

# Gallstone ileus four months after cholecystectomy

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**Abstract.** Gallstone ileus is a rare cause of intestinal obstruction caused by a large gallstone that most frequently obstructs the terminal ileum. Usually, the gallstone enters the intestinal tract via a cholecystoenteric fistula. A 61-year old woman presented to the emergency department with clinical signs of intestinal occlusion four months after laparoscopic cholecystectomy. The imaging techniques revealed the obstruction of the terminal ileum caused by a 24-mm calculus complicated with intra-abdominal abscesses. The patient completely recovered after urgent surgery. These conditions are very rare and they might have severe complications. Therefore, the focus of the present study, together with a literature review, is on the management of gallstone ileus.

**Key Words:** gallstone ileus, laparoscopic cholecystectomy, computed tomography.

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## Introduction

Gallstone ileus causes mechanical bowel obstruction in about 1-4% cases of intestinal obstruction (Lassandro et al 2004), most frequently occurring in patients older than 65 years (Ayantunde & Agrawal 2007). There is no specific set of clinical manifestations and the diagnosis is usually based on medical imaging (Delabrousse et al 2000). However, there are rare cases of intraoperative diagnosis alone.

There is no consensus regarding the ideal management of this condition. The obstructive gallstone needs to be removed, followed by enterotomy or enteral resection and enteral anastomosis should also be performed.

On the one hand, there are studies supporting one-step surgery, including enterotomy and fistula closure, while others prefer two-step surgery, especially for high-risk patients (Ayantunde & Agrawal 2007; Reisner & Cohen 2004; Muthukumarasamy et al 2008).

## Case report

A 61-year old woman with treatment-controlled arterial hypertension and chronic coronary disease, presented to our emergency department with sudden vomiting symptoms, right iliac fossa pain and failure to pass flatus or stool. She also had a 5-month history of right upper quadrant pain, nausea, intermittent diarrhea and weight loss. She had been referred to the surgery department with similar symptoms four months before, being diagnosed with gallstones complicated with acute cholecystitis. Laparoscopic

cholecystectomy was performed, but clinical symptoms did not disappear completely during postoperative follow-up.

The physical exam revealed normal hemodynamic findings and intense pain with palpation of the right upper quadrant. Laboratory tests showed inflammation with leukocytosis and slightly elevated C-reactive protein levels, without other major abnormalities, except for hypocalcaemia and hypomagnesaemia. Emergency plain abdominal X-ray and ultrasound examination showed distended, fluid-filled small bowel loops. Contrast-enhanced computed tomography revealed distended and fluid-filled loops of the small bowel with a collapsed terminal ileum (Figure 1) and abdominal gas collection between the bowel and the abdominal wall. The collection was seen in the thick hyperdense wall on CT (Figure 2). The obstruction was caused by a 24-mm calculus in the terminal ileum (Figure 3).

Based on these findings, the patient was diagnosed with gallstone ileus complicated with abdominal abscess, secondary to gastrointestinal perforation, being urgently referred to the surgery department.

Laparotomy revealed an inflammatory block surrounding the gastrointestinal perforation. A 24-mm biliary calculus was blocking the ileal lumen 25 cm away from the ileocecal valve. Segmentary enterectomy was carried out together with ileoileal anastomosis (Figure 4).

Pathological examination confirmed the ulceration of the ileum complicated with a covered and blocked gastrointestinal perforation with abscess formation. The postoperative follow-up was unremarkable and the patient was discharged 2 weeks later.



Figure 1 Collapsed terminal ileum (right arrow) and distended fluid-filled small bowel loops (left arrow)



