

Medical Treatment of Colovesical Fistula

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Colovesical fistula is the most common type of fistula associated with diverticular disease of the colon. It occurs in 2% to 22% of patients with known diverticular disease.¹⁻⁴ The preferred management of colovesical fistula is primary resection with anastomosis performed as a 1-stage procedure.^{1,3} There are, however, reports of patients with this type of fistula who have been managed medically for prolonged periods of time without operative intervention.⁵⁻⁸ This article reports the case of a patient with a diverticular colovesical fistula who was considered a prohibitive operative risk but was successfully treated medically without surgery.

CASE PRESENTATION

Presenting Symptoms and Patient History

An 82-year-old man sought medical attention because of a 2-week history of dysuria. On further questioning, the patient described symptoms of pneumaturia and said that he had been passing fecal material in his urine for approximately 3 months. Previous to these symptoms, he had no nocturia, urinary frequency, or other urinary difficulty. He reported no fever, chills, hematuria, melena, hematochezia, weight loss, or pain in the abdomen, pelvis, or flank.

The patient's medical history was significant for hypertension and coronary artery disease with stable angina. His medications included enteric-coated aspirin, terazosin, and sublingual nitroglycerin.

Physical Examination

The patient had the following vital signs: oral temperature, 98.7°F (37.1°C); blood pressure, 128/86 mm Hg; heart rate, 76 bpm; respiratory rate, 14 breaths/min. The abdomen was soft and nontender, and bowel sounds were normal. There was no organomegaly or flank tenderness. The prostate was moderately enlarged but was neither tender nor nodular. The stool tested negative for occult blood. The remainder of the physical examination showed no abnormalities.

Laboratory Examination and Imaging Study

Leukocyte count was $10.4 \times 10^3/\text{mm}^3$ with a normal differential. Measurement of serum electrolyte levels and a biochemical profile showed no abnormalities. Results of urinalysis confirmed the presence of leukocyte esterase and nitrates. Urine culture grew *Escherichia coli*, *Proteus mirabilis*, and *Klebsiella pneumoniae*. A computed tomography (CT) scan of the pelvis showed a colovesical fistula of the sigmoid colon (**Figure 1**). The patient was admitted to the hospital.

Treatment and Outcome

The day after admission, the patient had a spiking fever (to a temperature of 102°F [38.9°C]). He was treated initially with an intravenous infusion of antibiotics. Blood cultures failed to grow any organisms. The patient refused surgical correction of the fistula. After the fever resolved, he was discharged home with a prescription for antibiotics (to be taken orally) and in subsequent months required intermittent antibiotic therapy.

Six months later, the patient was readmitted because of urosepsis, shock, and respiratory failure. He had a nontransmural myocardial infarction during a hypotensive period. Treatment consisted of administration of fluids, vasopressors, and antibiotics (administered intravenously), as well as mechanical ventilation. Blood cultures now grew *P. mirabilis*. During a 2-month stay in the intensive care unit, he had recurrent episodes of bacteremia. A repeat CT scan of the pelvis was obtained to identify additional pathology, but it documented only the colovesical fistula. Results of a barium enema study confirmed the presence of the colovesical fistula and multiple colonic diverticula. No

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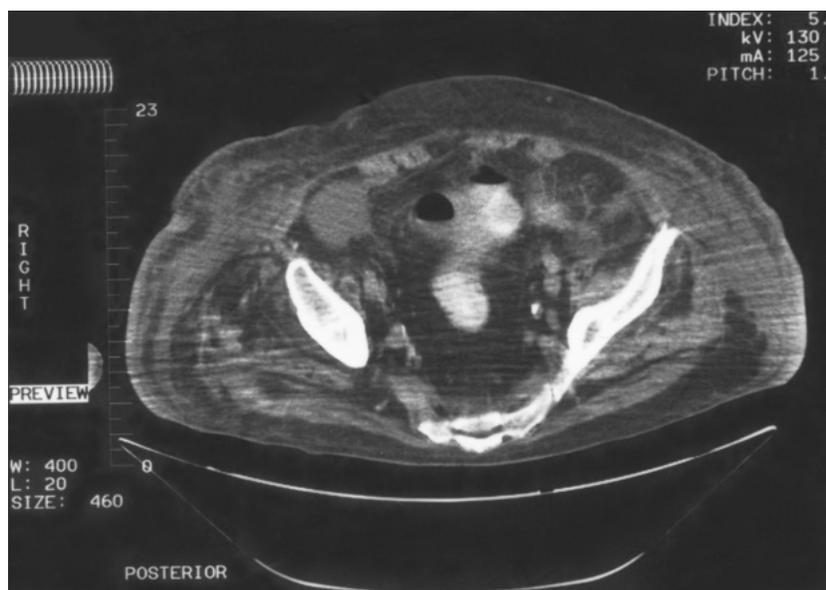


Figure 1. Computed tomography scan of the pelvis showing air and oral contrast material in the urinary bladder and a fistulous tract between the bladder and the colon.

distal stricture was noted. Cystoscopy failed to document either significant obstruction of the urinary outflow tract or a urologic malignancy.

