

# Complex Rectovaginal Fistula—An Experience at a Tertiary Care Centre

Shailendra Lalwani · Vibha Varma · Vinay Kumaran ·  
Naimish Mehta · Samiran Nundy

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**Abstract** Complex rectovaginal fistulae are difficult to manage. With an initial failed attempt, a simple fistula becomes complex and the success rate of a subsequent repair decreases. A review of our prospectively maintained records over a period of 16 years revealed 25 patients with rectovaginal fistulae. A variety of procedures was performed in these patients according to their aetiology, site and if there had been a previous attempt at repair. The mean age of the patients was 45 years. The most common cause was operative trauma in 14 cases. Ten patients had previous attempts at repair which had not been successful. The surgical procedures we performed included re-enforcement flaps, resection with diversion, repair with re-enforcement with omentum and simple diversion. Two patients developed recurrence, and one of them healed after a second repair. No recurrence developed in 10 patients who had failed attempts at repair elsewhere. Our experience has shown that most complex rectovaginal fistulae can be successfully repaired but they might require repeated operations. Faecal diversion is usually necessary, and in recurrent fistulae, we found that rather than a local repair, a muscle flap or omental interposition improves the chances of healing.

**Keywords** Rectovaginal fistula · Recurrent fistula · Pouchvaginal fistula · Gracilis flap repair

## Introduction

A rectovaginal fistula (RVF) is an epithelially lined tract between the rectum and vagina, and its management is a challenge to most surgeons.

The most common cause of RVF in developing countries is still obstetric injuries [1, 2] with others being operative trauma, radiation injury, inflammatory bowel disease (mostly Crohn's disease), infection and cancer. RVF may be accompanied by considerable social, psychological and sexual dysfunction.

Recurrent RVFs are difficult to treat with an overall failure rate of 21 to 39 % in different series [3, 4]. This failure rate increases with every failed attempt. A simple fistula may become complex when an attempt at repair fails because the damage caused by the devascularisation and subsequent fibrosis of the surrounding tissues makes subsequent operation more difficult and impairs healing. The management of such complex fistulae continues to be a challenge to the operating surgeon. In this study, we recount our experience of the management of rectovaginal fistulae in a tertiary care centre in New Delhi, India.

## Patients and Methods

### Patients

We retrospectively studied, from a prospectively maintained database, 25 consecutive women with vaginal fistulae who were admitted to the Department of Surgical Gastroenterology and Liver Transplantation in the Sir Ganga Ram Hospital, New Delhi between August 1996 and October 2013 and included patients with rectovaginal and pouchvaginal fistulae, i.e. following ileal pouch construction for ulcerative colitis. Data regarding the patients and the fistula characteristics were retrieved from our departmental records. These included demographics, fistula size and location, duration, the presence of local infection and involvement of the anal sphincter and the perineal body. The number and types of previous attempts at repair and the presence of incontinence to gas and stools were also noted.

S. Lalwani (✉) · V. Varma · V. Kumaran · N. Mehta · S. Nundy  
Department of Surgical Gastroenterology & Liver Transplantation,  
Sir Ganga Ram Hospital, Room No 2222, New Delhi 110060, India  
e-mail: slalwani2008@yahoo.com

