

Laparoscopic Treatment of Appendicovesical Fistula

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A 23-year-old man had a history of intermittent episodes of urinary tract infection with associated low abdominal pain for 15 years. Persistent bacteriuria even with prolonged antibiotics was the reason why he was referred to our hospital. Laboratory tests were normal except pyuria and growth of *Escherichia coli* in the urinary samples. Cystoscopy revealed a small slit-like opening on the right lateral wall of bladder dome. We found some air within the bladder and a suspicious communicating tract between the appendix and bladder on a CT scan. With a strong impression of appendicovesical fistula, a laparoscopy was performed to confirm a diagnosis and to remove the appendicovesical fistula resulting in a satisfactory result without any complication.

Key Words : Urinary tract infections, appendix, urinary bladder, fistula, laparoscopy

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INTRODUCTION

Appendicovesical fistula is a rare cause of recurrent urinary tract infection. It is very difficult to make an early diagnosis of appendicovesical fistula, because the symptoms are ambiguous in many cases and usual diagnostic tools cannot readily demonstrate the disease. Appendicovesical fistula is generally treated with appendectomy and repair of the bladder wall followed by catheter drainage. To our knowledge, there have been only 3 cases treated with laparoscopic surgery out of more than 100 published appendicovesical fistula cases.

CASE REPORT

A 23-year-old man with a healthy appearance (170 cm, 57 kg) was referred to our clinic for persistent bacteriuria unresolved with prolonged use of antibiotics. He was symptom-free and unremarkable on the physical examination at his 1st visit to our clinic. He had a history of intermittent pain in the right lower abdomen with recurrent UTI for 15 years and had been treated with antibiotics repeatedly. He had a history of hospital admission 10 years ago but he could not hear any underlying cause identified. He had not suffered any other medical or surgical disease. Laboratory tests were normal except for pyuria and growth of *Escherichia coli* in his urinary samples. Cystoscopy was performed and a small slit-like opening was found on the right lateral wall of the bladder dome without a definite fistulous tract (Fig. 1). Voiding cystography revealed a diverticulum on the right lateral wall of the bladder with a suspicious linear fistula tract heading in the 10 o'clock direction (Fig. 2). We found some air within the bladder and a suspicious communicating tract between the appendix and bladder on the CT scan.

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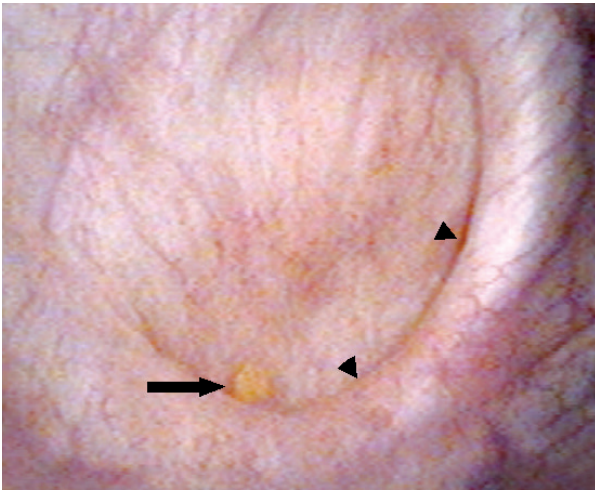


Fig. 1. Cystoscopic finding shows a slit-like opening (arrowhead) on the right side of the bladder dome with a fecalith (arrow).

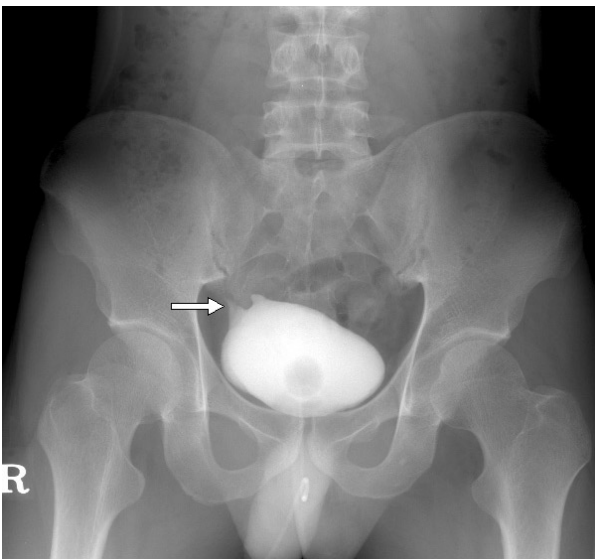


Fig. 2. Protrusion of right side of the bladder dome on voiding cystourethrography.

