



Original Article

ENDORECTAL LOCAL ADVANCEMENT FLAP IN TREATING RECTOVAGINAL FISTULA- OUR EXPERIENCE IN BANGABANDHU SHEIKH MUJIB MEDICAL UNIVERSITY

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Abstract

Background: Rectovaginal fistula is abnormal epithelial-lined connections between the rectum and vagina. Rectovaginal fistula represents an often devastating condition in patients and a challenge for surgeons. Successful management of this condition must take into account a variety of variables including the etiology, size, and location of the fistula. Repair options include advancement flaps, plugs, fistula ligation, and tissue interposition.

Method: We treated five cases of low rectovaginal fistula by endorectal local advancement flap in Colorectal Surgery Unit of Bangabandhu Sheikh Mujib Medical University between January 2011 to January 2014. Aim of this study was to evaluate the outcome of Endorectal local advancement flap in terms of cure, recurrence or failure in the management of rectovaginal fistula.

Result: Out of five, four patients had rectovaginal fistula due to obstetric cause, one was post-surgical. One patient developed partial flap necrosis. The patient was managed by conservative means. Post-operative hospital stay was 5 days (range 4 -7 days). All patients achieved complete healing after the procedure.

Conclusion: Rectovaginal fistula repair by endorectal local advancement flap should be part of the armamentarium of colorectal surgeons for treating persistent rectovaginal fistula.

Keywords: Rectovaginal fistula, Endorectal local advancement flap.

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Introduction

Patients having rectovaginal fistula are not very uncommon in our clinical practice. Most of the patients usually come to gynaecologists. Although infrequently life threatening rectovaginal fistulae poses significant problem for both patients and surgeons. Passing flatus or stool through the vagina is understandably distressing to the patients.

The most common etiological cause of rectovaginal fistula is obstetrical trauma. But other causes are inflammatory bowel disease, carcinoma, radiation, diverticulitis, and infectious processes, and as a result of postsurgical

procedures. Several factors contribute to this process. The best known, and most common, pathophysiology is widespread ischemic vascular injury produced by unrelieved obstructed prolonged labor that results in tissue necrosis and subsequent fistula formation. Other predisposing factors include forceps delivery, midline episiotomy, and third- or fourth-degree perineal lacerations¹⁻⁵. The second most common cause of rectovaginal fistula is inflammatory bowel disease, particularly Crohn's disease, which has been reported in up to 10% of patients. Radcliffe et al reported an incidence of 9.8% of rectovaginal fistulas in women with Crohn's disease.⁶ Schwartz et al also reported a 9% incidence of rectovaginal fistulas in patients with Crohn's disease in a population-based study in 2000⁷. Malignant processes, including cancers of the rectum, cervix, uterus, or vagina, can also contribute to the presence of a rectovaginal fistula. In addition, the fistulas can develop as complications of radiation therapy and postsurgical operations including low anterior resection with stapled anastomosis, hysterectomy, rectocele repair, and restorative proctocolectomy.

Patient symptoms usually depend on the size and location of a rectovaginal fistula. The most frequent symptoms are passage of flatus or liquid stool per vagina. Patients may also complain of a malodorous vaginal discharge and recurrent vaginitis. The physical examination is important to locate the fistula and to assess the integrity of surrounding tissue. There may be a palpable depression in the anterior midline of the rectum, or a pit like defect if the fistula is small. These changes may be visible on anoscopy. On vaginal examination, the darker mucosa in the fistula track may be apparent, contrasting with the light vaginal mucosa. There may be visible stool or signs of vaginitis. Probing the tract may be very painful. During the physical examination, an assessment of anal sphincter integrity will assist in surgical planning.