## Operative Procedures

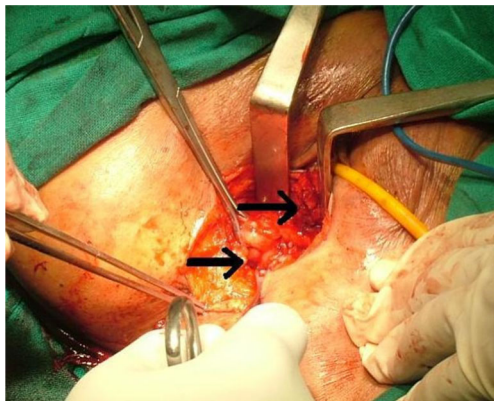
All the operations were done under general anaesthesia, in the modified dorsolithotomy position. The patients received antibiotics at the beginning of the operation, which were continued for the next 5 days. Prophylactic anticoagulant therapy was administered in the evening before the operation and was continued until the patient became freely ambulant. Different procedures were performed according to the aetiology and site of the fistula and whether there had been previous attempts at repair. The approach was transabdominal and in some patients, transperineal as well. Re-enforcement flap repairs (using the gracilis or rectus abdominis muscles) were performed in high fistulae, and those originating from neoplasms or following radiation. Resection with faecal diversion (i.e. proctectomy including the fistula site followed by a coloanal anastomosis and ileostomy) was performed when the fistula was not large and the tissues available for closure were well vascularized and supple. Local repair with omental reinforcement (Figs. 1 and 2) or faecal diversion alone via a colostomy or ileostomy was performed in patients with small, low fistulae surrounded by healthy tissues and an intact perineal body. Faecal diversion was undertaken in every case either before or together with the definitive repair.

The patients were followed up during routine outpatient visits or telephonically. Recurrence was defined as a renewed connection between the rectum or colon and vagina with persistent faecal discharge from the vagina following fistula repair.

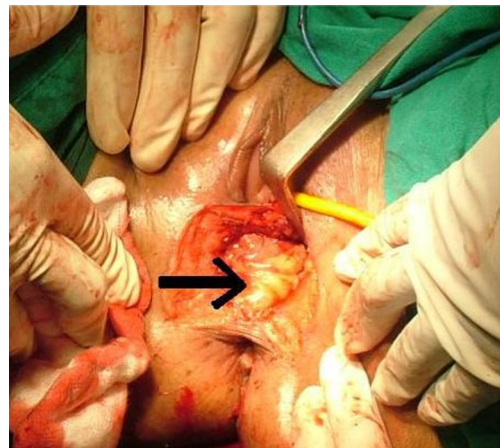
## Results

### Aetiology and Age Distribution

Out of the 25 females with fistulae, 14 were due to surgical trauma (abdominal hysterectomy—8, vaginal hysterectomy—2, post-ileal pouch anal anastomosis (IPAA) for ulcerative



**Fig. 1** Photograph showing rectal opening of fistula after excision of fistulous tract and repaired vaginal wall



**Fig. 2** Photograph showing omental re-enforcement between repaired vagina and rectum

colitis—3, low anterior resection—1), 4 followed obstetric injuries and in 5 they occurred after radiotherapy for malignant diseases (two for carcinoma of the rectum after low anterior resection and one each for carcinoma of the cervix and endometrium). One patient had a severe perineal injury following a road traffic accident, and one patient presented with a spontaneous fistula due to diverticulitis. The different aetiological factors and their resulting fistula types are shown in Table 1.

The mean age of all the patients was 45 years (range 20–67) whilst in the patients in which they occurred after obstetric injuries, it was 38 years (range 33–43), after surgical trauma it was 44 years (range 27–67) and after radiotherapy it was 60 years (range 50–65).

### Duration of Symptoms

The mean duration of symptoms was 20 months (range 1–60) in those with obstetrical injuries, 3.4 months (range 0.5–18)

**Table 1** Aetiology of fistulae

| Aetiology         | Number (%) | Subgroup  | Number of cases |
|-------------------|------------|---|-----------------|
| Surgical          | 14 (56)    | Post-abdominal hysterectomy                                     | 8               |
|                   |            | Vaginal hysterectomy  | 2               |
|                   |            | Ileal pouch for ulcerative colitis                              | 3               |
|                   |            | Low anterior resection  | 1               |
| Obstetric         | 4 (16)     | Difficult delivery after prolonged labour                       | 4               |
| Post-radiotherapy | 5 (20)     | Radiotherapy for carcinoma of the rectum, cervix or endometrium | 5               |
|                   |            |   |                 |
| Others            | 2 (8)      | Post-traumatic (perineal injury)                                | 1               |
|                   |            | Diverticulitis  | 1               |

following surgery and 4 months (range 0.6–12) following radiotherapy.

