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Original Article

Post-Hysterectomy Rectovaginal Fistula: A Series of Five Cases

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ABSTRACT

Background: Post-hysterectomy recto-vaginal fistula (PH-RVF) is a condition where abnormal communication develops between the healing vaginal vault and the rectum secondary to an iatrogenic surgical insult. The purpose of this study was to evaluate the clinical presentation, work-up, management, and outcomes of patients with PH-RVF.

Methods: Patients who underwent repair from January 2006 to December 2020 were analysed. The data was obtained retrospectively from a prospectively maintained database.

Results: Five patients formed part of the study. All patients presented with faecal peritonitis required a faecal diversion. The mean distance of the fistula was 9.4 cm from the anal verge. Multi-detector CT with rectal contrast delineated the fistula in all. There were no associated fistulae. Laparoscopic repair was undertaken at a median of 12 weeks after faecal diversion. The average blood loss and mean operative time were 66 mL and 176 minutes, respectively. Tissue interposition was done in three patients. There was no major morbidity. The median hospital stay was five days. Four patients had successful repairs. A recurrence was managed with a laparotomy, fistula takedown, and rectus abdominis interposition. Bowel continuity was restored 10 weeks (mean duration) after definitive repair. At a median follow-up of 114 months, none had vaginal discharge, urinary tract infections, or complaints regarding sexual function.

Conclusion: PH-RVF, a particular subset of high recto-vaginal fistula, is a complex fistula. Faecal diversion is required early in the course of management. With adequate planning, laparoscopic primary closure with or without tissue buttress is feasible, safe, and has a favourable long-term outcome.

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Introduction

Hysterectomy is a frequently performed gynaecological procedure. In a cross-sectional survey conducted in India in 2015-16, the prevalence rate of hysterectomy was 6% in the age group of 30-49 years, i.e., 10 million women in the age group of 30-49 years had been hysterectomised [1]. The reported incidence of rectal injury in patients undergoing hysterectomy is 0-1.5% [2, 3]. Although an intra-operatively recognised rectal injury could be managed by an immediate repair, the consequences of an unrecognised rectal injury are catastrophic. The latter results in major morbidity from faecal peritonitis or a pelvic abscess, which are potentially fatal in the post-operative period that requires a re-operation to achieve faecal diversion (ileostomy/colostomy) as the rectal injury is invariably above the peritoneal reflection, causing free peritoneal contamination.

In a developing country such as ours, the penetration of health insurance is around 18% in the urban population and 14% in the rural population [4]. In a patient with a post-hysterectomy fistula, the costs involved in the primary surgery, complicated by major post-operative sepsis requiring a re-operation, would be significant. This leaves the unfortunate patients with serious financial constraints to deal with the complications. Given these financial constraints and illiteracy in the rural population, there could be a likelihood of non-referral and patients living with a fistula or faecal diversion long-term.

Most of the data available addressing the problem of post-hysterectomy recto-vaginal fistula (PH-RVF) specifically comes from case reports [3, 5, 6]. The larger series on recto-vaginal fistula in general does not provide clear information on the management of PH-RVF [7-12]. The purpose of this study was to assess the clinical presentation, work-up, management, and outcomes of PH-RVF.

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Methods

All patients who underwent repair of PH-RVF from January 2006 to December 2020 were analysed. The data was obtained retrospectively from a prospectively maintained database. Details of primary surgery before referral, re-operation, duration of fistula, imaging characteristics – multi-detector computed tomography (MDCT), magnetic resonance imaging (MRI), operative repair, post-operative course, and recurrence were studied. A written informed consent was obtained from all patients prior to investigations and treatment, including consent for the academic usage of clinical material with preserved identity. Given the retrospective nature of the study, institutional review board approval was not sought.

