

Anastomotic-Vaginal Fistula After Colorectal Surgery

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The most feared complication of anterior and low anterior resection is anastomotic dehiscence. Although most leakages remain clinically silent, some may lead to formation of a colovaginal fistula. At the Lahey Clinic Medical Center, the records of nine patients with colovaginal fistula as a complication of colorectal surgery were reviewed to determine clinical characteristics and optimal management. The mean age was 63.7 years (range, 47–72 years). The initial indications for surgery were carcinoma of the rectum ($n = 4$), diverticular disease ($n = 3$), and closure of the colostomy after Hartmann's procedure ($n = 2$). Hysterectomy had been performed earlier in seven patients (78 percent). The end-to-end anastomosis (EEA[®]) stapling device was used in five patients, and four patients had a handsewn anastomosis. The fistula developed within 23 days after surgery and usually originated within 8 cm of the anal verge. Two patients underwent immediate diverting transverse colostomy. None of the seven patients who were initially managed medically had spontaneous closure of the fistula. High fistulas were successfully treated by colorectal resection in two patients, whereas low fistulas healed after transanal repair without colostomy in two patients. These results suggest that previous hysterectomy predisposes to development of a colovaginal fistula after colorectal surgery. Not all patients require fecal diversion. Colorectal resection for high fistulas and transanal repair for low fistulas appear to be viable options for treatment. [Key words: Complications, colonic surgery; Complications, rectal surgery; Rectovaginal fistula; Anastomotic leakage]

Fleshner PR, Schoetz DJ Jr, Roberts PL, Murray JJ, Collier JA, Veidenheimer MC. Anastomotic-vaginal fistula after colorectal surgery. *Dis Colon Rectum* 1992;35:938–943.

Improved surgical technique, particularly the increasing use of intraluminal circular stapling devices, has promoted safe execution of anterior and low anterior resection. Nonetheless, the surgeon must be cognizant of all potential postoperative complications and their appropriate management. Although the rational approach to common

problems, such as anastomotic leakage and pelvic abscess, has often been described in the literature,¹ little is known about the uncommon complication of anastomotic-vaginal fistula. To determine the clinical characteristics and optimal management of this condition, the records of nine patients with postoperative colovaginal and rectovaginal fistula were reviewed.

METHODS

The charts of all patients with colovaginal or rectovaginal fistula treated at Lahey Clinic Medical Center over the 10-year period ending December 1990 were reviewed. Only patients whose fistula developed as a consequence of colorectal surgery were included. Patients whose fistula resulted as a complication of radiation therapy, malignancy, anorectal surgery, or Crohn's disease were excluded from analysis.

Age, primary indication for resection, nature of previous operation, use of preoperative adjuvant radiation therapy, method of colorectal anastomosis, postoperative complications, and pathologic findings of the resected colorectum were recorded for all patients. Physical characteristics of the fistula and the time to diagnosis and subsequent management were also tabulated. A fistula was classified as high when it originated more than 8 cm from the anal verge and as low when the rectal opening was located below this level. Values are expressed as mean \pm SEM.

RESULTS

Of the 3,506 patients who underwent anterior or low anterior resection during this 10-year period, postoperative vaginal fistula developed in nine patients (0.3 percent) who composed the study group. Mean age at time of initial surgery was 63.7 \pm 3.1 years (range, 49–72 years). The most com-

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mon indication for colorectal resection was carcinoma of the rectum, whereas three patients had surgery for complicated diverticular disease (Table 1). In the two patients with diverticular colovaginal fistula, the vaginal defect was deliberately not sutured closed. Two patients underwent colostomy closure after Hartmann's resection. Only four of the nine patients had their index operation performed at the Lahey Clinic Medical Center.

All four patients with carcinoma of the rectum underwent low anterior resection and had a single preoperative dose of 500 cGy of radiotherapy delivered within 24 hours of surgery. Seven patients had previously had hysterectomy for benign disease. None of the patients was taking exogenous estrogen. Five patients had the anastomosis created with the end-to-end anastomosis (EEA[®]; U.S. Surgical Corporation, Norwalk, CT) stapler. In one patient, a staple misfire necessitated extensive reinforcement with sutures. Of the four patients whose anastomosis was handsewn, one had an anterior defect observed and repaired at the time of surgery.

Except for the development of the vaginal fistula, only one patient had an additional postoperative complication. After anterior resection and transverse loop colostomy to treat a colovaginal fistula resulting from diverticulitis, a pelvic abscess developed, eventually draining into the vaginal apex. Excluding this patient, no patient had a prolonged febrile course, diarrhea, ileus, or pelvic discomfort to suggest anastomotic leakage.