#### Fistula Characteristics

Sixteen patients had fistulae which were less than 2.5 cm in diameter and in nine patients they were wider than 2.5 cm. The fistulae were located in the lower third of the vagina in 9 patients, in the middle third in 10 and in the upper third in the remaining 6. One patient had faecal incontinence at presentation. Local inflammation was present in 10 patients (40 %). These characteristics are listed in Table 2.

#### Recurrent Fistulae and Previous Operations

Fourteen patients had had previous operations. Of these, in 10, there had been an attempt to repair which had failed (gracilis muscle interposition—2, perineal tear repair with colostomy—3, multiple different procedures with colostomy—3, transvaginal repair—2). Both failed gracilis flap repairs were performed in patients with obstetric fistulae. Four patients had already had diverting colostomies before they were referred to our centre.

#### Type and Number of Repairs

Twenty seven operations were done in the 25 patients. The type of procedure was tailored according to the cause, site and size of the fistula; the condition of the surrounding tissue and whether there had been any previous attempts at repair. Reinforcement flaps were used for recurrent, post-radiation and post-ileal pouch fistulae as well as for large-size fistulae which were located in the lower third of the vagina. The rectum was resected when the fistula was located in the upper third of the vagina, and there had been no previous attempts at repair. Faecal diversion alone was done for patients with small fistula (less than 1 cm) who had had no previous attempts at repair.

The types of repair included re-enforcement flaps (gracilis—5, rectus abdominis—3), proctectomy with coloanal anastomosis and diverting ileostomy in six, omental

interposition in four and simple diversion in seven (colostomy—2 and ileostomy—5). One patient who had a fistula following radiotherapy underwent a second operation following a failed first repair. One patient with a fistula following an ileal J pouch for ulcerative colitis had the pouch excised and a straight ileoanal anastomosis performed. All patients had some form of diversion procedure in the form of a loop ileostomy or colostomy which was closed after an average of 3.2 months (range 2–6).

Of the 10 patients with recurrent fistulae (the initial attempt having been made elsewhere), in 4 the repair was done using a gracilis flap, 2 a rectus abdominis flap, 3 had omental reinforcement and 1 patient was treated with an ileostomy alone.

The mean interval between the diagnosis and recurrence after first repair to the operation in our hospital was 6.5 months (range 15 days–5 years).

#### Follow Up, Complications and Mortality (Table 3)

The mean follow-up period was 6 years and 4 months (range 6 months–12 years). In two patients, the fistulae recurred after our repair. In the first patient who had a post-radiation fistula for endometrial carcinoma and had undergone an anterior resection of the rectum and coloanal anastomosis, we performed a gracilis muscle flap for the second repair and she was cured. The second patient with a pouch fistula developed recurrence even after a second gracilis flap repair and ultimately required pouch excision and a straight ileoanal anastomosis. She still has a defunctioning ileostomy. In none of the 10 patients who had recurrent fistulae did the repair fail. One patient developed peristomal skin excoriations. No other stoma-related complication occurred in any patient.

The average hospital stay was 8 days (range 5–12). One (5.3 %) died due to sepsis. She had been admitted with septicaemia and had undergone an emergency diverting colostomy alone. All the patients in whom the repair was successful are continent of faeces.