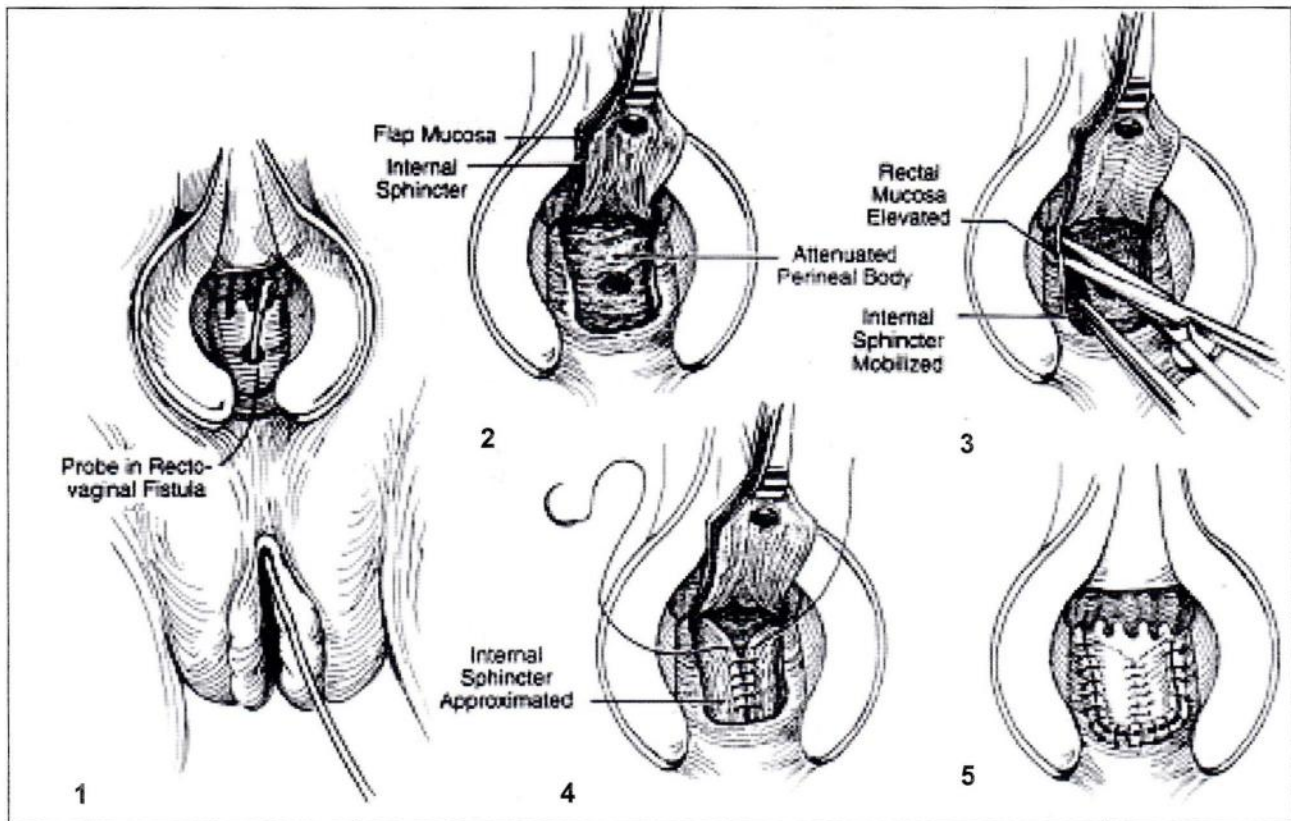
Endorectal and transvaginal ultrasounds may be used to identify a low fistula tract.^{8,9} Alternatively, a vaginal tampon can be inserted followed by instillation of a methylene blue enema. The tampon is removed after retaining the enema for 15 to 20 minutes. If there is no staining, the diagnosis of rectovaginal fistula is highly unlikely. More proximal fistulas are best diagnosed with vaginography or computed tomography with rectal contrast. Colonoscopy is necessary if inflammatory bowel disease is a suspected cause. Examination under anesthesia with biopsies may be necessary in patients with prior irradiation for malignancy. Clinically detected obvious fistula needs no investigations for the fistulous tract identification. All patients require assessment of fecal continence. This may be attainable with a good history; however, some women may have difficulty

distinguishing incontinence from fistulous drainage. Incontinence may be caused by the fistula, an underlying disease state, or anal sphincter trauma. Determining the cause of incontinence is important prior to operative intervention for a rectovaginal fistula^{10, 11}. Endoanal ultrasound and magnetic resonance imaging (MRI) are quite accurate in identifying a sphincter defect. Manometry may be used to determine functional sphincter defects in the absence of an anatomic defect. Patients with fistulae arising as a result of an obstetrical injury should be routinely evaluated for anatomic sphincter defects.

Methods

From January 2011 to January 2014, five (5) patients of rectovaginal fistula were treated by local advancement flap in the Colorectal Surgery unit of Bangabandhu Sheikh Mujib Medical University. All the patients were initially treated conservatively but unfortunately fistulae did not heal after a period of 3 to 6 months of conservative treatment. All patients were diagnosed by history, clinical examination and dye test. All patients underwent sigmoidoscopy to evaluate any secondary cause like inflammatory bowel disease. We could not perform endoanal ultrasound or MRI in any of our patients. All patients underwent mechanical bowel preparation preoperatively and received Ciprofloxacin and Metronidazol for 7 days.

