



“COMPARISON OF THE RESULT BETWEEN ABDOMINAL AND TRANSVAGINAL TECHNIQUES IN THE SURGICAL TREATMENT OF VESICOVAGINAL FISTULA”

Medical Science

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ABSTRACT

Aim: To compare the result outcomes in vesicovaginal fistula repair by TRANSABDOMINAL (omental flap) and TRANSVAGINAL (martius flap) approach. **Materials and Methods:** The single center 2 year prospective study of patients who were having simple vesicovaginal fistula, managed by trans abdominal approach using omental flap and transvaginal approach using martius flap used as 2nd alternatives to assess recurrence rate, hospital stay, intraoperative time and blood loss, perioperative complication and post op recovery time. Statistical analysis was done by unpaired t-test, chi square test and fisher's exact test. **Results:** There were 76 women having simple vesicovaginal fistula included in our study. Out of which 42.11% had repaired by transvaginal approach using martius flap and 57.89% patients had repaired by transabdominal approach. There were no peri-operative complications present in either approach. Mean operative time was shorter in transvaginal approach (132.25min) than transabdominal approach (263.91min.). Intraoperative blood loss was slightly more in trans abdominal approach as compared to transvaginal technique. Median duration of hospital stay was shorter for transvaginal approach (7 days) than transabdominal approach (16days). In transabdominal approach 90.91% (40/44) patient had successfully repaired and 93.75% (30/32) patient treated successfully by transvaginal approach which was insignificant (p value =1). **Conclusion:** We have inferred from our study that both transvaginal and transabdominal approaches provides same amount of results in simple vesicovaginal fistula repair when done along with use of interposition flaps with slightly better outcomes in case of transvaginal repair also better in terms of intraoperative time, blood loss and hospital stay of patients.

KEYWORDS

Martius Flap, Omental Flap, Vesicovaginal Fistula, Hospital Stay, Intraop Time

INTRODUCTION:

Pathologically created connection between the bladder and the vagina by which there is continuous and involuntary leakage of urine through the vaginal vault [1]. Commonest etiology in the developed countries is the iatrogenic injury of the genitourinary tract during gynecological procedures such as hysterectomy, endometrioma, and prolapse surgery [2]. The most common cause of vesicovaginal fistula in developing countries is the prolonged labor, which is responsible for >90% of the cases [3]. In low socio-economic status countries such as India mostly women has an early childbearing age, physically very poor and health of the mother having poor medical facilities are all contributing to obstructed labour as a significant risk factor to developing VVF. In various studies vesicovaginal fistula repair treat effectively by both transabdominal and transvaginal, the transvaginal approach having the advantage to avoid a laparotomy, shorter hospital stay, less intraoperative time and rapid recovery with negligible cosmesis issues. But in case of high up vesicovaginal fistulas; we can not approached by transvaginally route. The vesicovaginal fistula repair should be done by using interposition flap show a excellent outcome with negligible recurrence rate. The percentage of successfully treated by both transvaginal and transabdominal techniques are reported to be about 50-100% and 80-100%, respectively [4]. However, it is impossible to make an exact suggestion as to which technique is more appropriate for which patient, because the techniques differ among the patient groups. There are a limited number of studies comparing the two techniques head-to-head in the literature [5]. Therefore, the aim of this study was to compare the outcomes of these two techniques used in the surgical treatment of VVF.

MATERIALS AND METHODS-

The prospective study would be conducted in the department of general surgery & obs-gynae department LLR & Associated Hospitals, GSVM Medical College, Kanpur from December 2020 to October 2022 on all patients of vesicovaginal fistula who would be admitted in wards. The study was conducted after approval from Ethical committee of GSVM medical college, kanpur. Written informed consent was obtained from each participant. The clinical details of the patients were recorded according to the performa and questionnaire form was prepared before the commencement of the study. Criteria for selection of patients was based on

Inclusion criteria/Exclusion criteria

Patient of Vesicovaginal fistula of age Between 20 and 50yrs caused either by obstructed and prolonged labor or iatrogenic injury included in our study which was repairable by both method (Transvaginal &

transabdominal).

