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Case report

Gallstone ileus: An unusual cause of intestinal obstruction ☆,☆☆

Mohamed Bouziane^a, Nawal Bouknani^b, Mariam Kassimi^{b,*}, Jihane Habi^b,
Hind Guerroum^b, Mohamed Mahi^b

^aDepartment of General Surgery, Faculty of Medicine, Mohammed VI University of Health Sciences/Cheikh Khalifa International University Hospital, Casablanca, Morocco

^bDepartment of Radiology, Faculty of Medicine, Mohammed VI University of Health Sciences/Cheikh Khalifa International University Hospital, Casablanca, Morocco

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ABSTRACT

Gallstone ileus is an infrequent cause of intestinal obstruction. It is typically the result of cholecystoduodenal fistula, computed tomography scan is the best modality for the diagnosis. Surgical removal of the gallstone is the pillar of treatment to relieve intestinal obstruction. We report the case of a 77-year-old male with features of a small bowel obstruction. Computed tomography scan of the abdomen showed pneumobilia, a cholecystoduodenal fistula, and small bowel obstruction features suspicious for gallstone ileus. The patient had a laparotomy and removal of two gallstones via an enterotomy without postoperative complications.

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Gallstone ileus is an unusual cause of intestinal obstruction, the underlying pathology is caused by the impaction of a gallstone in the small bowel, passing through a biliary-enteric fistula usually created between the gallbladder and duodenum. It occurs in less than 5% of patients who present with a mechanical small bowel obstruction. Morbidity and mortality are usually high since it usually occurs in elderly patients. We report the case of a 77-year-old male that presented with intestinal obstruction due to gallstone ileus and was managed by open enterolithotomy.

Case presentation

A 77-year-old male presented with a history of colicky epigastric pain and vomiting. He also reported seven days of constipation and not passing flatus. He had no previous significant medical history and denied any previous biliary symptoms. He was hemodynamically stable and afebrile on presentation. Examination revealed a soft abdomen. Routine blood tests were unremarkable. An initial imaging evaluation by non-contrast abdominal CT scanning showed gall stones (ap-

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* Corresponding author.

E-mail address: m.kassimi91@hotmail.com (M. Kassimi).

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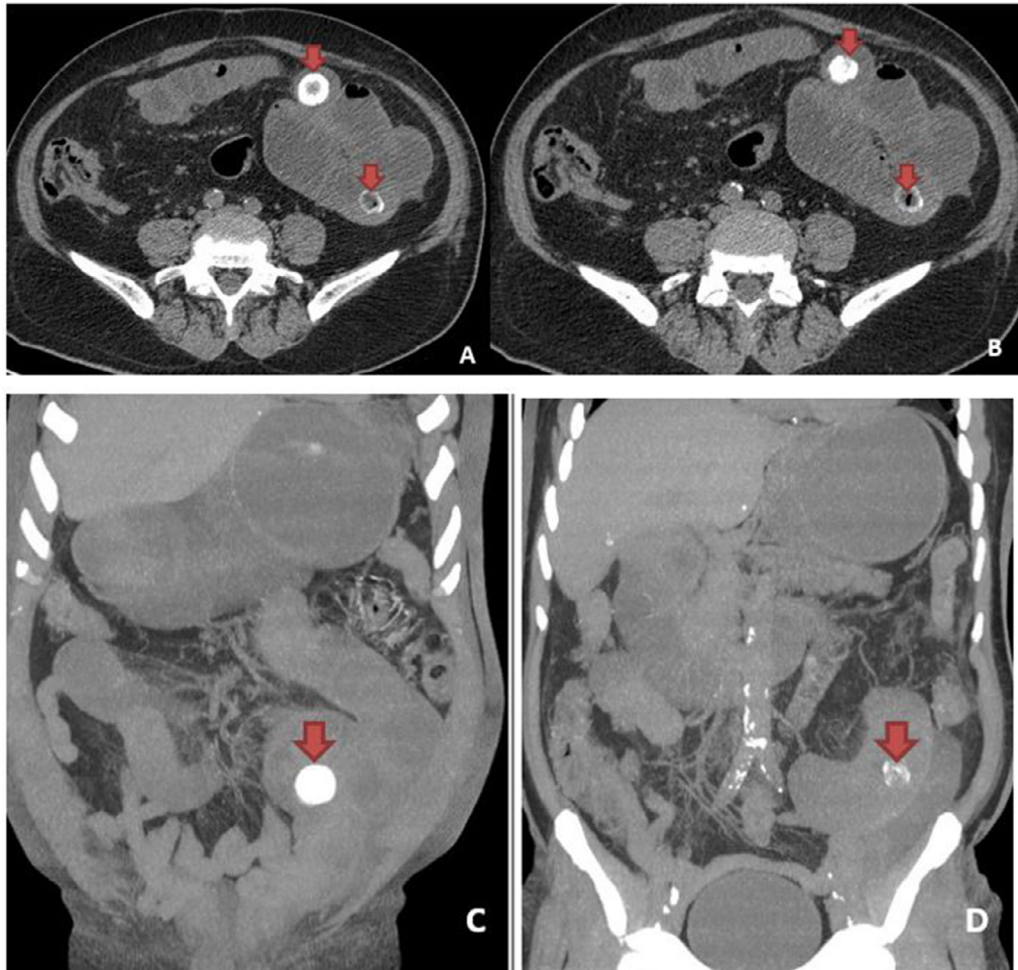