Review of the pathologic findings showed that three of the four carcinomas were bulky tumors with transmural invasion. The fourth patient had an Astler-Coller Stage B1 tumor. Microscopic evaluation of all specimens, including the rings of

tissue from the EEA[®] stapler, did not reveal vaginal tissue.

All patients presented with vaginal flatus, discharge, or both, causing some perineal discomfort and difficulty with hygiene. The fistula was observed usually within a mean of 23 ± 8.7 days after surgery (range, 7–90 days), arose from the anastomotic site in all patients, was identified by sigmoidoscopy in six patients and by contrast studies in three patients (Fig. 1), and was located 7.7 ± 1.5 cm from the anal verge (range, 4–18 cm). Two high and seven low fistulas were treated. The anastomotic defect ranged from 7 to 10 mm in diameter, although in two patients no defect could be appreciated. Two of the five anastomoses created with the EEA[®] stapler were found to have staples within the fistulous tract.

Management and outcome of the patients are summarized in Figure 2. Two patients with carcinoma of the rectum underwent fecal diversion 13 and 19 days after surgery. The low fistulas remain unhealed with the colostomy in place. None of the seven fistulas initially managed with bulking agents ($n = 7$) and antidiarrheal medications ($n = 5$) had closed after about 12 months of conservative therapy. Although one patient is minimally symptomatic taking bulking agents, six of the seven patients have required operative intervention. Two patients with high fistulas underwent rectosigmoid resection and primary anastomosis at 9 and 24 months after the index operation. Histopathologic findings of the two specimens revealed focal ulceration with acute and chronic inflammation. Although both fistulas healed, an anastomotic stricture requiring end sigmoid colostomy subsequently developed in one patient. Of the remaining four patients, one underwent proctectomy 24 months after the initial operation and one had end sigmoid colostomy 9 months after surgery. Two patients with low fistulas have been treated successfully with transanal procedures. In one patient, the tract was debrided, followed by mobilization and primary closure of the rectal opening. In the second patient, the anastomotic area was dissected off the vagina, and a plane was developed between the vaginal wall and proximal colon. A segment of full-thickness colon was excised, and the proximal bowel was sewn to the rectum. The vaginal side of the fistula was left open to achieve drainage. The fistula healed without colostomy in both patients.

Table 1.
Indication for Index Operation

Indication	Number
Rectal carcinoma	4
Diverticular disease	
Colovaginal fistula	2
Sigmoidectomy after diversion and drainage of diverticular abscess	1
Colostomy closure	
Hartmann's procedure for sigmoid endometrioma	1
Hartmann's procedure for recurrent sigmoid carcinoma	1

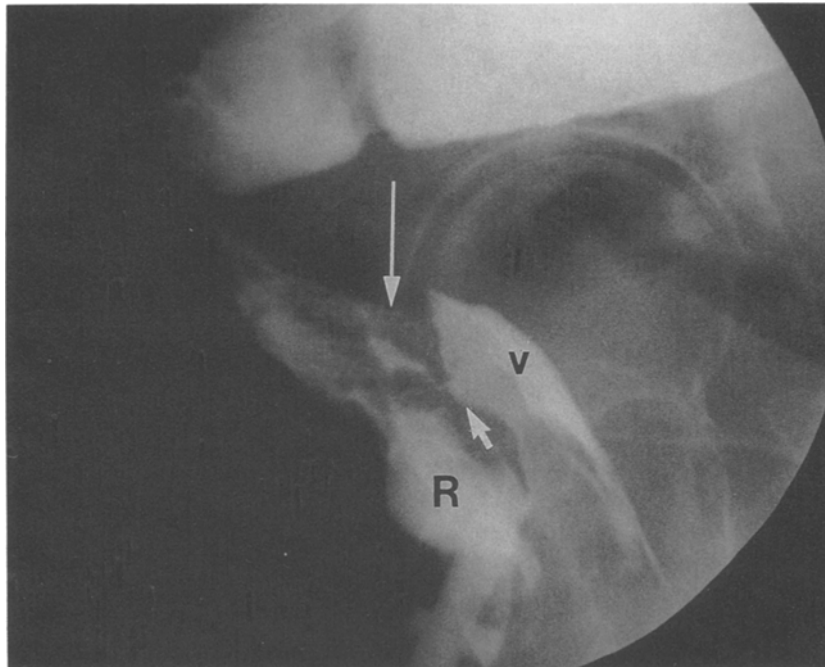


Figure 1. Fistula between the rectum (R) and vagina (V) demonstrated by barium enema study. Note anastomotic staples (long arrow) in the region of the fistula (short arrow).