- Completed written informed consent form acknowledging awareness of the alternative treatments and risk involved and Ability to return for scheduled follow up examinations.
- We exclude the patient of general poor health, history of radiotherapy, pelvic or genital malignancy, excessive scarring involved, fistula more than 4cm, multiple fistula, cervical fistula, extensive tissue loss, ureterovaginal fistula, failed previous repair, supratrigonal fistula, narrow vagina, any comorbidity (uncontrolled DM, HTN, malignancy), condition impair wound healing (hepatic, renal, immunological, neurological disease)
- Patient diagnosis made by history, clinical examination, various radiological investigations such as USG whole abdomen, fluoroscopic cystogram, CT-IVP and cystoscopic visualisation of fistula.

Operative technique

Patients were randomized into two groups by roll of dice method - **GROUP A** treated with transabdominal approach and **Group B** treated with Transvaginal approach. Patients who could not be operated through the vaginal route due to reasons like high up supratrigonal fistula, narrow vagina etc, underwent repair by an abdominal route and were excluded in this study. The study aims to compare the repair outcomes via different approaches. A successful repair is termed as no post operative leakage of urine from vagina for 2 weeks.

Transvaginal approach-

Patient was placed in a dorsal lithotomy position under general anesthesia. Cystoscopy was done before the start of procedure to visualize the fistula and ureteric orifices. Retrograde placement of ureteric stent was placed for fistula close to the ureteral orifice. A self-retaining retractor was placed inside the vagina exposing the fistula. French-8 sized foley catheter was inserted into the fistula providing traction and stability during dissection. A circumscribing incision on the vaginal epithelium was then made around the fistula. The vaginal epithelium was dissected off from the underlying fibro-muscularis layer until healthy tissues were obtained. The fibrosed fistula edges were excised with care.

Once the fistula was adequately mobilized, layered closure was performed. The first layer bladder mucosa, was closed with interrupted delayed absorbable sutures then a second layer of fibromuscular connective tissue was closed in a perpendicular fashion. Water-tightness was ensured by retrofilling the bladder with sterile water. Lastly, transplanting a pedicle muscular graft harvested from labia

majora and transposition of graft through a subcutaneous tunnel. Supra pubic catheterisation done and transurethral foley catheter was inserted for continuous bladder drainage.

Transabdominal O' CONOR Technique-

The patient was placed in a low lithotomy position under general anesthesia. Either a midline or a pfannenstiel incision was made. The bladder was distended with normal saline solution for easy identification then bisected from the dome down to the fistula posteriorly. Ureteral stents were placed for fistula close to the ureteral orifice. A plane was created between the bladder and vagina, dissecting until adequate tissue can be mobilized for tension free closure. The fistula was completely excised. The vaginal muscularis was closed using absorbable suture then the bladder in two layers (figure-1). Omental flap was done. Supra pubic catheterisation done and a transurethral Foley catheter was left in place.

Early complications include post repair retention hematoma formation pus discharge. Late complications observed such as reduced bladder capacity, irritative lower urinary tract symptoms (stress urinary incontinence & overactive bladder), recurrent fistula formation. Proper and regular follow up of the patient necessary to assess any complication or failure of treatment. Every patient was asked to follow up every week for 3 weeks and thereafter every month for 5 months. Descriptive statistics were employed to characterize the data. Fisher's exact test was used for categorical data.

OBSERVATION AND RESULTS –

A total of 76 participants were included in the group and were randomised into group A and Group B. - Group A underwent VVF repair by transabdominal approach while Group B underwent VVF repair by transvaginal approach. 44(57.89%) of the participants were in Group-A while 32 (42.11%) of the participants had Group-B (table-1).

