

Vesicosigmoidal Fistula Secondary to Sigmoid Colon Diverticulitis : A Case Report

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Abstract A 78-year-old man, who presented with urinary frequency, pneumaturia, and fecaluria was suspected of having an enterovesical fistula; cystoscopy and abdominal computed tomography were performed to confirm the diagnosis. Examination by barium enema established a diagnosis of vesicosigmoidal fistula secondary to sigmoid colon diverticulitis. A one-stage procedure was performed that consisted of the resection of the diseased segment of the colon and partial cystectomy. Unfortunately, he died suddenly and unexpectedly from acute respiratory failure on the 30th day following surgery. Although we could not rule out the possibility of direct involvement of the operation, the one-stage procedure can be performed, if the bowel is well prepared in advance of an elective surgery.

Key words : Vesicosigmoidal Fistula, Sigmoid Colon Diverticulitis

Introduction

The present report discusses a rare case of vesicosigmoidal fistula secondary to sigmoid colon diverticulitis.

Case Report

A 78-year-old man who had been treated with oral hyperglycemic agents for diabetes mellitus for 25 years was seen at the department of urology in our hospital. He had developed urinary frequency and pneumaturia a month prior to his examination. Ten days prior to his physical examination, he had also noticed fecaluria. Examination revealed nei-

ther fever nor abdominal tenderness. Urinalysis revealed hematuria and pyuria. The urinary culture was positive for *Enterococcus faecalis*. Cystoscopy revealed edematous changes; the orifice of the fistula was located in the posterior wall of the urinary bladder. A biopsy from the edematous lesion was negative for malignant cells. A provisional diagnosis of enterovesical fistula was made, and the patient was treated with antibiotic therapy as an outpatient until he was admitted to the department of urology for further examination three days later. On admission, the patient's physical examination had not remarkably changed as compared to his examination as an outpatient. His

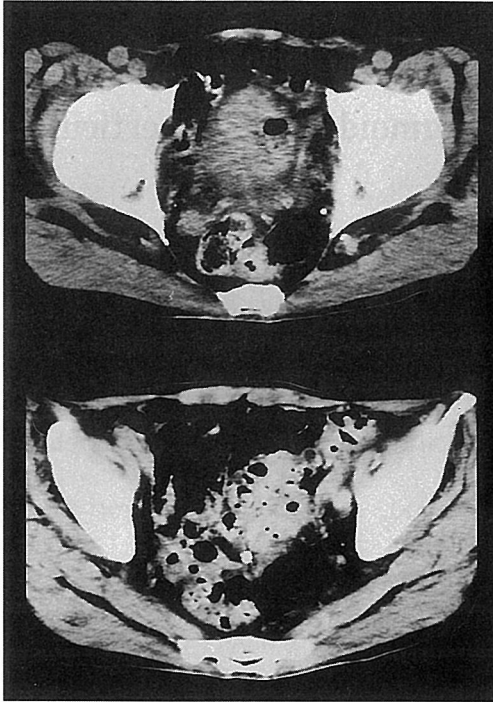


Fig. 1. Abdominal computed tomography reveals intravesical air (upper) and multiple air bubbles in the adjacent sigmoid colon (bottom).

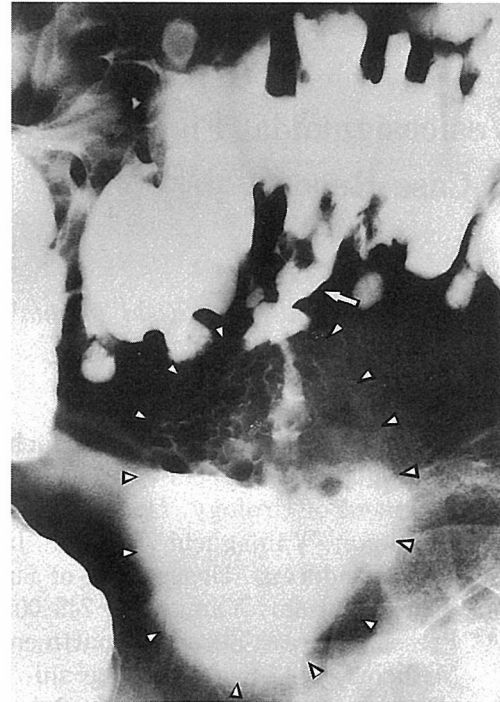


Fig. 2. Barium enema reveals diverticula of the sigmoid and descending colon and a fistula (arrow) between one of the diverticula in the sigmoid colon and the urinary bladder (arrowheads).