Operative procedure: The approach can be undertaken either trans-analy or vaginally. The trans-anal is intuitively preferable in that the repair is on the high pressure site of the fistula. We preferred trans-anal approach. All procedures were performed under spinal anesthesia. Patients were placed in a prone jack-knife position with exposure obtained by taping the buttocks apart. The track was identified by palpation and probing. A 'U' shaped flap of mucosa, submucosa and circular muscles of anorectum was created for a distance sufficient to allow a tension free repair (usually 4-5 cm). Dissection generated a flap with a base 2-3 times wider than the apex. The fistula track was debrided but not excised and the muscles were approximated over the fistulous opening with delayed absorbable suture. Distally, the end of the flap including the fistulous site was excised and the flap was sutured in place; the vaginal side was left open for drainage. Patients resume a normal diet with fibre supplement to prevent constipation. Ciprofloxacin and Metronidazol were continued for 7 days. Every patient was advised to avoid tampons and sexual intercourse for 6 weeks. First 3 patients had completed their 2 year follow up schedule and there is complete healing of the wound. The fourth patient was coming 3 monthly who developed partial flap necrosis and the fifth one was advised to come monthly for 6 months.



Operative procedure (figure 1-5): Endorectal advancement flap¹².

Results

Mean age of the patients was 31.17±13.35 years. Four patients with rectovaginal fistula were due to obstetric cause, 1 patient was post- surgical. Detailed history and physical examination were performed preoperatively. None of the patients developed complete flap necrosis following repair by endorectal local advancement flap but one had partial flap necrosis. This patient was managed by conservative means with sitz bath and daily dressing. Post-operative hospital stay was 5.8±0.84 days. All patients achieved healing after the procedure.

Table-I

Patients demography and perioperative data (n=5)

Variables	No. of patients (%)
Age (years)^a	32.17±13.35
Aetiology	
Obstetrical injury	4 (80.0%)
Post surgical	1(20.0%)
Hospital stay (days)^a	5.8±0.84
Postoperative outcome	
Complete healing	4(80.0%)
Partial flap necrosis	1(20.0%)
^a mean(±sd)	

Discussion

A small subset of patients may respond to medical optimization. This usually includes regulating bowel function and controlling diarrhea. Patients with rectovaginal fistula of obstetric origin may experience fistula healing with this regimen. Unfortunately, most women have persistent symptomatic disease that will not heal without surgical intervention. The choice of an adequate procedure is related to etiology, size, and location of the fistula. Endorectal local advancement flap is used in the treatment of persistent symptomatic disease of low rectovaginal fistula. The procedure is simple and indicated in the management of most of the rectovaginal fistula. The main disadvantage is flap failure and recurrence.

In a report by Kodner and colleagues¹³ from St. Louis, 107 patients underwent endorectal advancement flap repair for rectovaginal fistulae of a variety of causes: obstetric injury in 48, cryptoglandular abscess-fistula in 31, Crohn's disease in 24, and trauma or postoperative in 4 patients. Persistence or recurrence of the fistula occurred in 17 patients (16%). Nine patients whose initial operation failed underwent a second successful operation. Continence status was

unchanged in 80% and improved in 18%. The authors' observation Number of patients was that endorectal advancement flap repair successfully treated 93% of the complicated anorectal fistulas, avoiding fecal diversion and improving sphincter function. A retrospective analysis was reported by Ozuner et al¹⁴ of all patients at the Cleveland Clinic undergoing endorectal advancement flaps between 1988 and 1993. They reported 52 patients with rectovaginal fistulas. Median follow-up was 31 months (range, 1 to 79 months). Immediate failure (within 1 week of the repair) was seen in 6% of patients. Statistically significant ($p < 0.001$) higher recurrence rates were observed in patients who had undergone previous repairs. Etiology of the fistula, use of constipating medications, antibiotic use, and, most important, associated Crohn's disease did not statistically affect recurrence rates. Failure rate was influenced only by the number of previous repairs in this study. A follow-up study reported by Sonoda et al¹⁵ in 2002 looked at 34 patients with rectovaginal fistulas from 1994 to 1999 at the same institution. They reported a primary healing rate of 63.6%. The only factor that negatively influenced the healing rate of the flap in patients with rectovaginal fistulas was Crohn's disease ($p = 0.027$).