Surgical review of the case found the patient to be an unsuitable candidate for an operation, primarily because of his recent myocardial infarction. Conservative management, which included intravenous administration of antibiotics, attention to nutritional support, and bladder decompression with a urinary catheter, was continued.

After a period of rehabilitation, the patient was discharged home. He has continued to have feculent discharge from his urinary system and to require intermittent oral antibiotics but is otherwise healthy.

DISCUSSION

Colovesical fistulas occur primarily as a complication of diverticulitis. Approximately 10% to 15% of patients requiring surgical treatment for diverticulitis have a fistula extending into the bladder.⁷ Most patients with colovesical fistula are older than 50 years.⁵⁻⁸ This type of fistula is more common in men, suggesting that the uterus affords some protection against its formation in women.^{2,9}

Clinical Presentation

The most common symptoms of colovesical fistula are pneumaturia and fecaluria, followed by abdominal pain and dysuria. In most patients, material in the fistula travels in only 1 direction: from the colon to the bladder. Rarely is there urinary leakage into the colon. On average, patients have symptoms for an average of

14 to 18 months before the diagnosis of a colovesical fistula is established.^{10,11}

Establishing the Diagnosis

The diagnosis of colovesical fistula is initially based on clinical history elicited from the patient. Results of laboratory evaluation of urine cultures usually are positive for several bowel organisms. The urine also should be inspected for cellulose fibers and for evidence of any material administered during testing (eg, charcoal, methylene blue, or contrast material from a barium enema study [Bourne test¹²]).

A CT scan, barium enema study, and cystoscopy can each independently confirm the diagnosis of a colovesical fistula. A CT scan of the abdomen demonstrates the presence of a fistula when there is air or oral contrast material in the bladder; CT scans are diagnostic in 90% to 100% of patients with a colovesical fistula.^{1,13,14} CT imaging also provides important information regarding intraluminal and extraluminal pathology.¹⁴⁻¹⁶ The sensitivity of either cystoscopy or a barium enema study in making the diagnosis of colovesical fistula is reported to be 38% to 48%.¹ Although useful in excluding other diagnoses (eg, malignancy), sigmoidoscopy and colonoscopy usually do not permit visualization of a fistula.¹

Surgical Treatment

The treatment of choice for colovesical fistulas is primary resection of the colon with anastomosis performed as a 1-stage procedure, involving either simple closure, use of an omental flap, or resection and closure

of the bladder defect.^{3,4} A diverting colostomy can attenuate the fecaluria, pneumaturia, and dysuria, but the fistula often persists. If repair of the fistula is not performed at the time of colostomy, any urine leaking from the defunctionalized colon and rectum can cause symptoms even more uncomfortable than those originally experienced.⁸

Colovesical fistulas also have been successfully treated laparoscopically.¹⁷⁻¹⁹ Laparoscopic procedures have been shown to be as safe as conventional surgery and result in superior comfort and cosmesis, a shorter post-operative stay, and less ileus. Moreover, the long-term outcomes and morbidity of patients undergoing laparoscopic procedures for gastrointestinal fistulas are the same as in conventional surgery.^{17,18} However, intra-operative conversion to a more conventional surgical approach might be necessary more often in cases involving repair of a colovesical fistula than in those involving simpler colorectal pathology.¹⁸

Medical Therapy

Colovesical fistulas sometimes must be managed conservatively. There are case reports of colovesical fistulas not treated surgically because patients either did not want the operation or were too high a surgical risk (eg, because of age and comorbid conditions).⁵⁻⁸ Once the initial toxicity of infection from a colovesical fistula subsides, the patient often returns to normal health except for persistent pneumaturia and mild urinary symptoms.²⁰ Intermittent administration of antibiotics may spare patients life-threatening episodes of bacteremia, sepsis, or renal failure.^{1,8} Some patients have been successfully treated with conservative therapy for as long as 14 years. Experimental studies on animals suggest that colovesical fistula can be tolerated well except in the presence of distal urinary or gastrointestinal obstruction.²¹

Outstanding Issues

Several issues remain to be addressed concerning the medical treatment of colovesical fistula associated with diverticulitis. First of all, the potential usefulness of withholding oral feeding to allow bowel rest and/or intravenous hyperalimentation has not been investigated. Additionally, although administration of broad-spectrum antibiotics covering a wide range of potential pathogens has been advocated in patients with colovesical fistula, questions such as how long antibiotic treatment should continue and whether intravenous or oral administration of antimicrobials is optimal have not yet been studied. Finally, the utility of advocating a large fluid intake to increase urinary output and

indwelling urinary catheter drainage for bladder decompression has not been examined in patients with colovesical fistula.

CONCLUSION

Although surgical intervention is the treatment of choice for colovesical fistula, nonsurgical therapy is a viable option in patients for whom surgery is either not advisable or desired. Patients with colovesical fistula without distal urinary or bowel obstruction can be successfully managed medically with periodic administration of antibiotics and supportive care. Alternative medical therapies have yet to be fully explored. **HP**

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