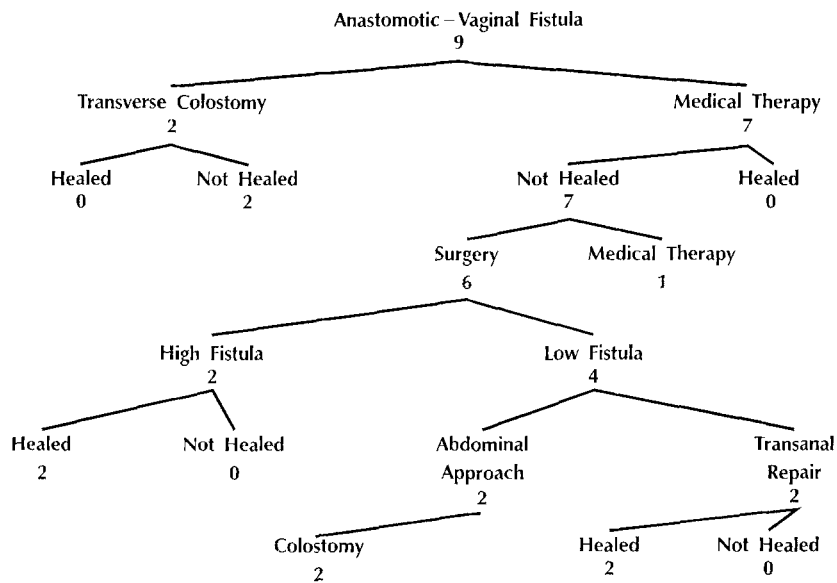


Figure 2. Treatment and outcome of patients with anastomotic-vaginal fistula are shown.

DISCUSSION

Most acquired fistulas between the distal alimentary tract and vagina result from obstetric injury, infection of the anal glands, pelvic irradiation, malignancy, diverticular disease, or inflammatory bowel disease. However, a minority of these fistulas develop after operations involving the sigmoid

colon and rectum.² To our knowledge, only two papers^{3,4} in the gynecologic literature have specifically referred to this occurrence. Lescher and Pratt³ found only 1 of 252 (0.4 percent) rectovaginal fistulas to arise after a colorectal operation, whereas Hudson and Chir⁴ determined that 11 of 265 (4.2 percent) acquired vaginal fistulas resulted from colorectal resection with ileorectal or colo-

rectal anastomosis. Our results and the colorectal literature⁵⁻⁹ attest to the low incidence of this complication (Table 2).

The pathophysiologic mechanism underlying the development of postoperative vaginal fistulas is unclear. As suggested by other authors,^{5,6} direct incorporation of the posterior vaginal wall into the anastomosis between the proximal colon and rectum could be responsible. In this series, the fistulas were not detected until an average of 23 days after operation. Furthermore, none of the specimens for pathologic study contained vaginal tissue, including the donut EEA® rings. These observations minimize the importance of this possible pathophysiologic source. Rather, leakage at the colorectal anastomosis with tracking to the vaginal wall is more plausible. Although one patient was thought to have anastomotic leakage, most leakages remain subclinical.¹⁰ Anastomotic leakage may result in a perianastomotic collection that dissects along a path of least resistance, namely, a defect in the vaginal wall. We believe that the vaginal wall is damaged frequently during operations in the pelvis, particularly in the elderly in whom the relative lack of estrogen produces a thin atrophic vaginal wall. None of the patients was taking exogenous estrogens.

Hysterectomy may predispose to anastomotic-vaginal fistula formation. Hudson and Chir⁴ reported on 11 patients with postoperative colorectal-vaginal fistula, three of whom had had hysterectomy. Takedown of dense adhesions between the anterior rectal wall and vaginal cuff that develop after hysterectomy may result in injury to the vaginal wall and predispose to development of an anastomotic fistula when anastomotic leakage occurs.

With knowledge of the pathophysiologic findings underlying the development of an anasto-

motivic-vaginal fistula, certain operative maneuvers may reduce the incidence of this complication. Meticulous dissection of the rectovaginal septum must be carried out with prompt suture repair of all vaginal injuries. In addition, stapled circular anastomoses should be positioned posteriorly with respect to the rectal staple line.

Our observation that four (44 percent) of the patients had received low-dose preoperative radiation therapy is difficult to interpret. Large prospective trials¹¹⁻¹³ examining this adjuvant treatment have yet to report on this postoperative complication. Perhaps, these data reflect that three of the four patients had bulky rectal carcinomas and that, in an attempt to gain wider tumor clearance, the vaginal wall was damaged.