Pre-operative evaluation included routine blood workup, urine and vaginal swab cultures. Sigmoidoscopy was done to identify the fistula in all. Likewise, all patients had a CT fistulogram done with images acquired after the instillation of rectal contrast (Figure 1). Reconstructed images were obtained (Figure 2). T2-weighted MR images in the sagittal plane were used to identify the fistula (Figure 3). Details of the size, location of the fistula, and distance from the anal verge were recorded. The laparoscopic approach for repair of these fistulas has been published by us earlier [13]. Follow-up was done by a review of outpatient records. The follow-up duration was calculated from the time of closure of the covering stoma to June 1, 2021. This included evaluation of symptoms regarding recurrence and sexual activity.

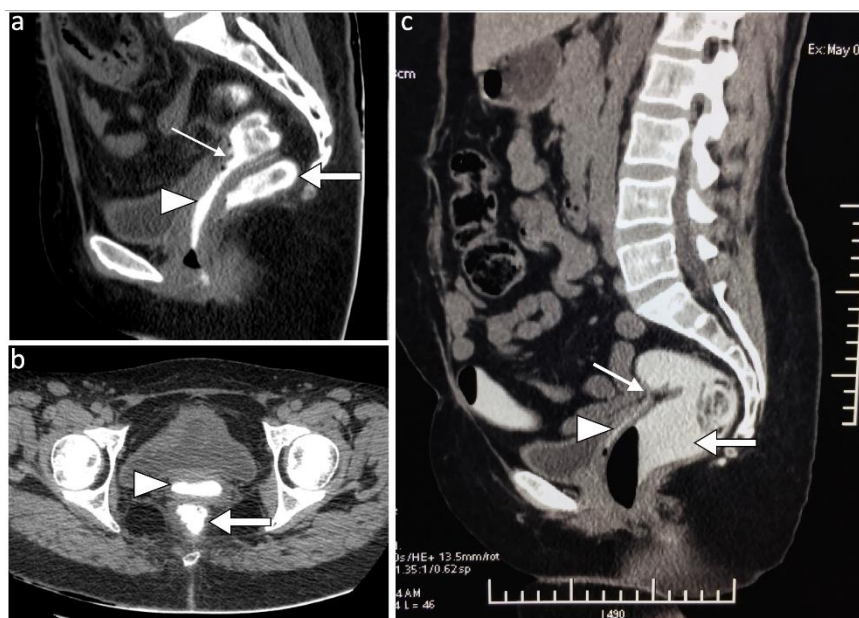


Figure 1: CT images of the pelvis. **a)** Sagittal image demonstrating the rectal contrast (block arrow) filling up the vagina (arrowhead) through the rectovaginal fistula (line arrow). **b)** Axial image of the same patient as in 1a, showing contrast given through the rectum filling up both the rectum (block arrow) and the vagina (arrowhead). **c)** Sagittal image of another patient demonstrating the fistula (line arrow) between the rectum (block arrow) and the vagina (arrowhead) to be arising from the vaginal vault.

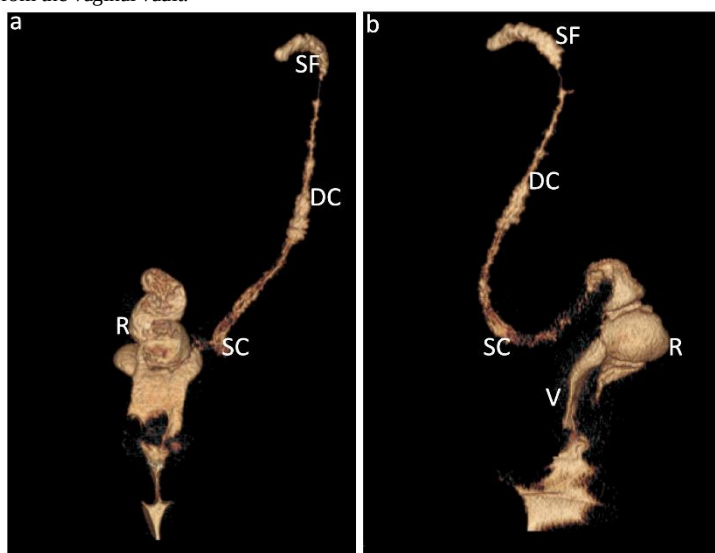


Figure 2: Reconstructed fistulogram. **a)** Anterior-posterior image showing contrast filling up the rectum 'R', sigmoid colon 'SC', descending colon 'DC' reaching up to the splenic flexure 'SF'. Also seen is the contrast passed per vaginally demonstrating the labial folds. **b)** Oblique image demonstrating the contrast in the vagina 'V'.