**Table 2** Characteristics of fistulae

| Characteristics    | Number of patients ( <i>n</i> =20) (%) |
|--------------------|--|
| Size               |  |
| Less than 2.5 cm   | 16 (64)                                |
| More than 2.5 cm   | 9 (36)                                 |
| Fistula location   |  |
| Lower 1/3          | 9 (36)                                 |
| Middle 1/3         | 10 (40)                                |
| Upper 1/3          | 6 (24)                                 |
| Stool incontinence | 1 (4)                                  |

#### Discussion

The most common cause of rectovaginal fistulae in developing countries is obstetric injury, and this has been reported occurring in up to 88 % of patients in published series [5–7]. Prolonged labour, causing necrosis of the rectovaginal septum, leads to the formation of a fistula. In developed countries, the incidence of genital fistulae has decreased considerably because of improved obstetric management [8, 9]. Cron reviewed the data from the USA and the UK and showed that a rectovaginal fistula in these countries was almost never the result of obstructed or prolonged labour [10] but much more

**Table 3** Complications and recurrence

| Complications                    | Aetiology         | Operative procedure                                 | Number of patients | Final outcome             |
|----------------------------------|-------------------|---|--------------------|---------------------------|
| Recurrence                       | Post-radiotherapy | Proctectomy with coloanal anastomosis and ileostomy | 1                  | Cured after second repair |
|                                  | Post-IPAA         | Gracilis flap repair twice and pouch excision       | 1                  | Recurrence                |
| Intestinal obstruction           | Post-traumatic    | Laparotomy and ileostomy                            | 1                  | Recovered                 |
| Sub-acute intestinal obstruction | Post-radiotherapy | Loop ileostomy                                      | 1                  | Recurrent episodes        |
| Sinus with fistula in ano        | Obstetric injury  | Gracilis flap repair                                | 1                  | Cured                     |

likely to be related to operative trauma, leaks from low rectal anastomoses, local inflammation or radiation damage [11]. Operative procedures like hysterectomies (for benign and malignant disease), low anterior resections (for rectal carcinoma) and ileoanal anastomoses (for ulcerative colitis) were also associated with the risk of developing a rectovaginal fistula. In a series from the Mayo Clinic, 24 % of their rectovaginal fistulae were secondary to inflammatory bowel disease whereas only 11 % were due to obstetric injuries [12].

Similarly, in our series, the most common cause of a rectovaginal fistula was post-surgical trauma (56 %)—abdominal hysterectomy (32 %), vaginal hysterectomy (8 %), post-IPAA (12 %) and following low anterior resection of the rectum (4 %). The incidence of fistulae following obstetric trauma was 16 %. This may be because we are a tertiary surgical gastroenterology unit to which mainly complex cases are referred.

The timing of repair is controversial. A waiting period of 3 to 6 months has been suggested by Lowry et al. [7] before attempted repair so that there is a resolution of infection. Hibbard [6] opined that a waiting period of 3 months was probably sufficient. In a study by Halverson et al. [4] on recurrent rectovaginal fistulae, the median length of time from the prior repair to the current repair was 3.4 months in those which failed and 5.2 months in those which were successful. They suggested therefore that until the local inflammatory reaction has subsided,

no attempt at repeat repair should be made, regardless of the interval following the previous repair. In our study, the mean length of time from the diagnosis (recurrence after prior repair) to the current repair was 6.5 months (range 15 days–5 years).

The role of a protective stoma is of unproven benefit. Some authors advocate routine diversion for high complex fistulae caused by irradiation and inflammatory bowel disease and for patients with multiple failed procedures [13]. Other studies have not demonstrated any advantage of a diverting stoma [6, 14–16]. Some have suggested that the interposition of a gracilis flap may avoid the need for a permanent ileostomy in patients with recurrent pouchvaginal fistulae [17, 18]. In our series, temporary diversion was used in all patients and it may have contributed to the high healing rate even in some recurrent fistulae. We would therefore think that a policy of temporary diversion may be safe and wise.

