

Case Report
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Gallstone Ileus: A Rare Cause of Intraluminal Small Bowel Obstruction

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ABSTRACT

Background: Gallstone ileus is mechanical intestinal obstruction secondary to impaction of a gallstone within the gastrointestinal tract, and accounts for 1-4% of mechanical bowel obstruction, with a preponderance in the female population [1].

Case Presentation: 56 year-old female presented with right upper quadrant pain (RUQ) and multiple vomits, current smoker. Mechanical obstruction noted on computerised-tomography and underwent laparotomy revealing gallstone ileus. This is on a background of two prior episodes of RUQ pain, presenting to the hospital but lost of follow-up after discharging against medical advice two years ago.

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Abbreviations

 RUQ = Right upper quadrant
 CT = Computed Topography

Introduction

A 56-year-old female presented to emergency department with acute epigastric pain associated with nausea and multiple vomits. This is on a background of a previous presentation two years prior for acute cholecystitis in which patient discharged against medical advice prior to emergency laparoscopic cholecystectomy. On examination, patient had palpation tenderness in the right upper quadrant and epigastric region however without generalised peritonism. Blood tests revealed raised inflammatory markers (CRP 14.8, WCC 16.5) and biochemical markers (Urea 65, Bilirubin 13/<4). Patient's past medical history included emphysema, asthma and gastro-oesophageal reflux disease. A computed topography (CT) scan of the abdomen and pelvis revealed proximal to mid-small bowel obstruction, with a transition point in the mid lower abdomen, and a peripherally calcified ovoid endoluminal structure at the level of the transition point is of unclear nature. The patient underwent an emergency laparotomy for removal of approximately 3 cm mass on CT. Intraoperatively patient proceeded with a lower midline laparotomy with careful inspection of the small bowel. The point of transition was identified and an enterotomy performed to deliver the mass, on appearance keeping with a large gallstone, approximately 30 mm in size. Enterotomy was closed with 3-0 PDS sutures with fascia and skin closed in standard fashion.

Patient was directed to have early feeding and mobilisation with intravenous antibiotics continued in the perioperative phase. The patient recovered well post-operatively and was discharged home subsequently on day 4 of admission after tolerating a regular diet and resumption of normal bowel function.

The patient's initial presentation in 2019 was due to two days of right upper quadrant pain in keeping with biliary colic then did not abate. Associated nausea was present and patient recalled a similar episode that resolved in 2010 without presentation to medical services. Ultrasonography in 2019 revealed a 2.7cm stone impacted at the neck with a 10mm wall, and a normal common bile duct diameter for patient's age.



Figure 1: CT of the abdomen demonstrating a small bowel obstruction with proximal bowel obstruction (A), and a peripherally calcified ovoid intraluminal structure at the level of the transition point (B)

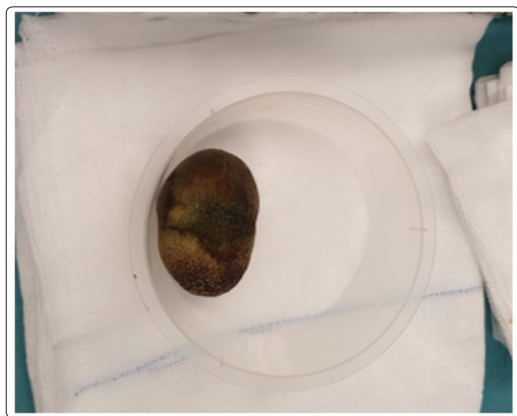


Figure 2: Intraoperative image showing large gallstone measuring approximately 30mm

Gallstone ileus is an uncommon presentation of gastrointestinal obstruction, complicating about 0.5% of gallstone disease. Gallstone ileus is commonly preceded by an initial episode of acute cholecystitis, with the inflammation leading to formation of adhesions. The inflammation and pressure of the gallstone results in erosion of the gallbladder wall, resulting in a fistula formation between the gallbladder and the adjacent portion of the gastrointestinal tract [2].

In 2-3% of cholelithiasis cases associated with acute cholecystitis, formation of a bilioenteric fistula is a common complication [3]. Common fistula formations include cholecystoduodenal (85%), cholecystogastric, cholecystojejunal, cholecystoileal, cholecystocolic and choledochoduodenal [4,5]. Gallstones greater than 2.5 cm have a higher tendency to cause bowel obstruction, 3% at the level of the duodenum, and more commonly at the terminal ileum [4].

Gallstone ileus presents most classically with the Rigler triad: an ectopic gallstone, distended bowel loops (indicating small bowel obstruction) and presence of air-fluid or pneumobilia. CT scanning helps to define the level and cause of bowel obstruction, and define the size and structure of the gallstone [5]. The degree of calcification of gallstones on CT is a key element for diagnosis of gallstone ileus, however, not all gallstones may be radiopaque on CT. A minority of gallstones are radiolucent on CT (14.9%) whilst approximately 48.3% demonstrate dense opacification, 11.5% are of slight opacification and 21.8% show rim opacification. It can be a challenge to diagnose as a significant percentage of gallstones are not detected due to composition nature, and in the absence of signs such as pneumobilia [6].

The main stay of management for gallstone ileus is removal of the obstructing stone. Three key elements of gallstone ileus are cholelithiasis, biliary-enteric fistula and intestinal obstruction which are addressed with various procedures. The intestinal obstruction can be relieved with an enterolithotomy, whilst the cholelithiasis and biliary-enteric fistula can be addressed through a cholecystectomy and fistula closure, often in a later staged procedure [4].

In the case presented here, the finding of a calcified ovoid intraluminal structure at the level of the transition point of proximal-to-mid small bowel obstruction, and potential fistulation of the gallbladder evidenced by wall thickening mucosal hyperenhancement of the region of the distal gastric prompted an emergency surgical intervention. The small bowel

was accessed and an enterotomy was made to remove the gallstone from the ileum. In this patient, pneumobilia was not seen and in literature review, it is sign not reliably found on CT scans in patients presenting with gallstone ileus. Given the patient has presented with recurrent acute calculous cholecystitis, with a lack of follow-up two years prior as the patient discharged against medical advice, the risk of recurrence of gallstone ileus is high [7]. Informed consent was obtained from all participants in this study.

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