Fig 1 – Noncontrast Abdominal CT scan, axial (A, B) and coronal (C, D) plans showing the gall stones (Arrows) obstructing the intestinal lumen. IG

proximately between 2 and 2.5 cm in diameter) situated at 1m 30cm from duodenojejunal angle obstructing the intestinal lumen with small bowel obstruction and a cholecystoduodenal fistula suspicious for gallstone ileus. Collapsed gallbladder with thickened walls and intraluminal air was also seen (Figs. 1 and 2).

Based on these findings and the patient's symptoms, emergency surgical treatment was determined considering that the gallstone intestinal obstruction could not be solved by itself. He was resuscitated with intravenous fluids and had a nasogastric tube inserted for decompression. A laparotomy was performed. Intraoperative findings noted small bowel obstruction with the transition point at 1m30 cm from the duodenojejunal angle caused by two large gallstones obstructing the lumen. The lumen itself was healthy and viable with no evidence of ischemia. A longitudinal enterotomy was made proximal to the distal gallstone. Both stones were removed (2 cm and 2,5 cm), and the enterotomy was closed transversely (Figs. 3 and 4). His postoperative period was ordinary, and the patient was discharged home after six days.

Discussion

Gallstone ileus is a rare disease, which is reported in 0.3%-0.5% of patients with gallstones [1]. It is associated with significant morbidity and mortality (overall 18%) and the typical age group is in patients >70 years old [2].

It occurs most commonly as a result of an aberrant fistula between the biliary tract and the gastrointestinal tract. The cholecystoduodenal fistula is provoked by inflammations of the gallbladder. The inflamed gallbladder with stone sticks to the duodenum. Necrosis, ulceration, and perforation through the adherent area create fistula [3]. Via this fistula, gallstones may enter the gastrointestinal tract. Providing the size of the gallstones, they may cause mechanical intestinal obstruction, many articles indicate that the gallstone must be >2.5 cm in diameter to cause gallstone ileus [4], and that was the case in our patient. Clinical examination is consistent with bowel obstruction, dehydration, nausea, vomiting, abdominal pain, and constipation, which are most commonly present [5].

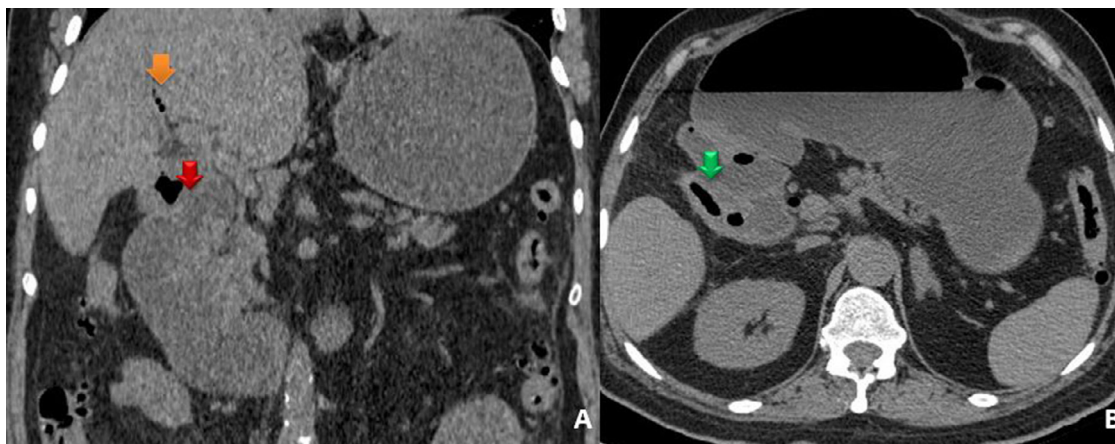


Fig 2 – Abdominal CT scan without contrast enhancement in coronal and axial planes. (A) Connecting path between the gallbladder and duodenum: cholecystoduodenal fistula (Red arrow), Air in the biliary tree is also seen (Orange arrow). (B) Collapsed gallbladder with thickened walls and intraluminal air (Green arrow). (Color version of figure is available online.)

