

# A typical gallstone ileus: Clinical, radiological and operational findings

Mehmet Sertkaya<sup>1</sup> , Arif Emre<sup>2</sup> , Sami Akbulut<sup>3</sup> , Halit Vicdan<sup>4</sup> , Ahmet Necati Şanlı<sup>2</sup> 

<sup>1</sup>Department of General Surgery, Adıyaman University Training and Research Hospital, Adıyaman, Turkey

<sup>2</sup>Department of General Surgery, Kahramanmaraş Sütçü İmam University School of Medicine, Kahramanmaraş, Turkey

<sup>3</sup>Department of General Surgery, İnönü University School of Medicine, Malatya, Turkey

<sup>4</sup>Department of Radiology, Kilis State Hospital, Kilis, Turkey

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Dear Editor,

Gallstone ileus is a rare cause (1%-4% of cases) of mechanical small bowel obstruction. It generally affects elderly patients between 60 and 85 years with a female preponderance. It is a rare complication of chronic cholecystitis causing bilioenteric fistula and occurs when a gallstone passes into the small bowel through the fistula and usually impacts at the ileocecal valve. Treatment of gallstone ileus is surgery, but cholecystectomy and fistula repair is a controversial subject in the same session. Cholecystectomy and fistula repair is often suggested in the literature with a second surgery. We present a typical case of gallstone ileus in light of radiological, clinical, and operational findings.

A 68-year-old woman who was sick for 2 days was admitted to the emergency department with complaints of nausea, vomiting, and difficulty in passing gas and stool. She had a history of diabetes mellitus, multinodular goiter, total abdominal hysterectomy, and bilateral salpingo-oophorectomy due to a squamous metaplasia in the cervix. On physical examination, minimal tenderness in all quadrants, mild abdominal distension without guarding, and rebound tenderness were observed. Plain abdominal X-ray and abdominal tomography were highly suggestive of gallstone ileus (Figure 1, 2). The patient was admitted to the intensive care unit and operated on day 2 of admission. On exploration, a segment of the jejunum 100 cm proximal to the cecum was found to be completely occluded by a large and partially mobile mass with a hardness of stone that was initially thought to be a bezoar. After a longitudinal incision was made in the small intestine, we found a huge gallstone with a size of 5-6 cm. It was removed from the intestine through incision piece by piece using an over clamp, and the intestine was repaired

transversely. A continued exploration of the gallbladder and the duodenum revealed a wide bilioduodenal fistula and edema of the gallbladder, thus the operation was completed without cholecystectomy. The patient had an uneventful postoperative course and was discharged after monitoring in the intensive care unit and clinic for 2 and 3 days, respectively. At 18 months after surgery, the patient was followed up for a control magnetic resonance cholangiopancreatography (MRCP). MRCP showed no evidence of any fistula in the biliary tract. Ultrasonography revealed a few stones with a size of 5 mm and biliary sludge in the gallbladder.

The term gallstone gastrointestinal obstruction is suggested for mechanical intestinal obstruction with gallstones. Thomas Bartholini, in a postmortem study in 1654, exposed a cholecystointestinal fistula with a gallstone in the bowel. In 1890, Courvoisier published the first gallstone ileus cases of 131 patients and reported a mortality rate of 44% (1).

Chronic recurrent cholelithiasis is the most important cause of bilioenteric fistula. However, duodenal ulcer perforation in the bile ducts, a tumor infiltration starting from the bile ducts or the gastrointestinal tract, echinococcal cysts, and liver or kidney abscesses are other rare causes (2). In our patient, the cause of the fistula was chronic cholelithiasis.

The most common site of bilioenteric fistula is the duodenum, but cholecystocolonic, cholecysto-duodenal-colonic, cholecystojejunal, cholecystogastric, choledocoduodenal, and duodenum-left hepatic duct cases have also been reported. The most common mechanism of gallstone ileus formation is migration of a gallstone through

Corresponding Author: Mehmet Sertkaya; [drsertkaya@gmail.com](mailto:drsertkaya@gmail.com)

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the cholecystoduodenal fistula to remain impacted in the distal ileum lumen and causing an intestinal obstruction (3,4). In the present case, there was a large bilioduodenal fistula, and the obstruction site was at the proximal ileum.

