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Colovaginal Fistulas – Presentation, Evaluation and Management

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Abstract

Objective—The objective of this study was to review a single institution's experience with colovaginal fistulas to provide guidance towards identification and management of this problem.

Methods—Patients with colovaginal fistulas treated by two senior surgeons between January 1, 1990 and June 31, 2011 were identified. A retrospective chart review was then performed to determine presenting characteristics and history, evaluation for the fistulas, and treatment outcomes.

Results—19 patients were identified. The average age was 63.5 years and median parity 2. 37% complained of flatus per vagina, 89% reported stool per vagina, and 68% noted vaginal discharge. 95% had previously undergone hysterectomy. The fistulas were identified at the left vaginal apex in 90% of the subjects. Self-reported history and/or operative findings suggested diverticulitis as the most common etiology (79% of the subjects). All subjects underwent sigmoid resection with primary anastomosis, with complete symptom resolution in 84%.

Conclusions—Patients with colovaginal fistulas commonly present for primary evaluation by gynecologists. A triad of symptoms and history should trigger a high index of suspicion for colovaginal fistulas: 1) Complaints of stool or flatus per vagina or foul-smelling vaginitis resistant to treatment; 2) Previous hysterectomy; and 3) History of diverticulitis. The fistulas can often be visualized on speculum examination at the left vaginal apex. Rolling the patient from left-to-right lateral decubitus positions during a contrast enema study can improve its sensitivity. Repair of colovaginal fistulas via rectosigmoid resection and primary reanastomosis is safe and effective. We recommend multidisciplinary management involving colorectal surgery and gynecology.

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Keywords

Vaginal Fistula; Digestive System Fistula; Diverticulitis

Introduction

A fistula is an abnormal communication between two epithelialized surfaces. Colovaginal fistulas, although rare, can result in significant emotional, interpersonal and financial consequences.¹ These fistulas occur most commonly in women who have previously undergone total hysterectomy.² There is wide agreement that surgical management is the most appropriate treatment of digestive tract-vaginal fistulas,³ with colovaginal fistulas representing the third most common lower reproductive tract fistulas surgically repaired.⁴

The current literature supports a multidisciplinary approach to the workup and treatment of colovaginal fistulas.¹ However, there is limited information about the ideal diagnostic evaluation and management for patients presenting with this problem. The goal of this study was to review our experience at a tertiary referral institution with the diagnosis, evaluation, and treatment of women presenting for evaluation and treatment of colovaginal fistulas.

Materials and Methods

This is a University of Michigan School of Medicine Institutional Review Board-approved retrospective chart review (IRBMED #HUM00050784). Medical records for two senior surgeons (D.E.F. and R.E.B.) were obtained for patients with International Classification of Diseases, Ninth Revision (ICD-9) codes supportive of colovaginal fistulas (619.1 and 619.9), along with Current Procedural Terminology (CPT) codes supportive of fistula repairs (46270-46320, 57300, 57305, 57307 and 57308). Waiver for informed consent was obtained from the IRB.

Two authors (M.B.B. and N.K.) independently reviewed the charts to identify patients that underwent evaluation and/or treatment of colovaginal fistulas. Women with inflammatory bowel diseases were not included in this review since their etiology, presentation, and treatment are usually quite different. Details about the patients' demographics, medical and surgical histories, presentation for care, work-up for the fistulas, surgical treatment, and postoperative courses were identified and stored in a Microsoft Excel database.

Results

19 patients were evaluated and treated for colovaginal fistulas from 1990 through 2011. Demographic characteristics of these patients are presented in Table 1. 36.8% (n = 7) reported flatus per vagina, 89.5% (n = 17) reported stool per vagina, and 68.4% (n = 13) complained of persistent vaginal discharge. The interval between the patients' hysterectomy and presentation for fistula was a median of 19 years, with range 1 – 39 years. The majority of the patients (89.5%, n = 17) were initially referred to an obstetrician-gynecologist for evaluation. Documentation about sexual activity was available for 9 patients (47.4%), with 3 (33.3%) sexually active at the time of evaluation.

A fistula was visualized on speculum exam in 78.9% (n = 15). Eight of these were identified at the left vaginal apex (53.3%). The others were documented as having a fistula seen at the apex, without description of laterality. Other diagnostic and imaging modalities used to evaluate these patients are presented in Table 2. Contrast enemas were requested with images obtained with the patients rolled side-to-side and placed in steep Trendelenburg. If the sigmoid colon was seen to move completely out of the pelvis, a colovaginal fistula could be safely ruled out. In patients with colovaginal fistula, the sigmoid colon will be seen to be densely adherent to the vaginal apex. Sometimes, but not always, contrast extravasation into the vagina will also be seen (Figure 1). 17 of the patients in this series had contrast enemas performed at our institution. Of these, the fistula was definitively identified in 8 (47.1%) and contrast was identified in the vagina (by radiography or examination) despite the fistula not being visualized radiographically in a further 3 (17.6%). No evidence of a colovaginal fistula was seen for the remaining 6 patients (35.3%). Of the 8 patients with definitive visualization of the fistula on contrast enema, two (25%) had no contrast extravasation into the vagina.