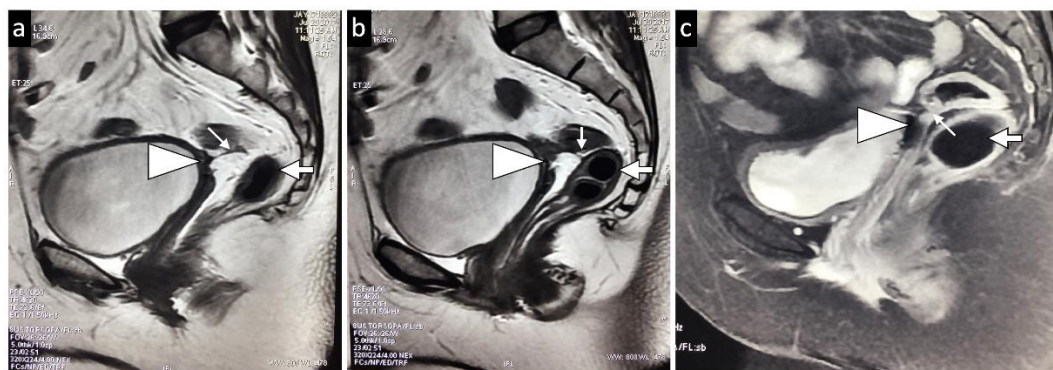


Figure 3: MRI T2 weighted sagittal images. **a)** Fistula (line arrow) extending from the vaginal vault (arrowhead). **b)** Subsequent image demonstrating the fistula opening into the rectum (block arrow). **c)** Fistulous tract (line arrow) clearly seen to extend from the vaginal vault (arrowhead) to the rectum (block arrow).

Results

Five patients with PH-RVF formed the study group. The median age of the patients was 42 years. The primary procedure in all patients was an abdominal hysterectomy (Table 1). All patients presented with faecal peritonitis. Four patients had the second operation (re-operation for faecal peritonitis) at the primary center, while one had this under our care. The diversion in these five patients had been achieved by loop

ileostomy in three, divided end ileostomy in one, and Hartmann's procedure in one patient, respectively. All five patients had persistent purulent vaginal discharge during follow-up. They were evaluated for, and underwent surgical management of, PH-RVF after informed consent. None of the five patients had a prior repair of PH-RVF. In the interim period preceding definitive repair, no patients experienced urinary tract infections.

Table 1: Clinical presentation.

Case	Age (years)	Prior Surgery	Presentation	Diversion to repair (weeks)	Sigmoidoscopy
1	50	Hysterectomy	PV discharge, Status ileostomy	16	10 cm from anal verge
2	40	Hysterectomy	Post hysterectomy peritonitis	6	9 cm from anal verge
3	45	Hysterectomy	PV discharge, Status ileostomy	12	9 cm from anal verge
4	40	Hysterectomy	PV discharge, Status ileostomy	10	10 cm from anal verge
5	42	Hysterectomy	PV discharge, Status sigmoid colostomy	336	9 cm from anal verge

Sigmoidoscopy placed the level of the fistula opening in the rectum at a mean distance of 9.4 cm from the anal verge (range 9-10 cm). Contrast enhanced MDCT with rectal contrast delineated fistula in all patients. There was no associated ureteric injury, vesico-vaginal or recto-vesical fistula in any of the patients. After faecal diversion, definitive repair of the fistula was undertaken at a median of 12 weeks. All patients had staged surgery with laparoscopic repair of PH-RVF, followed by restoration of bowel continuity at a later date. The mean diameter of the fistula was 10 mm (Table 2). The average blood loss was 66 mL. Three

out of five patients had an interposition of healthy tissue (omentum, n=2, and Gracilis, n=1). The mean operative time was 176 minutes. The opening of the fistula in the rectum was more cranial compared to the vaginal side. In the initial three patients, we repaired the opening in the vagina. Later in the experience, in the remaining two patients, we left it unrepaired, and the open vaginal vault in-tum served as a drain. One patient had an infection in the wound, requiring bedside dressing. The median hospital stay was five days.