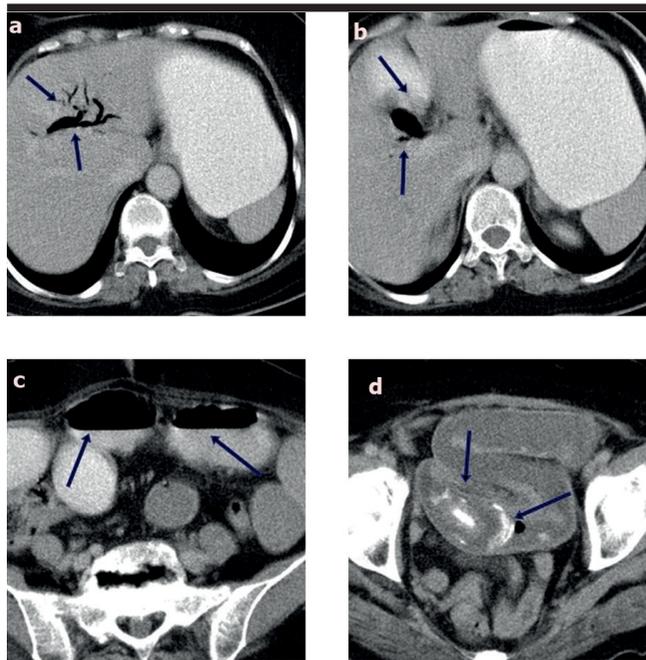


Figure 1. a-d. CT scans showing pneumobilia (a, b); air-fluid levels (c); and gallstone in the small bowel (d)

It has also been reported that numerous gallstones lead to simultaneous obstructions in various localizations (4). In addition, cases of gallstones obstructing the gastric output have been reported; this was called Bouveret syndrome after the name of Leon Bouveret who reported two cases for the first time in 1896 (4,5).

Acute, subacute, and chronic classification can also be performed according to the onset of gallstone ileus. The chronic type is referred to as Karewsky syndrome and is characterized by chronic repetitive pain attacks and asymptomatic periods, resulting from the passage of bile duct stones through the bowel (3). Chronic recurrent gallstone ileus has been suggested to be a consequence of cholelithiasis with an untreated biliary enteric fistula (6,7). In addition, it is held to be responsible for gallstone ileus recurrence in order to choose only enterolithotomy or conservative approach in the treatment (8).

Gallstone ileus has been implicated in approximately 25% of small bowel obstructions seen in patients >65 years old, and cases of colonic gallstone ileus have rarely been reported in the literature (9). It is most commonly seen in elderly individuals and is more common in female patients (1-9). Our patient was also a 68-year-old woman.

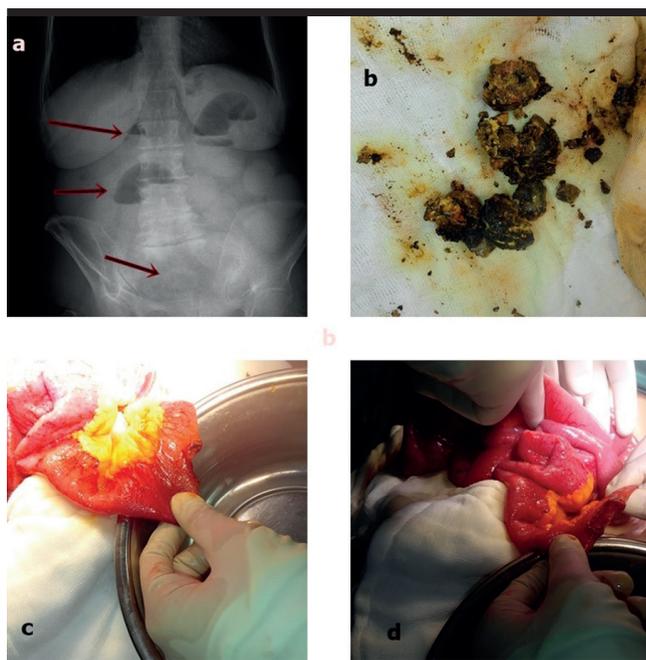


Figure 2. a-d. Rigler's triad on plain X-ray (a); and pictures during surgery (b, c, d)