The symptoms associated with colovaginal or rectovaginal fistula, namely, feculent vaginal discharge, recurrent or chronic vaginitis, and passage of flatus or stool through the vagina, are unacceptable. Initial management should be nonoperative. The use of bulking agents and antidiarrheal drugs may permit abatement of inflammation and edema in local tissues to increase the chances for successful repair. However, in contradistinction to some obstetric vaginal fistulas,¹⁴ these measures should not be expected to result in closure of the fistula because none healed with conservative treatment alone. These facts concur with the opinions of Eden,¹⁵ who in 1914 recognized that spontaneous closure of a rectovaginal fistula secondary to pelvic abscess involving both the rectum and vagina almost never occurs. Notwithstanding these observations, other authors^{4,8} have reported high rates of spontaneous healing of vaginal fistulas after abdominal or pelvic operations. Hudson and Chir⁴ observed a 63 percent incidence of closure, whereas Antonsen and Kronborg⁸ demonstrated that all four patients in whom rectovaginal fistula developed after low anterior resection were treated with fecal diversion and eventually underwent closure of the colostomy. However, the former study⁴ included patients with vaginal fistulas after gynecologic operations, and the latter study⁸ did not comment on whether any additional local procedures were performed. With these considerations in mind, we believe that spontaneous closure of an anastomotic-vaginal fistula is unlikely.

Little is known about optimal surgical management of patients with anastomotic-vaginal fistulas, although abdominal or perineal approaches may be considered. Temporary fecal diversion controls

Table 2.
Incidence of Vaginal Fistula After Colorectal Surgery

Study	Year	Number of Patients	Number of Fistulas (%)
Heald <i>et al.</i> ⁵	1981	100	1 (1.0)
Smith ⁶	1981	3,594	3 (0.1)
Leff <i>et al.</i> ⁷	1982	106	2 (1.9)
Antonsen and Kronborg ⁸	1987	178	4 (2.2)
Varma <i>et al.</i> ⁹	1990	30	1 (3.3)
Current study	1991	3,506	9 (0.3)
Total		7,514	20 (0.3)

symptoms but is not curative and usually will be permanent without surgical repair to the fistula. Primary abdominal repair of the fistula can be effected by sleeve resection of the old anastomosis, by suturing the vaginal defect, and by creating a new colorectal anastomosis. This repair can be secured with interposition of an omental patch between the colorectal suture line and the vaginal closure site. Two of our patients were treated successfully in this manner, and other authors^{16,17} have had experience with this approach for other types of complex rectovaginal fistulas and find it satisfactory. It appears that the high anastomotic-vaginal fistula is best approached in this manner.

Low anastomotic-vaginal fistulas, like other low rectovaginal fistulas, may be managed with a number of techniques, including resection with coloanal anastomosis, transvaginal repair, and transanal repair. Parks and associates¹⁸ described the successful use of a per anal anastomosis of the colon to the anal canal for patients with traumatic and postirradiation rectovaginal fistulas. Although they reported no complications, most studies¹⁹ addressing the coloanal procedure have documented appreciable postoperative morbidity, principally related to incontinence. Transvaginal repair entails full-thickness excision of the fistula and layered closure of the resulting defect. Lescher and Pratt³ used this approach in 49 patients with traumatic rectovaginal fistulas, yet they had a high recurrence rate. Perhaps use of the levator muscles as intervening tissue between the rectal and vaginal suture lines, as recently described by Bauer and colleagues²⁰ for the management of rectovaginal fistula in Crohn's disease, could improve these results.

Transanal repair of rectovaginal fistulas can be accomplished by the various methods of sliding flap advancement or layered closure.² One group of surgeons²¹ reported uniform success using the latter approach in 35 patients. They excised the fistula, repaired the muscle defect in layers, and covered the suture line with a small mucosal flap. In both patients in our series who underwent this procedure, healing occurred without complication. The vaginal wall must be separated from the rectum until a point well above the level of the fistula. This separation ensures that a soft, yielding rectum can be used to close the rectal opening without tension. Furthermore, the vagina should be left open to facilitate drainage. As in the repair of other

types of rectovaginal fistulas, protective colostomy was not used and, according to some investigators,²² is often unnecessary.

CONCLUSIONS

Anastomotic-vaginal fistulas appear to arise from dehiscence of the anastomosis with subsequent tracking into the vagina. Medical therapy can be pursued, but the fistula is unlikely to close without surgery. Not all patients require fecal diversion. Rather, colorectal resection for high fistulas and transanal repair for low fistulas are possible methods of treatment.

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