Table 2: Operative details and morbidity.

Case	Diameter of fistula (mm)	Blood loss (ml)	Operative time (minutes)	Interposition	Morbidity	Hosp Stay (days)
1	16	100	220	Right gracilis	SSI - Grade 1	15
2	10	50	150	None	No	6
3	11	80	180	Omentum	No	5
4	9	50	150	None	No	4
5	7	50	180	Omentum	No	5

Four patients had successful repairs. One patient (Case 2) had a recurrence of the fistula, 8 weeks after the repair, which was diagnosed on the check contrast CT. This patient had undergone a suture closure without buttress. We managed her with a midline laparotomy, takedown of the fistula, closure of both the rectal and vaginal defects, and a left rectus abdominis interposition. Thus, successful repair was achieved in

four patients after a single repair and in one after a second repair (Table 3). We restored the bowel continuity at a mean of 10 weeks after the definitive repair. At a median follow-up of 114 months, none had complaints of vaginal discharge, no history of urinary tract infection, and none of the patients had any complaints regarding sexual function.

Table 3: Follow-up.

Case	Recurrence	Re-intervention	Restoration (weeks)	Follow-up (months)
1	No	Na	12	182
2	Yes	Fourteen weeks later, left rectus abdominis interposition	10	114
3	No	Na	10	116
4	No	Na	8	108
5	No	Na	10	44

Na: not applicable.

Discussion

Post-hysterectomy recto-vaginal fistula is an iatrogenic condition characterized by abnormal communication between the injured rectum (cautery burn, unrecognized perforation, etc.) and the healing vaginal vault. PH-RVF is invariably a high recto-vaginal fistula that has a distinct etiopathogenesis, clinical course, and management considerations compared to those resulting from other etiologies. The

available literature on PH-RVF is sparse (Table 4) [3, 5-12]. The current study specifically addresses this subgroup. The relevant management issues of this infrequent condition are discussed. First, when is the appropriate time for repair? Second, are there any issues in the waiting period that need addressing? Third, what should the preoperative evaluation be for these patients? And finally, what is the best approach to the management of PH-RVF?

Table 4: Summary of reported PH-RVF cases.

Series	Year	N	Post-surgical	PH-RVF	Evaluation	Surgery for PH-RVF	Recurrence
Ayhan <i>et al.</i>	1995	36	36	?	Clinical exam	?	?
Schwenk <i>et al.</i>	1997	1	1	1	Colonoscopy & barium enema	Laparoscopic low anterior resection and anastomosis	0
Malhotra <i>et al.</i>	2002	1	1	1	Clinical exam & barium enema	Laparotomy, fistula take-down & primary closure	0
Palanivelu C <i>et al.</i>	2007	2	2	2	Vaginography, methylene blue exam	Laparoscopic fistula take-down, primary closure with omental interposition	0
Van der Hagen <i>et al.</i>	2011	40	18	?	Methylene blue exam	?	?
Lambertz <i>et al.</i>	2015	62	15	?	Unclear	?	?
Corte <i>et al.</i>	2015	79	25	0	Not reported	NA	NA
Mukwege <i>et al.</i>	2016	10	6	0	Clinical exam	NA	NA
Zlouziou <i>et al.</i>	2020	11	10	1	Clinical exam	Martius flap repair	0
Current series	2021	5	5	5	Clinical exam, colonoscopy, CECT with rectal contrast	Laparoscopic fistula take down, primary closure with/without tissue interposition	1

N: Number of patients; NA: Not applicable; PH-RVF: Post-hysterectomy rectovaginal fistula.