Recurrent rectovaginal fistulae are difficult to treat and have a variable reported success rate in different series. MacRae and colleagues [3] retrospectively reviewed 28 patients who had had at least one previous attempt at repair with an overall success rate of 61 % (17 out of 28). Lowry et al. [7] reported an overall successful repair rate of 83–88 % in patients undergoing a primary repair, 85 % after one previous failed attempt and 55 % after two prior failed repairs. Halverson et al. [4] reported a 79 % success rate after a median

**Table 4** Results of repair of rectovaginal fistulae

| Author (country)                     | Year | No. of patients      | Recurrence no. of patients (percentage) |
|--------------------------------------|------|----------------------|---|
| Mazier WP et al. [14] (USA)          | 1995 | 95 (Simple fistula)  | 3 (3.1)                                 |
|                                      |      | 31 (Complex fistula) | 3 (9.6)                                 |
| MacRae HM et al. [3] (Canada)        | 1995 | 18 (Simple fistula)  | 5 (27)                                  |
|                                      |      | 10 (Complex fistula) | 6 (60)                                  |
| D. Soriano et al. [22] (France)      | 2001 | 18 (Simple fistula)  | 0 (0)                                   |
|                                      |      | 30 (Complex fistula) | 0 (0)                                   |
| Sang Wook Bai et al. [23] (Korea)    | 2002 | 21                   | 1 (4.7)                                 |
| Athanasiadis S et al. [24] (Germany) | 2007 | 37                   | 10 (27)                                 |
| Present series (India)               | 2014 | 15 (Simple fistula)  | 2 (13.3)                                |
|                                      |      | 10 (Complex fistula) | 0 (0)                                   |

of two operations. Fourteen patients were successfully treated after only one repeat repair, eight underwent two repairs and four patients had three repairs. The decreased success after subsequent repairs may be attributed to the unresolved inflammation, tension, haematoma formation or underlying disease (e.g. Crohn's disease). Surprisingly, in our series, in none of the 10 patients with recurrent rectovaginal fistulae did the repair fail. Results of repair of rectovaginal fistulae in different series are shown in Table 4.

Ileal pouchvaginal fistulae are difficult to treat. Heriot AG et al. [19] reported recurrence in 27 of 45 (60 %) patients who underwent primary repair. In our study, pouchvaginal fistulae developed in three patients after restorative proctocolectomy and were successfully repaired in two. One patient required excision of her pouch after two failed repair attempts.

Muscle flaps are usually used to close rectovaginal fistulae after other attempts at local repair have failed [20, 21]. Most series reported successful closure with such flaps with satisfying long-term results but they contain small numbers of patients [21].

Our experience showed that post-radiation and post-IPAA fistulae are difficult to treat and they may require multiple repairs. Although no correlation between method of initial repair and success of further repairs was found in our study, out of 10 recurrent fistulae in our series, 9 underwent reinforcement with muscle or omental flaps with no recurrence. Lowry et al. [7] also suggested that in patients with two or more previous repairs, muscle interposition should be considered. Regardless of the type of repair, certain principles, such as gentle handling, careful debridement and adequate mobilisation of tissue to allow tension-free approximation, are essential for a successful outcome [4]. A patient with failed prior repair may be successfully treated with re-enforcement muscle flaps.

## Conclusion

Most complex rectovaginal fistulae can be successfully repaired. The type of procedure needs to be tailored according to the site and nature of the defect and repeated operations might be required. We believe that muscle or omental interposition should be used in patients with recurrent fistulae and advocate performing faecal diversion before or during the definitive repair using a diverting loop ileostomy or colostomy.

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**Authors' Contributions** Shailendra Lalwani was responsible for the acquisition of data, or analysis and interpretation of data. Vibha Varma, Naimish Mehta and Vinay Kumaran did the drafting of the article or revising it critically, and finally, Samiran Nundy gave the final approval of the version to be published.

**Conflict of Interest** This authors (Shailendra Lalwani, Vibha Varma, Vinay Kumaran, Naimish Mehta, Samiran Nundy) of the article declare that they do not have commercial associations (e.g., consultancies, stock ownership, equity interests, patent licensing arrangements, research support, speaker's bureau, etc.) that might pose a conflict of interest in connection with the submitted article.

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