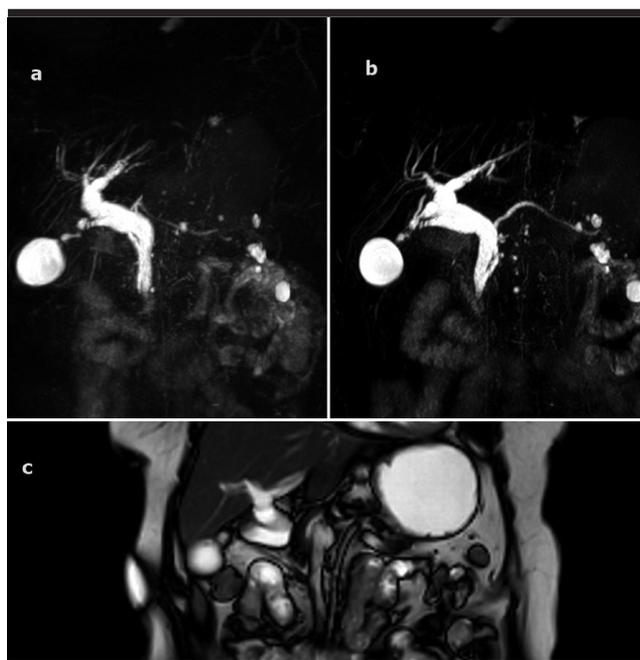


Figure 3. a-c. MRCP scans at 18 months after surgery (a, b, c)

Gallstone ileus is also considered to be a complication associated with subclinical or mild cholecystitis. Patients present with signs and symptoms of intestinal obstruction at the emergency department. Stones >2.5 cm in diameter usually cause blockage, whereas smaller stones can pass through the gut without causing any symptoms (1,2,4-8,10). Our patient also had intestinal obstructive symptoms, such as nausea, vomiting, difficulty in passing gas and stool, and abdominal tenderness. In addition, the stone was 5-6 cm in size and caused complete lumen obstruction (Figure 3).

Preoperative definitive diagnosis has been reported to be between 30% and 70%. Plain abdominal radiographs play an important role in diagnosis. In 1941, Rigler et al. (1) described four specific radiographic signs in gallstone ileus: a small bowel obstruction, gas within the biliary tree, a gallstone in the bowel, and change of the position of gallstone on serial films. However, the Rigler's triad is used more often clinically (2,4,5,10). Ultrasonography and computed tomography (CT) are more effective than plain radiographs in revealing bile stones, ectopic gallstones, pneumobilia, and gallbladder abnormalities (8). The sensitivity, specificity, and accuracy of CT in diagnosing gallstone ileus are reported to be approximately 93%, 100%, and 99%, respectively (1,8). Rigler's triad consists of three signs on abdominal X-rays; it is better seen on CT than on plain films (3,10). In our patient, the Rigler's triad was clearly seen on CT, but when we examined the plain radiogram later, we noticed that it also had shown the Rigler's triad (Figure 1, 2).

The main treatment of gallstone ileus is surgical repair, and current surgical procedures include (1) simple enterolithotomy and primer repair of the bowel; (2) one-stage procedure consisting of enterolithotomy, cholecystectomy, and fistula repair; and (3) two-stage procedure consisting of enterolithotomy with cholecystectomy performed later (1,2). There is an ongoing debate about cholecystectomy and fistula repair at the same session or at a second operation to be performed later. Owing to the mortality caused by comorbid diseases, enterolithotomy, which is the procedure to improve the symptoms first, and postponement of cholecystectomy and fistula repair to another session are mainly proposed (1-3,6-8). We also chose enterolithotomy as an adequate treatment approach because our patient was an elderly woman and had comorbid diseases and of the prospect that in the exploration, edema of the bile ducts would make reconstruction of the fistula difficult.

With the goal of recognizing recurrent gallstone ileus and imaging the bile ducts, at 18 months after surgery, we decided to have a control MRCP, revealing no bilioenteric fistula or gallstone in the bowel (Figure 3).

Gallstone ileus should be kept in mind in elderly patients who present with intestinal obstructive symptoms. Diagnosis can be made by careful anamnesis, examination, and imaging techniques. In treatment, it is important to choose the adequate treatment modality by taking into account the opening of the obstruction first due to the urgency and comorbid diseases. Treatment of gallstone ileus is surgery, but cholecystectomy and fistula repair is a controversial subject in the same session. Cholecystectomy and fistula repair is often suggested in the literature with a second surgery.

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