Despite the fact that only 36.8% (n = 7) had a documented history of diverticulitis at the time of clinical evaluation, the etiology of the fistula was found to be diverticulitis by imaging and intraoperative findings in 79% (n = 15). The only subject not previously having undergone hysterectomy had had cervical cancer treated with pelvic radiation, and her fistula was presumed to be due to radiation injury. The etiology for another patient was presumed to be a previously-performed mesh-augmented rectopexy. Documentation from the other two patients was insufficient to identify an etiology for the fistula.

Intraoperatively, the site of the fistulous communication was noted to be at the left vaginal apex in 90% of the patients (n = 17). All of the patients underwent sigmoid colectomy, with excision of the segment of colon harboring the fistula and distal sigmoid down to the upper rectum. 36.8% (7/19) of the surgeries were performed in the lithotomy position and 57.9% supine. For 1 case (5.3%), the surgery was begun with the patient in lithotomy but she was repositioned into lithotomy to allow for an intraoperative vaginal examination as there was extensive scarring and inflammation such that the surgeon had difficulty confirming that the fistula had been resected. A probe was therefore passed through the fistula vaginally to ensure that the adherent bowel had been resected. In all of the other cases, the fistulae were readily identified without the need for obturators or other tools in the vagina. 84.2% (n = 16) underwent primary, hand-sewn anastomosis at the time of the repair. Anastomosis was deemed not be safe to perform in 2 patients. A third patient did not have enough healthy colon to allow for a primary anastomosis. No subjects were noted to have bladder involvement. Omentum, peritoneum or epiploic fat were interposed between the sigmoid and vagina in 14/19 (73.7%) of the cases. For the remaining patients, a flap was not used as 80% (4/5) had an oostomy performed or there was no omentum available (1 patient). After surgical treatment(s), symptom resolution was ultimately documented in 78.9% (n = 15), with one patient having no follow-up documentation available.

Postoperative complications were rare. Urinary tract infection was documented in 10.5% (n = 2), cellulitis in 5.3% (n = 1), and deep venous thrombosis in 5.3% (n = 1). Anastomotic leaks were documented for 12.5% (2/16). Both had diverting ileostomies performed. One of the patients did well with no fistula recurrence after ileostomy reversal (13 month follow-up

was documented). The other patient developed a recurrent fistula that was surgically treated by colon resection 10 months after her original surgery; she had no recurrence as of 1 year later.

There were a total of 3 patients with recurrent fistulas (15.8%) in our series. One was the patient mentioned above, with the recurrence likely due to the anastomotic leak. Another had a fistula recurrence approximately 16 months after her primary repair, associated with an episode of diverticulitis, and she reported stool per vagina at her latest follow-up. The other's fistula was caused by an erosion into the vagina of Marlex mesh that had been placed for rectopexy prior to her presentation at our institution. She underwent excision of mesh and permanent sigmoid colostomy. She nevertheless developed a persistent fistula between the vaginal apex and rectal stump that was later surgically treated transvaginally. She subsequently developed a chronic presacral abscess that fistulized to the vagina, which was successfully treated by transrectal incision and drainage. As of her most recent follow-up (approximately 8 years after her initial evaluation in our system), the fistulas are healed, although she has persistent rectal discharge due to disuse colitis.

Discussion

Main Findings

Colovaginal fistula is a relatively modern disease, being largely absent from the medical literature until the mid-20th century.³ It remains relatively rare. In the twenty year period from 1979-2006, the rate of inpatient colovaginal fistula repairs was approximately 0.6 per 100,000 women.⁴ Given that nearly all of the patients in our series were initially referred to a gynecologist, it is critical that obstetrician-gynecologists be familiar and comfortable with its evaluation and treatment.

Similar to Siegle and colleagues,⁵ we have found a triad of symptoms that should raise suspicion for the presence of colovaginal fistula:

1. The patient reports stool and/or flatus per vagina or persistent foul-smelling vaginal discharge/vaginitis resistant to local or medical treatment
2. The patient has previously undergone hysterectomy
3. The patient has a history of diverticular disease, with or without a history of diverticulitis (many may not report this diagnosis)

The sequence of events leading to the development of colovaginal fistula begins with sigmoid diverticular inflammation, which typically occurs in a loop of sigmoid in the left pelvis. The inflamed sigmoid colon becomes adherent to the vaginal apex, either due to the diverticular inflammation or from previous adhesive disease. There, a small abscess can form and drain through the convenient exit site of the vagina, leading to fistula formation. Understanding this sequence of events allows for a rational and systematic approach to evaluation and treatment of colovaginal fistulas.

Strengths and Limitations

Our institution has utilized an electronic health record, including imaging reports, since 1997 and all of the subjects had complete records available. This study was therefore strengthened by the robust independent chart review by two authors. As a tertiary referral hospital, our institution is the main regional center in which women with colovaginal fistula receive treatment, so our overall volume is high. Use of both ICD-9 and CPT codes ensured reliable identification of patients treated for colovaginal fistula. All retrospective studies are subject to similar limitations, including reliance on possibly incomplete or inaccurate medical records. A further limitation of this study is that our methodology only allowed us to identify those patients who were treated for colovaginal fistulas, whereas we are unable to determine frequencies or characteristics of those with a negative workup.