I When is the Appropriate Time for Repair?

In our patients, the median time from injury to repair was 12 weeks. One of our patients (case 5) underwent repair after 336 weeks. She was managed conservatively elsewhere in the hope of a spontaneous closure. There is limited literature on the timing of repair in PH-RVF. Repair around 12 weeks gives adequate time for the scar tissue to mature and the inflammation to subside. We do not anticipate a PH-RVF to resolve spontaneously and urge formal closure in every case.

II Are there any Issues in the Waiting Period that Need Addressing?

Vaginitis and recurrent urinary tract infections (UTI) are significant issues associated with recto-vaginal fistulas in general [14]. One would expect these problems even in post-hysterectomy fistulas. However, none of our patients had a recurrent UTI. There are two plausible explanations for the above observation: First, unlike obstetric fistulas,

post-hysterectomy fistulas do not have a vesico-vaginal fistula component; second, diversion of the faecal stream away from the fistula, which was achieved in all of our patients.

Wilson *et al.* reported significantly higher symptoms of depression, post-traumatic stress disorder, and somatic complaints in patients with obstetric fistula [15]. Likewise, Goh *et al.* screened 68 patients with genital tract fistulas and found that 97% of this group had mental dysfunction [16]. Therefore, the other possible issues one would have to address when managing a patient with post-hysterectomy are sexual dysfunction, depression, and social isolation.

III What should the Preoperative Evaluation be for these Patients?

PH-RVF may not be clinically apparent on the rectal or vaginal examination given the higher location. They may be visualized by sigmoidoscopy as part of the initial workup. There is a paucity of data

on preoperative imaging for recto-vaginal fistulas in general, and studies on high rectovaginal fistula have not specifically dealt with this topic. Imaging examination is done with rectal contrast CT, MRI, or endoscopic ultrasound [17, 18]. We prefer to do a CT with rectal contrast to delineate the fistula. Additionally, it helps in preoperative surgical planning. In contrast to the reports of other high recto-vaginal fistulas, none of our patients required a resectional procedure [11]. This may be due to thorough pre-operative assessment and surgical planning using rectal contrast CT pelvic imaging.

IV What is the Best Approach to the Management of PH-RVF?

The 2016 guidelines of the American Society of Colorectal Surgeons for rectovaginal fistula treatment strongly recommended use of an abdominal approach for high fistula, primary closure for simple fistula, and tissue interposition for recurrent or complex fistulas [19]. However, there are a few centers that think resection and anastomosis is the best way to treat high fistulae [20]. Given that all of our patients had effective repairs without the need for resection, the latter option should be reserved for a selected group of patients, possibly those who have a recurrence.

Conclusion

PH-RVF are high fistulae that are rare following elective hysterectomy but result in major morbidity. Faecal diversion prior to repair is a requirement. Repair needs to be undertaken after 12 weeks of faecal diversion. CT with rectal contrast provides critical information and is an important tool for planning surgical repair. Stoma closure must follow documented fistula closure on CT imaging with rectal contrast. With adequate preoperative planning, laparoscopic primary closure with or without tissue buttress is feasible, safe, and has a favourable long-term outcome.

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Conflicts of Interest

None.

Availability of Data and Materials

All the data regarding the manuscript is available on request.

Author Contributions

All authors are in agreement with the content of the manuscript. Conception: Srikanth Gadiyaram; Drafting of the article: Murugappan Nachiappan, Srikanth Gadiyaram; Critical review and editing: Srikanth Gadiyaram, Murugappan Nachiappan; Final approval: Srikanth Gadiyaram, Murugappan Nachiappan; Accountability: Srikanth Gadiyaram, Murugappan Nachiappan.

Abbreviation

CT: Computed Tomography

MDCT: Multi-Detector Computed Tomography

MRI: Magnetic Resonance Imaging

PH-RVF: Post-Hysterectomy Recto-Vaginal Fistula

UTI: Urinary Tract Infections

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