

Management of Malignant Vaginal Fistulas: Suggestion of a Novel Technique

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ABSTRACT

Objective: This study was performed with the aim to evaluate the results of the treatment of vaginal fistulas caused by pelvic malignancy and to present a new surgical technique.

Materials and methods: In this retrospective study, patients with vaginal fistula who have been treated in Ghaem and Omid Hospitals of Mashhad University of Medical Sciences from 2004 to 2020 were studied. The inclusion criteria were the patients whose fistulas were caused by malignant neoplasia with pelvic organ origin. The patients with fistulas caused by other causes were excluded from the study. Patients' information was collected from the electronic records and the hospital archives and also the information recorded by the surgeon.

Results: Out of 26 patients with vaginal fistula caused by pelvic malignancies, 18 cases had enterovaginal fistula. Cancer of cervix (11 cases) was the most prevalent cancer. Time interval between the incidence of fistula and the onset of the disease was 43.5 months. About 16 patients had a history of radiotherapy before the onset of the fistula, and 23 cases had undergone surgery before the onset of fistula. About 11 patients were treated with resection, 8 patients with ostomy, and 5 with fistulized loop bypass.

Discussion and conclusion: In cases of extensive pelvic involvement with a tumor, it is recommended to use intestinal bypass in fistula site with the technique provided in this article, since it controls the symptoms of the patient and has limited complications.

Keywords: New technique, Outcomes, Pelvic malignancy, Vaginal fistula.

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INTRODUCTION

Vaginal fistulas caused by pelvic malignancies often result in the excretion of gastrointestinal secretions from the vagina, which is referred to as vaginal fistula. Vaginal fistulas cause distressing symptoms. These symptoms, which depend somewhat on the type of fistula, include vaginitis, feeling of gas passing from vagina, stool and urine excretion of the vagina, and some degree of incontinence and severe itching.¹ The types of vaginal fistulas include rectovaginal, anovaginal, colovaginal, enterovaginal, vesicovaginal, ureterovaginal, and uterovaginal.² Several causes have been reported for these fistulas, the most common of which are obstetrics complications, bowel inflammatory disease, postoperative complications, pelvic malignancies, infections, trauma, and radiotherapy.³

In patients with gynecologic malignancies, vesicovaginal and enterovaginal fistulas are more common. In these patients, a fistula can be the result of a primary tumor invasion or recurrence of the tumor or a complication after surgery or radiotherapy.⁴

In order to diagnose fistula, in addition to clinical history and examination, different methods based on the location of fistula are used. Anoscopy, vaginography, ureterography, cystoscopy, and endoluminal ultrasound are of the methods, but the diagnostic method for complex fistulas is MRI and for those who do not tolerate it is CT scan.⁵

Since the spontaneous repair of these fistulas is very rare,⁶ several surgical and nonsurgical treatments have been used. Treatment of vaginal fistulas also varies according to the type, size, and location of fistula. Different surgical procedures have been used, from simple resection to pelvic exenteration, depending on the case.⁷ The new percutaneous methods with successful short-term results are also presented.⁸ In patients who do not tolerate

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general anesthesia or have multiple associated diseases, or have delayed complications of radiotherapy, palliative therapy with diversion of bowel contents may be the only possible treatment for the fistula.⁹ However, evidence-based randomized clinical trials which determine appropriate treatment for vaginal fistula are not still performed.¹⁰

The aim of this study was to investigate the surgical procedures performed and their results in patients with fistula in the field of gynecologic malignancies. Meanwhile, a new method has been proposed in cases of complicated fistula in end-stage patients.

MATERIALS AND METHODS

In this retrospective study, patients with vaginal fistula who have been treated in Ghaem and Omid Hospitals of Mashhad University of Medical Sciences from 2004 to 2020 were studied. The inclusion criteria were the patients whose fistulas were caused