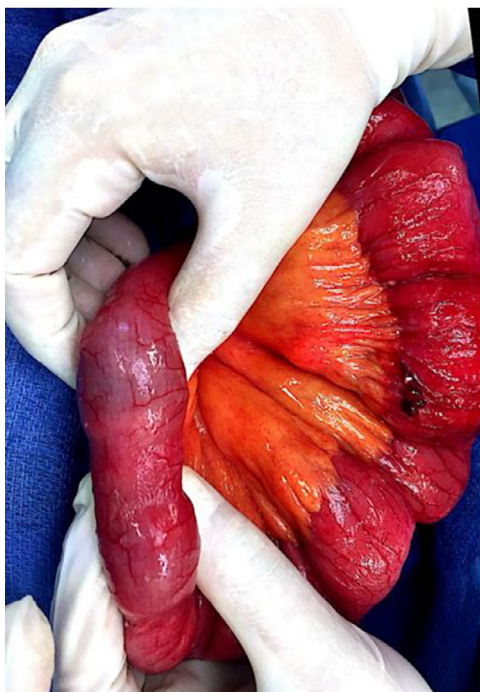


Fig. 3 – Intraoperative photograph shows segment of small bowel containing impacted gallstones.

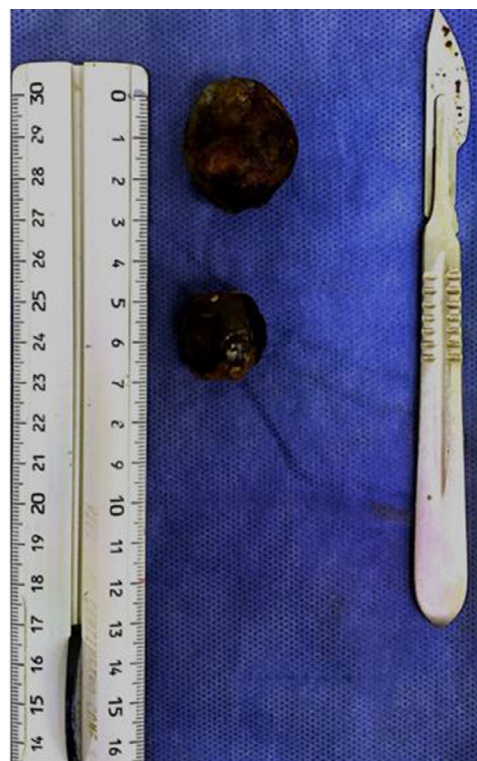


Fig. 4 – Gross photograph of gallstones after removal from bowel.

Bowel obstruction may be intermittent by either spontaneous relief of impaction or progression of the gallstone through the gastrointestinal tract.

Abdominal CT is the best modality for the diagnosis of gallstone ileus. CT findings include obstruction of the small intestine, ectopic gallstones, pneumobilia, gallbladder abnormalities, and informing about the viability of the affected segment of the bowel preoperatively. Rigler's triad reports classical features revealed by imaging suggestive of gallstone ileus. It includes mechanical obstruction, pneumobilia, and an ectopic

gallstone within the bowel lumen. Our patient had all two of Rigler's findings in the CT examination [6].

All these pieces of information obtained with CT are mandatory for a decision-making strategy and subsequent surgical planning. Treatment aims to relieve the obstruction, which centers on the removal of the gallstone.

Based on the literature, there are three approaches described for the treatment of gallstone ileus: Enterolithotomy

alone, Enterolithotomy coupled with cholecystectomy and fistula closure (one-stage procedure), Enterolithotomy then delayed cholecystectomy at a later time, usually 4-6 weeks (two-stage procedure) [7]. Of the three procedures, there is a small increased risk of morbidity and mortality associated with a single-stage procedure; however, there is also a known risk of further complications from gallstones while awaiting a cholecystectomy and repair of fistula in a two-staged procedure [8]. Intraoperatively, we noticed a large fistula tract with a collapsed gallbladder. Consequently, we elected for a staged procedure with a laparotomy and enterolithotomy initially.

In conclusion, gallstone ileus is a rare cause of intestinal obstruction. Abdominal CT is the preferred modality because of its better and rapid diagnosis. Management of gallstone ileus is mainly surgical and the choice of surgical option relied on the preoperative medical status of the patient, the intraoperative findings, and surgeon skills.

We report this case to start being familiar with this entity, its clinical manifestation, and radiological findings to lead to early diagnosis for a better outcome.

Key points

- Gallstone ileus is a Forgotten cause of bowel occlusion.
- Abdominal CT remains the most helpful diagnostic tool that leads to early diagnosis and better outcomes.
- Rigler's triad reports classical features revealed by imaging suggestive of gallstone ileus including mechanical ob-

struction, pneumobilia, and an ectopic gallstone within the bowel lumen.

- The choice of surgical treatment depends on the preoperative medical status of the patient, the intraoperative findings, and surgeon skills.

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