With an impression of appendicovesical fistula, laparoscopic surgery was performed through three abdominal ports. A supraumbilical port (10 mm trocar), a suprapubic port (5 mm trocar), and a right upper quadrant port (12 mm trocar) were placed. The distal tip of the appendix was firmly adhered to the right lateral side of the bladder with thick fibrosis. The body and base of the appendix looked healthy without surrounding fibrosis (Fig. 3). The base of the appendix was ligated with 2-0 Vicryl and the bladder was resected with an Endo-GIA stapler (Ethicon Endo-Surgery, Cincinnati, OH, USA) under simultaneous intravesical monitoring of the bladder with a flexible cystoscope. A urethral catheter was inserted for urinary drainage and was removed 7 days after the surgery. The postoperative course was uneventful. The surgical specimen showed a 7.5 × 1.0 cm sized appendix attached to a 3.0 × 2.5 cm

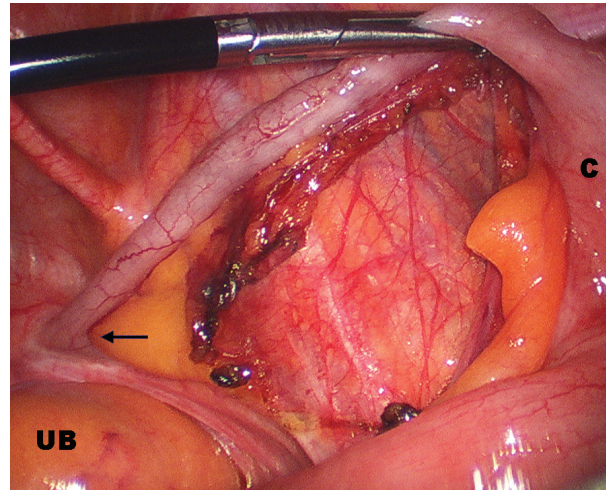


Fig. 3. Laparoscopic finding shows a grasped appendix, of which the tip is firmly attached to the right side of the bladder dome (arrow). UB, urinary bladder; C, cecum.

sized bladder wall, and a small caliber fistulous tract with some fecalith was identified between them.

DISCUSSION

Appendicovesical fistula is a rare complication of appendicitis. In addition to appendicitis, it has been reported that adenocarcinoma, Crohn's disease, villous adenoma, and neuroma of the appendix can infrequently bring about appendicovesical fistula.¹ It occurs most often in males between the age of 10 and 40. It has been thought that the lower incidence in females is due to the interposition of the uterus between the bladder and the bowel.² Most common complaints of appendicovesical fistula are recurrent urinary tract infection, dysuria, and low abdominal pain. Pneumaturia and fecaluria can appear occasionally. The most common organisms cultured in urine specimen are *Escherichia coli* and *Klebsiella*. Almost every individual experiences periodic remissions due to the intermittent complete obstruction of fistula caused by fecalith.³ It is assumed that the abdominal pain relieves if the fecalith empties into the bladder.

It is difficult to make an early diagnosis of appendicovesical fistula, because the symptoms are occasionally ambiguous and the usual diagnostic tool cannot readily demonstrate the disease. It has been reported that it usually took at least 1 year from the onset of symptom to confirmatory diagnosis. Unfortunately, it may be delayed for more than 10 years.⁴ Many diagnostic tools, such as intravenous pyelography (IVP), cystoscopy, barium enema, cystogram, and computed tomography (CT) scans, have been used for detecting an appendicovesical fistula. CT has been recognized as the most accurate diagnostic test, whereas plain films and IVP are not helpful. Goldman, et al.⁵ reported that

he could find all the vesicoenteric fistula with the 1 cm interval computerized tomography. Sarr, et al.⁶ also reported that the CT had all positive findings in his patients and demonstrated evidence of communication between the bladder and the gastrointestinal tract. Cystoscopy and barium enema usually make a diagnosis of appendicovesical fistula in 40% and 50% of the patients, respectively.⁷

Generally, the treatment of appendicovesical fistula consists of appendectomy and repair of the bladder wall followed by catheter drainage and antibiotics. We carried out laparoscopic appendectomy and excision of the fistulous tract, including repair of bladder wall with Endo-GIA stapler (Ethicon Endo-Surgery, Cincinnati, OH, USA). Endo-GIA has some possibility of causing infection and stone formation; nevertheless we did not observe either infection or bladder stones after 12 months of follow-up. Moreover, many authors routinely use a stapler during orthotopic neobladder reconstruction with an acceptable incidence of long-term complications. Although more than 100 cases have been reported in the literature, laparoscopic treatment was conducted in only 3 cases.^{8,9} Laparoscopy has now been employed for the treatment of appendicovesical fistula with the advantages of decreased hospitalization and convalescence.

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