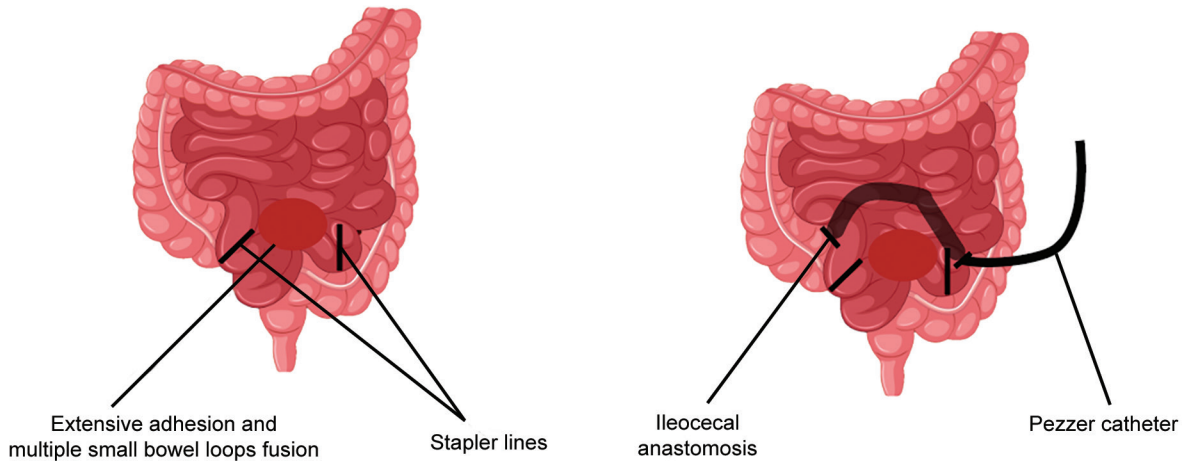


Fig. 1: Schematic design of novel intestinal fistula bypass technique. Note the location of the Pezzet drain

by malignant neoplasia with pelvic organ origin. The patients with fistulas caused by other causes were excluded from the study. Patients' information was collected from the electronic records and the hospital archives and also the information recorded by the surgeon. This information includes demographic data, diagnosis of primary tumor, tumor pathology, time of fistula symptoms occurrence, type of fistula, and type of treatment and treatment outcome.

Patients were admitted to a single surgeon for performing diagnostic and therapeutic procedures, and all surgical procedures were performed by the same surgeon.

All patients have undergone clinical examination and additional diagnostic tests were performed including simple graphy, graphy with contrast, ultrasound, and CT scan.

Medical treatment was performed for patients with undesirable conditions who had no possibility to do surgery, and laparotomy was performed in cases leading to surgery. During surgery, general examination of the abdomen and pelvis was done, the location of fistula was assessed, and the type of operation was decided according to the findings. The surgical procedures performed consisted of the initial anastomosis of the fistulized loop, resection with Hartmann colostomy, enterostomy or deviant colostomy, and fistulized loop bypass. In patients who had extensive invasion of tumor to the intestines, it was not possible to do dissection and releasing, so an ostomy was done in the most distal part of the gastrointestinal tract before the fistula.

There was extensive adhesion and actually multiple small-bowel loops fusion in the pelvic cavity between the intestine and pelvic organs in 4 cases. Our new surgical technique was employed in these cases. In this circumstance, it was impossible to dissect tissues without inadvertent enterotomies. So, a small bowel was cut proximal to the fusion site with a linear cutter stapler. The proximal end reanastomosed distal to fistula (ileoileal or ileocecal). A Pezzet drain was inserted into the small bowel distal to fusion and brought out through a stab wound in the abdominal wall. If there was uncertainty about distal obstruction in the rectum, a diversion colostomy was created (Fig. 1).

RESULTS

Twenty-six patients with vaginal fistula from pelvic malignancies were identified. The underlying malignancies included 10 cases of

Table 1: Underlying malignancy and patient's age

Underlying malignancy	Mean age (year)	Age range (year)	N (%)
Ovarian cancer	49.5	30–70	10 (38.4)
Cervical cancer	57.5	42–63	11 (42.30)
Endometrial cancer			3 (11.53)
Rectal adenocarcinoma	57.3	55–62	1 (3.84)
Bladder cancer			1 (3.84)
Total	53.8	30–70	26 (100)

ovarian cancer, 11 cases of cervical cancer, 3 cases of endometrial cancer, 1 rectal cancer, and 1 urinary bladder carcinoma (Table 1). Patients were referred immediately or with delay after fistula. The interval between the incidence of fistula and the onset of the disease, which was defined as the time of the first therapeutic intervention, was 1–204 months (mean of 43.5 months). In one patient, the first presentation of tumor was vaginal fistula. The presentation of fistula was before surgical operation in 17 cases and was followed by surgery in 8 cases: 5 of these cases were after the surgery of ovarian cancer recurrence and 3 after hysterectomy of endometrial cancer.

The symptoms of the patients were fecal excretion from the vagina in 17 cases, excretion in the urine in 5 cases, and urine excretion from the vagina in 1 case. There were also 3 cases of percutaneous fistulas. The underlying malignancy and age of the patients are presented in Table 2. The type of fistula based on the underlying malignancy is presented in Table 2. The complex ileorectovaginal fistula was observed in one patient and also complex ileovesicovaginal fistula in one case. In 22 cases, before the presentation of fistula, there was a history of bilateral hysterectomy and/or oophorectomy, and only 3 cases of cervical cancer patients have received initial treatment with radiotherapy. In 14 patients, radiotherapy was performed prior to the onset of fistula, including 9 patients with cervical cancer and 3 with ovarian cancer, and 2 with endometrial cancer.