24 (31.58%) of the participants had Age: 21 to 30 Years. 52 (68.42%) of the participants had Age: 31 to 40 Years. The variables age (year) was normally distributed (checked by Kolmogorov-Smirnov test). The mean (SD) of age was 33.34 (5) years. The median (IQR) of age were 33 years (30-38). The age ranged from 22 to 40 years.

32 (42.11%) of the participants had chief complaint at presentation: continous discharge from vagina. 8(10.53%) of the participants had chief complaint at presentation: continuous urine discharge. 6 (7.89%) of the participants had chief complaint at presentation: foul odor from vagina. 20(26.32%) of the participants had chief complaint at presentation: urinary incontinence. 10(13.16%) of the participants had chief complaint at presentation: vaginal discharge after labor (table-2).

The mean (SD) of duration of symptoms (months) was 3.07 (3.25). The median (IQR) of duration of symptoms (months) was 1.5 (1-5.25). The duration of symptoms (months) ranged from 0.25- 11. 36 (47.37%) of the participants had cystoscopy: Infratrigonal 40(52.63%) of the participants had cystoscopy: supratrigonal (table-3).

The mean (SD) of size of fistula was 1.91 (0.64). The median (IQR) of size of fistula was 2 (1.5-2.5). The Size of Fistula ranged from 1 – 3cm. 44(57.89%) of participants were treated by transabdominal approach using omental flap. 32(42.11%) of participants were treated by transvaginal techniques using martius flap. Mean operative time for transabdominal approach (263.91min.) Is greater than transvaginal technique (132.25min); Which was significant (p value 0.001). Median hospital stay for group-A patient was longer (16days) than group-B (7days) which was insignificant (p value 0.86). Intraoperative blood loss measured in terms of drop in Hb during surgery and assess by mean of Hb difference between pre & postoperative period. Which is more in case of transabdominal approach (2.9gm%) as compared to transvaginal technique (1.2gm%) but these value are insignificant (p value 0.001).

58 (76.32%) of the participants had early complication: None. 10 (13.16%) of the participants had early complication: Haematoma.. 4(5.26%) of the participants had early complication: Pus Discharge. 4(5.26%) of the participants had early complication: Urine Retention (table-4). Distribution of late complication of study subjects (table-5).

Fisher's exact test was used to explore the association between 'Group'

and 'Late Complication' as more than 20% of the total number of cells had an expected count of less than 5. There was no significant difference between the various groups in terms of distribution of Late Complication (p value 0.028). 70(92.11%) of the participants were successfully treated with regular follow-up. 6(7.89%) of the participants have failed surgical outcome (table-6).

Fisher's exact test was used to explore the association between 'Group' and 'Repair Outcome' as more than 20% of the total number of cells had an expected count of less than 5. There was no significant difference between the various groups in terms of distribution of Repair Outcome (p = 1.0).

DISCUSSION-

Vesico-vaginal fistulas (VVF) are the most common female genitourinary fistulas, and also the most common acquired fistulas of the urinary tract. The main symptom of VVF is leakage of urine from the vagina, apparent only when the bladder is full or constantly in the presence of large fistula. After gynecological surgery, leakage usually appears after removal of the urinary catheter [6]. Important clinical details of VVF are the size and the localization of the fistula, its relationship with ureteral orifices and the presence of inflammation and scar tissue around the fistula. Cystoscopy with vaginal examination is the most important clinical examination in the evaluation of VVF. Intravenous urography with cystography in the lateral position is necessary to discover the position of the fistulous channel and to exclude ureterovaginal fistula.

Surgical treatment is mandatory in the treatment of VVF. The optimum moment for surgery is after completion of the healing reaction i.e. 2 months, after the appearance of the fistula. Important technical details include excision of all diseased tissue in the bladder and vagina, complete separation of the bladder from vagina with a margin of healthy tissue and watertight closure of both bladder and vagina without tension. Interposition of vascularized tissue (peritoneum, omentum, labial fat pad, gracilis muscle, myocutaneous muscle flaps) between the closed bladder and the vagina is recommended to improve vascularity [7,8].

