urol Int* 1999; 62: 183–187.
- [30]. Mola G, Vangeenderhuysen C. Introduction. In: Lewis G, De Bernis L (eds) *Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development*, chapter 1. World Health Organization, Geneva, 2006.
- [31]. Pushkar DY, Sumerova NM, Kasyan GR. Management of urethrovaginal fistulae. *Curr Opin Urol*. 2008;18:389- 94.
- [32]. Webster GD, Sihelnik SA, Stone AR. Urethrovaginal fistula: a review of the surgical management. *J Urol* 1984;132:460–2.

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