

## Case Report

### A Case of Gallstone Ileus

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**Abstract:** A 57-year-old woman was admitted to our hospital with abdominal pain and vomiting. Her abdomen was distended, and obstructive bowel sounds were discovered on examination. Diffuse abdominal tenderness was present, but no palpable masses were apparent. Abdominal computed tomography confirmed a large gallstone obstructing the small bowel. Colonoscopy revealed a large gallstone lodged at the terminal ileum, which was subsequently fragmented using electronic hydraulic lithotripsy (EHL). The patient has remained asymptomatic for over 3 years of follow-up after the EHL treatment. Here, we present this case of small intestinal obstruction caused by a large gallstone in the lower ileum.

**Key words:** gallstone ileus, intestinal obstruction, electronic hydraulic lithotripsy

## Introduction

Gallstone ileus is a rare complication of cholelithiasis and cholecystitis that may cause mechanical intestinal obstruction. The most frequent mechanism by which the obstruction occurs is migration of a gallstone through a cholecystoduodenal fistula<sup>1)</sup>. Gallstone ileus is most commonly found in elderly patients with cholelithiasis, and is associated with high rates of morbidity and complications. Treatment of this disorder by enterolithotomy alone is the gold standard for managing patients with severe concomitant disease<sup>2, 3)</sup>.

## Case Report

A 57-year-old previously healthy woman presented to our emergency department complaining of abdominal pain and vomiting. The patient was not under any specific medication, her medical history did not suggest any major diseases, and she had no prior history of abdominal surgery or trauma. The patient did not smoke or drink alcohol. Physical examination revealed that she was conscious and dehydrated. The patient's vital signs were as follows: temperature, 36.7°C; pulse rate, 66 beats/min; and blood pressure, 104/64 mmHg. Abdominal examination revealed abdominal distension, decreased bowel sounds, and tenderness with rebound tenderness. The hernial sites were free. Laboratory examination showed a hemoglobin level of 13.9 g/dL, leucocyte count of 23,800 cells/cm<sup>3</sup>, and serum



Fig. 1. Plain abdominal radiography  
A plain abdominal radiograph showing distended bowel loops.

C-reactive protein (CRP) level of 14.8 mg/dL. Plain abdominal radiography showed small bowel air-fluid levels (Fig. 1). An abdominal computed tomography (CT) showed the classic triad of findings characteristic of gallstone ileus: dilated loops of the small bowel, air in the gallbladder, and an ectopic stone in the ileum (Fig. 2). The gallbladder and duodenal walls were thickened, and a cholecystoduodenal fistula was suspected. She was admitted to the hospital with gallstone ileus. Placement of a long ileus tube returned 2 L of bilious fluid. In addition, the patient recorded 500–1000 mL/day of small intestinal drainage via the ileus tube over the subsequent 12 days. Ileus tube imaging revealed dilation and obstruction of the small intestine in the lower abdominal region, although contrast medium passed through to the anal side. However, the contrast medium showed a stone at the terminal ileum (Fig. 3A, 3B).

Under conscious sedation, the patient underwent electronic hydraulic lithotripsy (EHL) to break the stone into several pieces over approximately 2 hours. Colonoscopy also showed a gallstone in the ileum (Fig. 4A) that was confirmed to be at the terminal ileum using contrast medium (Fig. 3C). EHL using a 100-W current was adequate to fragment the stone. With some manipulations, the broken stone was freed from the intestinal wall (Fig. 4B, 4C), and a few days later several pieces of broken stone appeared in the patient feces. The patient made a full recovery and was eventually discharged to home. The patient has remained asymptomatic over 3 years of follow-up after EHL. She is now in good health.