We have used interposition flaps in all our patients during repair. In transabdominal approach Omental flap and in transvaginal approach martius flap was used. Moreover, these tissues are capable of absorbing urinary extravasate and preventing the leakage from the bladder. The approach is dependent of many factors and on the experience and training of the surgeon. A debate still surrounds the appropriate route of surgery. There are no randomized trial data that compare an abdominal versus vaginal approach and clearly there is no clear methodology given that the choice of approach is based upon individual fistulae characteristics and surgeon preference. Where there is ureteric or uterine involvement or access to the vagina is difficult, and then an abdominal approach is more likely to be indicated.

Abdominal approach may be used to treat all types of VVF; it is the preferred approach in complex situations, when the fistula is large (wider than 4 cm) or when ureteral orifices are involved in the fistula and ureteral re-implantation is required. The success rate is 80–90% [9-12].

Interposition of well-vascularized omental or peritoneal flaps between the bladder and the uterus is recommended for all VVF repair prevention of relapse and for treatment of VVF [13]. Vaginal approach is less aggressive and well accepted by patients. It involves tension-free closure of the fistula with creation of an anterior vaginal wall flap and is followed with high success rate, up to 96% [14]. Interposition of vascularized grafts can also be performed by this approach; the success rate is 82–97% [15]. In our series, there was no significant difference in outcome according to the route of VVF repair (p = 1.000). although outcomes of vaginal VVF repair (30/32 successful) were better than abdominal VVF repair (40/44 successful).

CONCLUSION-

We have inferred from our study that both transvaginal and transabdominal approaches provides same amount of results in simple vesicovaginal fistula repair when done along with use of interposition flaps. It should be noted that this study did not include complex fistula and vesicovaginal fistula due to malignancy or radiation. To repair vesicovaginal fistula we have choice as per surgeon's preference and patient's comfort as both the approaches have similar repair outcomes.

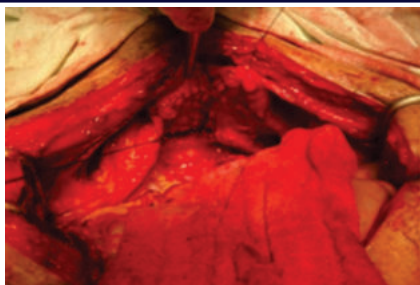


Figure-1: Bladder closed in two layers (perpendicular fashion)

Table-1: Distribution of participants in terms of group of study subjects (n=76)

Group	Frequency	Percentage
A	44	57.89%
B	32	42.11%
Total	76	

Table-2: Distribution of symptoms at presentation of study subjects.

Symptoms at presentation	Frequency	Percentage
Continuous discharge from vagina	32	42.11%
Continuous urine discharge	8	10.53%
Foul odor from vagina	6	7.89%
Urinary incontinence	20	26.32%
Vaginal discharge after labor	10	13.16%
Total	76	100%

Table-3: Distribution of cystoscopy of study subjects

Cystoscopy	Frequency	Percentage
Infratrigonal	36	47.37%
Supratrigonal	40	52.63%
Total	76	100%

Table-4: Distribution of early complication of study subjects.

Early Complications	Frequency	Percentage
None	58	76.32%
Hematoma	10	13.16%
Pus discharge	4	5.26%
Urinary retention	4	5.26%
Total	76	

Table-5: Comparison of late complication between group A and B

Late complications	Group A (n=44)	Group B (n=32)	Total	P-Value
None	44 (100%)	28 (87.50%)	72 (94.74%)	0.028
Yes (stress incontinence)	0 (0.00%)	4 (12.50%)	4 (5.26%)	
Total	44	32	76	

Table-6: Comparison of outcome between group A and B.

Outcome	Group A (n=44)	Group B (n=32)	Total	P-Value
Successful	40 (90.91%)	30 (93.75%)	70 (92.11%)	1*
Unsuccessful	4 (9.09%)	2 (6.25%)	6 (7.89%)	
Total	44	32	76	

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