A variety of factors contribute to the different success rates with this approach reported in the literature. Lowry et al¹⁶ described their results for 81 mucosal advancement flap repairs in women with simple fistulas at the University of Minnesota. Simple fistulas were defined as those in the middle to lower rectum and less than 2.5 cm in diameter. The mean age of the patients was 34 years (range, 18 to 76 years). The causes were obstetrical injury (74%), perineal infection (10%), operative trauma (7%), and unknown (8%). Overall, the repair was successful in 83% of patients. Success correlated with the number of previous repairs; patients with no previous repair had an 88% success rate; those with one previous repair had an 85% success rate; and those with two previous repairs had a 55% success rate. In 25 patients a concomitant sphincteroplasty was performed. This study suggests that one should be considerably reluctant to perform a mucosal advancement flap in patients in whom two previous attempts have failed. In addition, it suggests that a higher rate of success may be achieved if one adds a concomitant sphincter repair.

Tsang and colleagues¹⁰ from the same institution analyzed the outcome of rectovaginal fistula repairs based on preoperative sphincter status. They identified

52 women who underwent 62 repairs of simple obstetrical rectovaginal fistulas. Fourteen patients (27%) had preoperative endoanal ultrasound studies and 25 (48%) had anal manometry studies. Median age was 30.5 years, and median follow-up was 15 (range, 0.5 to 123) months. Twenty-five patients (48%) complained of varying degrees of fecal incontinence before surgery. There were 27 endorectal advancement flaps and 35 sphincteroplasties (28 with and 8 without levatoroplasty). Success rates were 41% with endorectal advancement flaps and 80% with sphincteroplasties (96% success with and 33% without levatoroplasty; $p = 0.0001$). An endorectal advancement flap was successful in 50% of patients with normal sphincter function but in only 33% of patients with abnormal sphincter function. For sphincteroplasties, success rates were 73% versus 84% for normal and abnormal sphincter function, respectively ($p = \text{not significant}$). Results were better after sphincteroplasties versus endorectal advancement flaps in patients with sphincter defects identified by endoanal ultrasonography (88% versus 33%; $p = 0.06$) and by manometry (86% versus 33%; $p = \text{not significant}$). Poor results correlated with prior surgery in patients undergoing endorectal advancement flaps (45% versus 25%; $p = 0.07$) but not sphincteroplasties (80% versus 75%; $p = 0.06$).

Khanduja et al¹⁷ reported the effectiveness of combining an advancement flap with sphincteroplasty in patients with rectovaginal fistula and anal sphincter disruption. The mean age of the patients was 30 years and the mean duration of symptoms was 54.8 weeks (range, 7 weeks to 6 years). In addition to mucosal advancement flap repair, 13 patients underwent two-layer repair of anal sphincters (with re-approximation of the puborectalis in 8 of the patients); 6 patients underwent one-layer overlap repair of anal sphincters (with re-approximation of the puborectalis in 2 of the patients); and 1 patient underwent reapproximation of internal anal sphincter alone. Postoperatively, vaginal discharge of stool and flatus was eliminated entirely in all 20 patients. Perfect anal continence of stool and flatus was restored in 14 patients (70%). Incontinence was improved but not eliminated in six patients (four incontinent to liquid stool and two to flatus), and two patients required perineal pads. Subjectively, 19 patients (95%) reported the result as excellent or good and there were no complications.

In our series, during the three year's time we have done only 5 cases. Though our experience is very

limited with a small number of patients, it appears that endorectal local advancement flap for the repair of rectovaginal fistula has got a comparable outcome with those other studies with larger sample sizes.

In summary, the use of a mucosal advancement flap repair is appropriate for most simple rectovaginal fistulae. Its success rate depends on the etiology of the fistula, with a better outcome in patients with obstetrical injuries than in patients with inflammatory bowel disease. It also depends on previous repairs, with a higher failure rate in patients who have undergone two or more attempts, and it depends on the preoperative assessment of sphincter function, with patients undergoing sphincter repair having a higher success rate with mucosal advancement flaps.

Conclusion

Rectovaginal fistula repair by endorectal local advancement flap should be part of the armamentarium of colorectal surgeons for treating symptomatic persistent rectovaginal fistula. The anatomic configuration of perineum, the anorectum and perianal region is very complex and knowledge of this area is essential before performing any surgical procedure. Rectovaginal fistulae have long been a very agonizing, symptomatic disease plaguing both the patient and surgeon. An individualized, systematic approach to these fistulas based on their size, location, and etiology provides a more concise treatment plan for their resolution, which is possible with correct technique. The preparation of flaps is important for treatment success.

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