In terms of pathology results, in patients with ovarian cancer, the results of pathology were cystadenocarcinoma in 8 cases, granulosa cell tumor in 1 case, and Sertoli–Leydig cell tumor in 1 case. The interval between onset of the disease and presentation of fistula in the case of granulosa cell tumor was 17 years and

Table 2: Types of fistulas based on underlying malignancy

	Vesicovaginal	Ileovesicovaginal	Enterocutaneous	Ileovesical	Rectovaginal	Ileovaginal
Ovarian cancer	10	–	1	2	2	3
Cervical cancer	11	–	1	–	2	5
Uterine cancer	3	–	–	1	–	1
Rectal cancer	1	–	–	–	1	–
Bladder cancer	1	1	–	–	–	–
Total	26	1	2	3	4	9

Table 3: Type of surgery based on the type of fistula

Type of fistula	Medical treatment		Diverting ostomy		Resection	N (%)
	Bypass	–	–	–		
Ileovaginal	1	3	2	2	2	9 (34.6)
Rectovaginal	–	–	3	4	4	7 (26.9)
Ileovesical	–	1	3	1	1	4 (15.3)
Enterocutaneous	1	–	–	2	2	3 (11.5)
Ileovesicovaginal	–	1	–	1	1	2 (7.6)
Vesicovaginal	–	–	–	1	1	1 (3.8)
Total	2	5	8	11	11	26

in the case of the Sertoli–Leydig cell tumor was 8.5 years. If we exclude these two cases, the mean time interval between onset of the disease and presentation of fistula in ovarian cancer was 38.2 months (7–120 months), in cervical cancer was 22.1 months (1–44 months), and in endometrial cancer was 39 months (36–42 months).

Three cases had gastrointestinal fistula as iatrogenic. The first case was a 52-year-old woman who had undergone uterine cancer surgery at another center and was referred to the center due to a colon fistula at the incision. Laparotomy was performed for the patient that multiple lacerations were observed in the rectosigmoid region. According to the report of the first surgeon, the surgery has been associated with adhesion and difficulty of dissection. Partial colectomy, Hartmann’s colostomy, as well as Bogota bag in the abdominal wall were performed for the patient. Finally, the colostomy was closed, and the patient’s general condition is good up to 6 years after the operation. The second case was a 64-year-old woman with a history of Sertoli–Leydig cell tumor, in which laparotomy was done in another center due to the recurrence of the tumor, and because of severe adhesion of the intestines, no special procedure was performed. Following this, the patient was referred to our center with a complaint of a narrow intestinal fistula to the abdomen wall. Laparotomy was again performed, resection of fistulized loop anastomosis was done, and the patient had good general condition after 7 months of operation. The third case was a 62-year-old woman with ovarian cancer recurrence that laparotomy was performed in another center, and no special procedure was performed due to utmost adhesion. She was referred to this center with an enterocutaneous fistula. The patient received medical treatment until she died after 2 months due to sepsis.

Laparotomy and surgery were used to treat the fistula in 24 patients, and the type of operation is presented in Table 3, and only 2 patients received medical treatment: one had no consent to surgical therapy and the other was unable to tolerate general anesthesia. Bypass was decided for 4 patients who had advanced disease or severe adhesion, and there was no possibility for bowel dissection and fistulized loop resection. Of these, there were

two cases of ovarian cancer recurrence and two cases of cervical cancer recurrence. The type of fistula was ileovaginal in 2 patients, ileovesical in one case, and ileovesicovaginal in one case. Of these patients, one case is still alive after about 4 years, and three died 4, 7, and 12 months after the operation.

In the follow-up of patients until doing the study, 11 cases died, 10 were alive, and follow-up was not possible in 5 cases. The average follow-up period for those who survived was 44 months (7–96 months), and the average survival time for those who died was 5.7 months (1–12 months).