white blood cell count and C-reactive protein level were 7,400 cell/ μ l and 6.7 mg/dl, respectively. Excretory urograms showed a normal upper urinary tract. Cystogram showed no communication between the urinary bladder and the bowel. Abdominal computed tomography revealed intravesical air and multiple air bubbles in the adjacent sigmoid colon (Fig. 1). The latter was thought to be caused by sigmoid colon diverticula. The patient was then referred to our department for further evaluation. Barium enema demonstrated diverticula of the sigmoid and descending colon and a fistula between one of the diverticula in the sigmoid colon and the urinary bladder (Fig. 2). A preoperative diagnosis of vesicosigmoidal fistula secondary to sigmoid colon diverticulitis was made. The patient had received only total parenteral nutrition for three days following admission. A laparotomy was performed eighteen days after admission with a well-prepared bowel. Multiple diverticula were seen in the sigmoid and descending colon, and the sigmoid colon was severely adherent to the posterior wall of the urinary

bladder (Fig. 3). The vesicosigmoidal fistula was dissected, and a fistulectomy consisting of partial cystectomy and resection of the diseased segment of the colon was performed (Fig. 4). Bowel continuity was reestablished by creating an end-to-end anastomosis. The

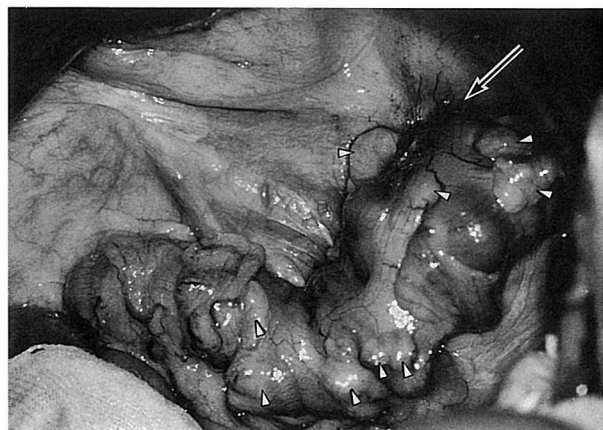


Fig. 3. Intraoperative findings show diverticula of the sigmoid and descending colon (arrows) and severe adhesion between the sigmoid colon and the posterior wall of the urinary bladder (arrowhead).

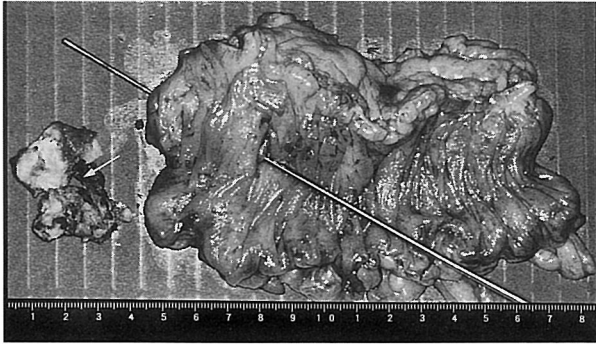


Fig. 4. Resected specimens show the diseased segment of colon, in which a sonde is inserted through the fistula, and a partially resected urinary bladder with the orifice of fistula (arrow).

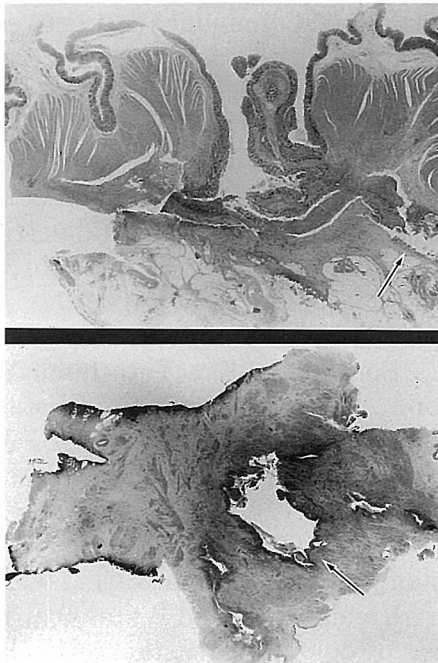


Fig. 5. Low power view of the cut specimens of the diseased segment of the colon and the partially resected urinary bladder. The fistula (arrows) was lined with granulation tissue and was surrounded by chronic inflammation (H&E, original magnification $\times 4$).