Interpretation

Our review, similar to previously published series, suggests that the fistula can be identified at the left vaginal apex in nearly all patients.^{1, 3} Our experience suggests stool and/or granulation tissue is commonly seen on vaginal speculum exam at the fistula site. A lacrimal duct probe can be inserted into the presumed fistula site in the vaginal apex to confirm the presence of the fistula. The next step is to evaluate the sigmoid colon, most conveniently by contrast enema. Although previous reports suggested this imaging modality had low sensitivity for such fistulas,⁶ we have found that by rolling patients from side-to-side in steep Trendelenburg, we can confirm sigmoid adherence to the vaginal apex, and sometimes see vaginal passage of contrast if the fistula is large enough. The presence of diverticula in the sigmoid colon fixed to the region of the vaginal apex, with or without extravasation of contrast into the vagina, is sufficient to confirm the diagnosis.

Multiple tests and imaging modalities have been reported to be helpful in confirming or identifying colovaginal fistulas. Activated charcoal swallow studies can be helpful in confirming a fistula. However, our experience is that patients sometimes have difficulty determining if the charcoal is being passed from the rectum or the vagina (or both). Furthermore, a negative charcoal swallow study does not rule out the presence of a fistula. We did not routinely use fistula-protocol magnetic resonance imaging (MRI) during the time period of our case series. Although MRI has the advantage of high sensitivity and anatomic resolution, it is expensive and not readily available at all institutions. As such, the algorithm we present in Figure 2 represents an evaluation and treatment protocol that should be able to be followed at any hospital.

Although some reports suggest a substantial proportion of colovaginal fistulas are related to underlying malignancy,^{1, 7} none of the subjects in our series were found to have cancers (gynecologic or gastrointestinal) as the cause of their fistula. Nevertheless, flexible sigmoidoscopy or colonoscopy may be indicated prior to any colon resection to visualize the region of interest and rule out any possible neoplasm. If there is any suspicion of active diverticular disease, abdominal-pelvic CT is indicated to evaluate for acute inflammation or abscess.

It is widely-agreed that surgical repair is the gold-standard treatment for colovaginal fistulas.³ Resection of the communication between the bowel and vagina is critical for successful treatment. No repair is usually needed on the vagina. In fact, several studies have shown that the long-term success seems independent of repair of the defect in the vagina.^{6, 8} Our results, similar to other published series, suggest that rectosigmoid resection with primary anastomosis is both safe and effective for the majority of patients.^{1, 5, 8-9} Extrapolation from our data suggests that for patients healthy enough to undergo primary anastomosis, success rates approach 95%, although repeat surgical procedures may be necessary, especially if mesh is present. Our data also suggest that recurrence risk can be minimized by ensuring resection of all diverticular disease, and postoperative medical and dietary management to minimize recurrence of diverticulitis.

A majority of the surgeries in our extended case series were performed in the supine position, as the senior surgeon performed hand-sewn anastomoses. However, as most surgeons now use the EEA stapler and/or related devices, lithotomy positioning (with access to the anus and low rectum) is necessary. We also recommend use of the lithotomy position to allow for cystoscopy and/or ureteral stenting, placement and manipulation of vaginal obturators or probes (which can be helpful in cases with pelvic adhesions or inflammation), and vaginal and rectal examinations.

Conclusion

Colovaginal fistulas are uncommon, but not rare. We recommend that patients with suspected colovaginal fistulas are referred to multidisciplinary specialty clinics. An algorithm for evaluation and management of these patients is presented in Figure 2. Close collaboration between obstetrician-gynecologists and colorectal surgeons promotes optimal care and management of this distressing condition.

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Figure 1. Contrast Enemas

Arrows highlight colovaginal fistulas with contrast in the vagina.

Note the sharp left turn of the sigmoid colon toward the fistula.

Figure 2. Evaluation and management algorithm for patients suspected of having colovaginal fistulas

Table 1
Demographics of Patients with Colovaginal Fistulas

<u>Characteristic</u>	<u>N = 19</u>
Age (years)	63.5 ± 10.9
Gravidity	3 (0, 6)
Parity	2 (0, 6)
Current or former smoker	35.3 (6/17) ^a
Using hormonal replacement therapy	42.1 (8)
Prior hysterectomy	94.7 (18)
Hysterectomy performed abdominally	100 (18)

Data are presented as mean ± standard deviation, median (range), or percentage (n).

^a Documentation about smoking was only available for 17 patients.

Table 2
Adjunct Modalities Utilized in the Evaluation of Patients with Colovaginal Fistulas

Test	Frequency Used (N = 19)
Contrast enema	100 (19)
Flexible sigmoidoscopy	36.8 (7)
Colonoscopy	15.8 (3)
Small bowel follow-through	15.8 (3)
Upper endoscopy	10.5 (2)
CT scan	10.5 (2)
Charcoal swallow test	5.3 (1)

Data are presented as percentage (n). All studies were performed in our health system or were documented as having occurred at outside institutions.