DISCUSSION AND CONCLUSION

Vaginal fistula is not actually a disease, it is a symptom of a variety of diseases that cause very unpleasant conditions for patients and affects different aspects of the patient’s life. Since the accurate prevalence of the causes of vaginal fistula in scientific papers is not clear, and also the prevalence of vaginal fistulas in pelvic malignancies is not clearly determined, pelvic tumors account for less than 5% of the causes of vaginal fistulas.¹¹

In patients with gynecologic malignancy, fistula is caused by primary tumor invasion or recurrence of the tumor or can be a complication of surgery or radiotherapy.¹² In this study, 14 patients received radiotherapy before fistula was presented, of which the cause of the fistula was only due to radiotherapy in 4 cases and was associated with tumor recurrence in 10 cases. The factors that are included in the development of fistula following radiotherapy are: more advanced stage of the primary tumor, higher dose of radiotherapy, and associated cardiovascular diseases and cigarette smoking.¹³

Radiotherapy causes progressive obliterating endarteritis that leads to necrosis and degradation of mucosal surfaces.¹⁴ Some patients receive both external radiotherapy and vaginal brachytherapy, and thus vaginal fistula is more common in cervical cancer patients.¹⁵ In a retrospective study on 2,096 patients with cervical cancer during a 10-year period, 1.8% of patients complicated by fistula, all of them had already received radiotherapy.¹⁶ In this study, 22 patients had a history of surgery prior to the presentation of fistula, which had been caused by tissue damage, radiotherapy, and tumor recurrence. It is not clear that which factor was the exact cause of fistula in these patients, but the accumulation effects of these cases have contributed to the formation of fistula. The most common technical error in the literature, accidental inclusion of the posterior vaginal wall in colorectal anastomosis, was not observed in this study.¹⁷ A retrospective study of Berek et al. on 75 patients who had undergone pelvic drainage surgery for gynecologic cancer recurrence and gastrointestinal or urinary fistulas after surgery was reported in 17 cases.⁴

Vesicovaginal and enterovaginal fistulas are the most common types of fistulas associated with gynecologic malignancies.¹⁸ In this

study, enterovaginal fistulas, including ileovaginal and rectovaginal fistulas, included 61.5% of cases (16/26).

Given the low possibility of successful conservative treatment in vaginal fistulas, especially in the field of gynecologic malignancies,¹⁹ surgery is the definitive treatment for these fistulas. Of course, this treatment is performed not only due to removing the potential side effects of fistulas, such as recurrent²⁰ urinary tract infections, but also due to eliminating its destructive effects on patients' self-esteem and quality of life.²¹

There are several surgical methods for the treatment of vaginal fistula, and choosing the suitable methods, especially in patients with gynecologic malignancies, depends on the condition of fistula (simple or complex), the health status of the underlying tissues (history of radiotherapy and surgery), and the recurrence of tumor.²¹

Although most fistulas in this study were vaginal (ileovaginal and rectovaginal), but due to the complexity of the fistula or tumor recurrence, vaginal surgery was not possible, so laparotomy with abdominal approach was performed for all patients. According to the findings during surgery, resection of the involved area was performed in 11 cases. Resection with anastomosis was performed in 5 cases, partial colectomy with Hartmann's colostomy was performed in 2 cases, and also posterior exenteration without tumoral residue was done in 2 cases. One case was treated by anterior exenteration because of bladder cancer, and finally, a recurrency of rectal cancer underwent abdominoperineal resection.

In five patients with severe adhesions in the pelvic region, it was not possible to do dissection, so a bypass was performed in the manner previously described. The fistulas created in these patients are often created in the ileum terminal region. This is probably due to the proximity of this part of the intestine to the pelvic cavity. In cases of gynecologic malignancies, that generally surgery is performed on the pelvis, adhesion between the ileum and the surfaces without pelvic peritoneum, and also vaginal cuff leading to bowel entrapment in the pelvic cavity. Additionally, radiotherapy causes more damage to this fixed part of the intestine. In the same manner, tumor recurrence entraps the bowel and predisposes it to radiation. So, access to this fistula located within such a complex of viscera needs a hazardous dissection. Inevitably multiple enterotomies occur. Spillage of bowel contents contaminates the operation field and alongside with irradiated tissues results in surgical infections and abscesses.

According to the abovementioned, narrow intestinal bypass is an effective method to relieve the symptoms of the patient without causing risk or a special complication for patients. In this study, in the cases of bypass, cases of postoperative death (death within 30 days after surgery) or fistula recurrence were not observed.

Our new approach to treat complicated fistulas caused by gynecologic malignancies is simple and safe and has no significant complication for patients; we suggest this method to surgeons for treatment of this group of patients.

AUTHOR'S CONTRIBUTIONS

GM, AA, and MEP carried out data collection. AA and AM— writing: review and editing and investigation. MTRM – writing. All authors read and approved final manuscript.

Ethical Statement

The study was approved by the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran (ID: 8032363).

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