urinary bladder was closed in two layers and the adherent peritoneum was then wrapped. Histological examination of the permanent sections demonstrated multiple diverticula which consisted of mucosa and serosa, the former having herniated through the muscular coat of the bowel, namely false diver-

ticula. The fistula was lined by granulation tissue and was surrounded by chronic inflammation (Fig. 5). The patient did not develop a leakage at the colonic anastomosis or at the site of the urinary bladder suture. There were not postoperative complications such as intra-abdominal infection, ileus, and pneumonia. On the 30th day following surgery, his respiratory status suddenly and unexpectedly deteriorated and he developed drowsiness and hypotension of 80mmHg systolic. He was intubated immediately. Arterial blood gases at that time showed a pH 7.154; PaO₂ 130.6 mmHg; PaCO₂ 70.2mmHg; HCO₃⁻ 23.7 mEq/l; base excess 5.1. Massive mucus sputum was suctioned from tracheal tube. During the suction, he developed ventricular fibrillation, from which he could not be resuscitated. Post-mortem examination was not performed.

Discussion

Since initial report by Jones¹⁾, many cases of vesicosigmoidal fistula secondary to diverticulitis of the sigmoid colon have been reported in Europe and America. To our knowledge, only 131 cases have been documented in literature in Japan; ours being the 132nd case report²⁻⁹⁾. Of these 132 patients, 107 were reported after 1980: the number of these reports is increasing. The reason for increase in the incidence of colon diverticula is perhaps the change towards Euro-American diet^{10,11)}.

Of these 132 case studies, 127 refer to gender. One hundred and four of the patients were male and 23 were female; this gives a male-to-female ratio of 4.5 : 1. The reported male-to-female ratio in diverticular disease in Japan was 1.8 : 1¹¹⁾. The lower incidence in females is thought to be due to the interposition of the uterus between the colon and urinary bladder^{12,13)}.

The main clinical presentations of this disease are primarily related to the urinary tract, e.g., pneumaturia, fecaluria, and micturitional pain. On the other hand, symptoms are rare that are related to sigmoid colon diverticulitis, e.g., lower left quadrant pain, diarrhea, constipation, tarry stool, and mass formation.

Common diagnostic procedures used when

there is suspicion of colovesical fistula are the following: cystogram, cystoscopy, barium enema, colonoscopy, and computed tomography (CT). Barium enemas can be more successful in demonstrating the presence of fistulae than cystograms. This is because even at rest, the pressure in the colon in diverticular disease is higher than in the urinary bladder¹⁴⁾. A barium enema can also reveal colonic abnormality. Cystoscopy often reveals the orifice of the fistula, but fistulography through cystoscopy is necessary in order to establish the presence of the fistula. Even when the orifice of the fistula cannot be found on cystoscopy, a localized area of bullous edema is a common finding, which would suggest the existence of a fistula. Pathological specimens that are obtained through cystoscopy are also useful in ruling out underlying malignant disease. Colonoscopy is useful in the evaluation of colon disease, but often times, it does not identify fistulae. The CT findings of intravesical air, focal wall thickness of the urinary bladder, and thickening of adjacent bowel are suggestive of colovesical fistula. Narumi¹⁵⁾ reported the usefulness of CT following barium evacuation. In our case, cystoscopy and CT indirectly demonstrated the presence of a colovesical fistula; the preoperative diagnosis of a vesicosigmoidal fistula secondary to diverticulitis of the sigmoid colon was made by barium enema.

Vesicosigmoidal fistulae secondary to diverticulitis of the sigmoid colon rarely close with the aid of conservative therapy. Furthermore, the disease can lead to chronic urinary tract infection. Therefore, such fistulae must be surgically treated in most cases. The repair can be undergone electively with the patient in optimal condition and the bowel properly prepared. The majority of patients with this disease in Japan has undergone a one-stage procedure consisting of resection of the diseased colon and partial cystectomy. However, Miyazaki¹⁵⁾ and Yoshida⁷⁾ have insisted on the usefulness of colonic resection and simple closure of the fistula without performing partial cystectomy. When patients have complications, such as generalized peritonitis, a large abscess, or poor in general, then a two-stage procedure, e.g.,

resection and primary anastomosis with temporary transverse colostomy, or resection and exteriorization of the proximal colon without anastomosis (Hartmann's procedure) should be performed. Unfortunately, our patient died suddenly and unexpectedly from acute respiratory failure on the 30th day following surgery. Although we could not rule out the possibility that the procedure might be directly involved in the patient's outcome, the one-stage procedure presented in this report can be performed, if the bowel is well prepared in advance of an elective surgery.

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