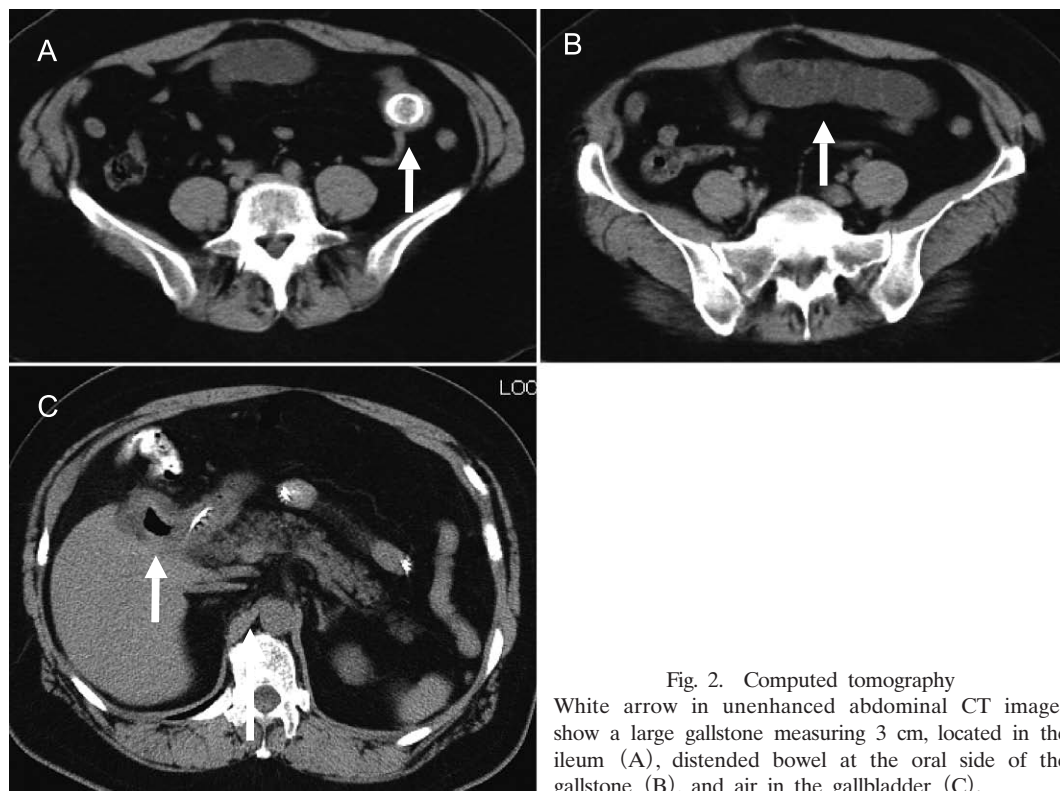


Fig. 2. Computed tomography  
White arrow in unenhanced abdominal CT images show a large gallstone measuring 3 cm, located in the ileum (A), distended bowel at the oral side of the gallstone (B), and air in the gallbladder (C).

## Discussion

Gallstone ileus is a rare cause of small bowel obstruction<sup>4-8</sup>). It occurs almost exclusively in the elderly and accounts for 25% of mechanical small bowel obstruction in patients over the age of 65, with a mortality rate of 12 ~ 50%<sup>7</sup>). This pathology occurs 3 to 5 times more frequently in women than in men<sup>5</sup>). The disease proceeds when a gallstone enters the intestinal tract through a fistula formed between the gallbladder and the duodenum, stomach, or colon.

The terminal ileum is the most frequent site of obstruction<sup>4</sup>). In the case presented here, an abdominal CT showed an ectopic stone in the ileum. However, the stone may alternatively be found in the duodenum, where it will cause Bouveret's syndrome<sup>6</sup>), as well as in the jejunum (30%) and colon (2.5%). Plain abdominal radiographs may reveal signs of small-bowel obstruction and concomitant aerobilia, which is also supportive of gallstone ileus<sup>9</sup>). However, the diagnosis of gallstone ileus is still frequently missed or delayed, and an accurate preoperative diagnosis is made in only 77% of cases<sup>10</sup>). The classical radiological triad for this diagnosis is pneumobilia, the presence of an ectopic gallstone, and mechanical bowel obstruction<sup>11</sup>). Advanced diagnostic imaging technology, such as multidetector CT,