Figure 3. Biliary calculus in the ileal lumen

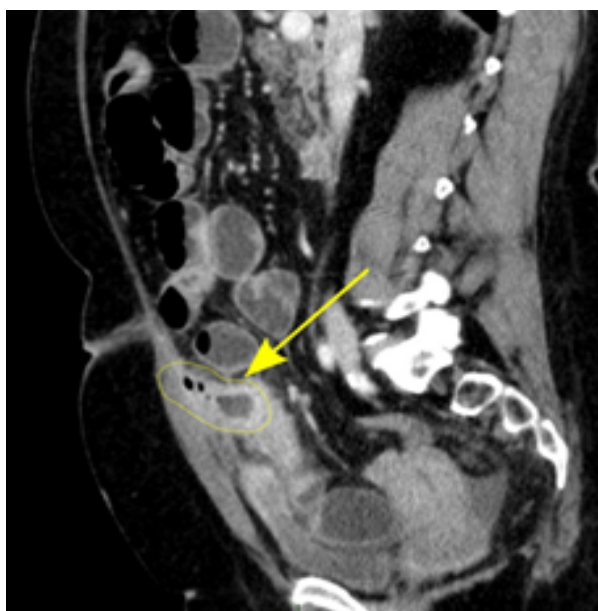


Figure 2. Abdominal gas collection between the bowel and the abdominal wall

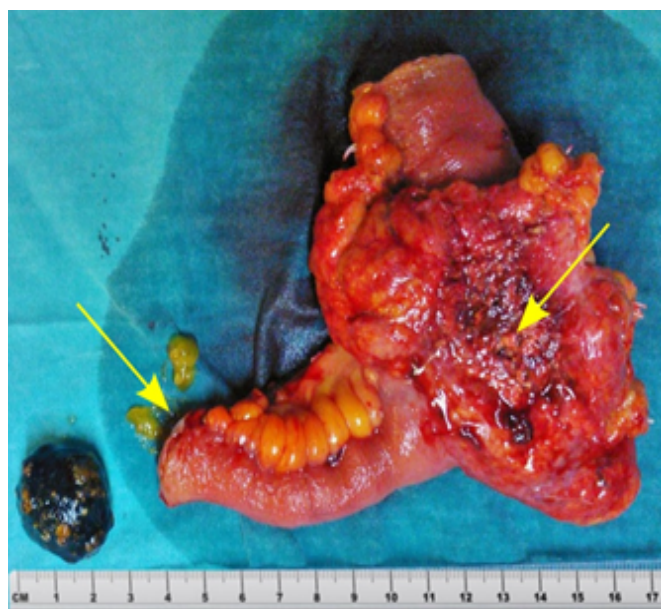


Figure 4 Segmentary enterectomy with inflammatory mass and perforation (left arrow) and distal resection margin with the gallstone being delivered at this site (right arrow)

## Discussions

Gallstone ileus is a rare complication of gallstones. It occurs more frequently in elderly females, probably due to the long-lasting gallstone problems. This condition is associated with a high mortality rate (up to 7.5-15%) as a result of the delayed diagnosis and associated comorbidities, such as diabetes, obesity and cardiovascular diseases (Reisner&Cohen 2004). The producing mechanism is related to gallbladder inflammation and adhesion processes during an episode of acute cholecystitis, which binds the gallbladder fundus to the adjacent organ. This inflammation can be followed by gallstone erosion through the gallbladder, resulting in a cholecystoenteric fistula and the passage of the gallstone into the intestinal tract. Cholecystoenteric fistulas are more frequent in the duodenum

(68% of cases) (Nakao *et al* 2008), but they may also be seen in the colon, stomach, small bowel or liver.

If the size of the stone is greater than 2.5 cm, it is more likely to result in the impaction of the terminal ileum (65% of cases) (Reisner&Cohen 1994) or of the ileocecal valve, as a result of a narrow lumen and slow peristaltic movements (Foss& Summers 1942). Rarely, it can lead to large bowel obstruction (4% of intestinal obstruction cases) (Reisner&Cohen 1994) as a result of the progressive increase in gallstone size due to fecal accumulation (Anseline 1981). Sometimes, there is no biliodigestive fistula and the stone passes through the Vater's papilla, or it may do so after papillotomy, finally causing gallstone ileus (Deitz *et al* 1986).

Gallstone ileus may also occur after cholecystectomy. The literature reported a case of biliary ileus in a young patient, 3 years after cholecystectomy, with an old ileoileal anastomosis,

the gallstone being probably trapped and growing under fecal accumulation (Papavramidis et al 2009). Another case was reported 25 years post-cholecystectomy, when the gallstone was trapped in a large jejunal diverticula and then moved out causing obstruction (Saedon et al 2008).

Laparoscopic cholecystectomy might lead to the “loss” of gallstones in the abdominal cavity. This may happen in up to 6% of all laparoscopic cholecystectomies. These stones may cause an inflammatory reaction which results in abscesses, fistulas, localized or generalized peritonitis. Persistent inflammatory reaction can lead to gastrointestinal perforation and gallstone migration into and through the bowel causing bowel obstruction (Diez et al 1998; Wills & Smith 1994). However, in these cases, the gallstones are usually small. Due to the long-lasting symptoms, prior to cholecystectomy, and the surgical findings, this mechanism is less likely to occur in our patient.

The typical clinical manifestation of gallstone ileus is bowel obstruction. However, in case of partial bowel obstruction, the symptoms can be soothed and, therefore, the diagnosis is delayed. The diagnosis is usually established using radiological examinations, especially contrast-enhanced CT.

Standard radiological signs of gallstone ileus are indicated by Rigler’s triad: pneumobilia, intestinal obstruction and ectopic gallstone. These three findings are seen on CT scans in 77,7% of cases (Lassandro et al 2004).

The prompt relief of the intestinal obstruction is the key in the management of this condition. The discussion is whether to use a one-stage procedure that includes ureterolithotomy, cholecystectomy and fistula repair, or ureterolithotomy with interval cholecystectomy and fistula repair. The one-stage procedure is usually used for relatively fit and carefully selected patients (Rodriguez et al 1997).

Interestingly, four months after laparoscopic cholecystectomy, our patient continued to have signs of intermittent partial intestinal obstruction. The gallstone may have crossed through the gastrointestinal tract before cholecystectomy. The biliodigestive fistula may have quickly closed, as there was no evidence of a biliary-digestive fistula at that time. This quick closure is described in the literature, especially in case of a cessation of inflammation (Reisner & Cohen 1994). The presence of abdominal symptoms after cholecystectomy is described as postcholecystectomy syndrome (PCS) and no extensive diagnostic workup has been initiated until complete occlusion. After surgery, symptoms resolved completely and the patient was discharged.

## Conclusion

Gallstone ileus is a rare cause of intestinal obstruction, occurring more often in the elderly. Post-cholecystectomy gallstone ileus is a very rare clinical finding. A high index of suspicion and CT scan are key factors in the final diagnosis. The ideal management of the disease lies in the prompt relief of the intestinal obstruction.

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