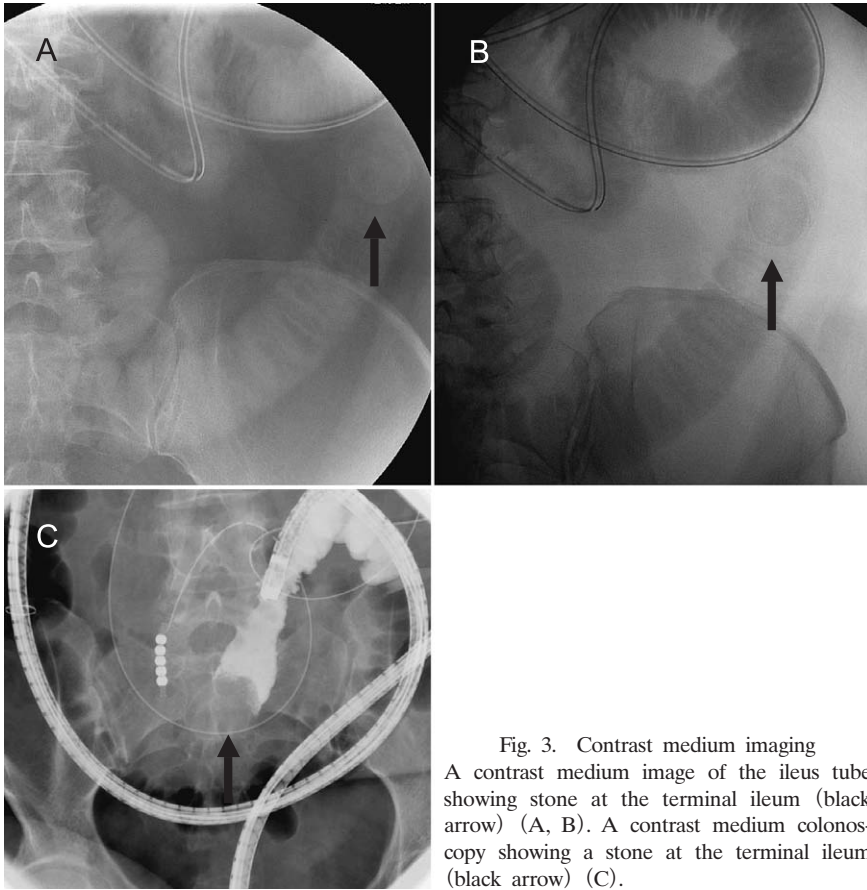


Fig. 3. Contrast medium imaging  
 A contrast medium image of the ileus tube showing stone at the terminal ileum (black arrow) (A, B). A contrast medium colonoscopy showing a stone at the terminal ileum (black arrow) (C).

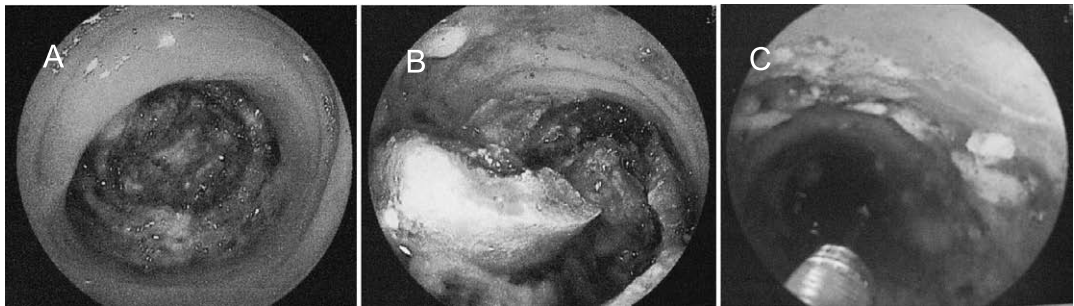


Fig. 4. Endoscopy

Colonoscopy showed a gallstone in the terminal ileum (A). A large gallstone was pulverized using electric lithotripsy (B, C).

allows direct visualization of cholecystoenteric fistulae, permitting more precise diagnoses<sup>12)</sup>.

The principal goal in the management of gallstone ileus is rapid, effective relief of the mechanical bowel obstruction. In the current case, we performed colonoscopy and found

a large gallstone lodged at the terminal ileum. The gallstone was fragmented using EHL and then retrieved with a snare and forceps. Generally, in cases like this one, if the stone is within the reach of an endoscope, either in the proximal small bowel or in the colon, it may be treated by lithotripsy and removal of the fragment<sup>5)</sup>. Extracorporeal shockwave lithotripsy has also been used successfully, but this method is limited by bowel gas. Unfortunately, the majority of patients require surgery, with options including enterotomy and removal of the stones (enterolithotomy), enterolithotomy plus cholecystectomy, and repair of the fistula<sup>6)</sup>. Most clinicians favor enterolithotomy alone, followed by cholecystectomy later, because of its lower morbidity and high spontaneous fistula closure, up to 50%<sup>9)</sup>. Although it is a rare cause of bowel obstruction, gallstone ileus should be considered when treating cases of small bowel obstruction.

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