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Gallstone ileus

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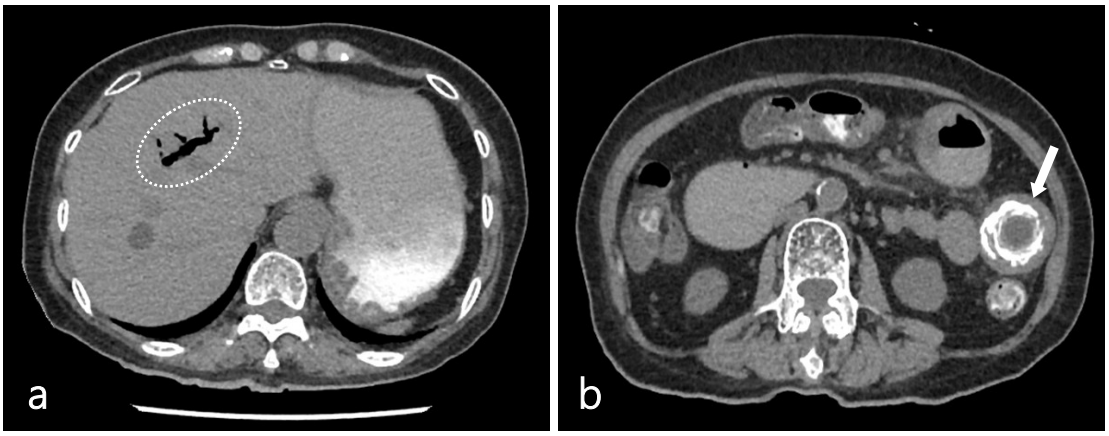

A 76-year-old female presented with vomiting and diarrhoea for four days. She had a history of diabetes mellitus and hypertension, but no prior biliary symptoms. On examination, she was not icteric; her abdomen was soft but distended. Rectal examination was unremarkable. Her leukocyte count was elevated at 13×10^9/L (normal range: 4–10×10^9/L), but liver function tests remained within normal limits. Abdominal radiograph showed ectopic calcified lesion seen over the left upper quadrant region. Hepatobiliary ultrasound showed a contracted gallbladder filled with multiple small stones. Contrast-enhanced computed tomography (CT) of the abdomen and pelvis revealed a dilated proximal small bowel and confirmed the diagnosis (**Figure 1a and b**).

What is the diagnosis ?

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ANSWER: Bowel obstruction due to migrated stones—Gallstone ileus.

The diagnosis is given as she has fulfilled the components of Rigler's triad namely presence of dilated proximal small bowel, aerobilia and multiple ectopic gallstones impacted within the small bowel. The computed tomography (CT) scan showed aerobilia (**Figure 1a**- air within the biliary tree) due to the choleduodenal fistula formed as a result of the gallstones (**Figure 1b**). Following fluid resuscitation and bowel decompression, the patient underwent emergency exploratory laparotomy. Intraoperatively, two impacted gallstones were found (**Figures 2**). Enterotomy was performed to retrieve the stones. Closure was done using Heineke-Mikulicz technique. Due to the patient's frailty, advanced age, and grossly dilated bowel, a concurrent repair of the choledochoduodenal fistula was not attempted. This decision helped minimise operative time and surgical risk.

The term gallstone ileus is a misnomer, as the condition does not represent a true ileus (a non-mechanical bowel obstruction), but rather a mechanical obstruction caused by gallstones that have migrated into the bowel via a biliary-enteric fistula. It is a rare complication of gallstone disease, occurring in approximately 0.3%–0.5% of cases.[1] Gallstone ileus accounts for 1%–4% of all bowel obstructions and less than 25% of non-strangulated small bowel obstructions in patients aged over 65.[2] Delayed diagnosis and treatment contribute to the high morbidity and mortality.

The classical findings in abdominal radiograph include i) aerobilia, ii) intestinal obstruction, and iii) an ectopic located gallstone.[3] Ultrasound is an effective modality in evaluating complicated gallstone disease such as cholecystitis, choledocholithiasis, fistula and impacted stone.[4] CT scan remains the diagnostic gold standard, with high sensitivity of 93% for detecting Rigler's triad and better visualisation of the fistula and gallstones.[5] Ectopic gallstones tend to lodge at sites of natural narrowing, with the ileocaecal valve being the most common site. In this case, one stone was located in the jejunum and another in the terminal ileum.[1]

The management strategy primarily involves surgical intervention where the main goals are extraction of the obstructing gallstone and closure of biliary enteric fistula with removal of gallbladder. The optimal surgical approach can be divided into three subgroups namely i) enterolithotomy (stone removal alone), ii) one-stage procedure (enterolithotomy, fistula repair, cholecystectomy) or iii) two-stage procedure (enterolithotomy followed by interval closure of fistula with cholecystectomy.[5]

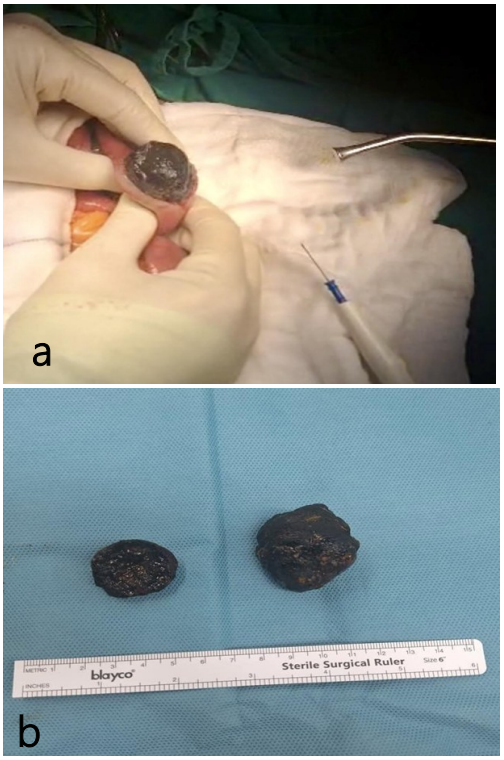

Figure 2: Intraoperative findings upon enterotomy revealed one large stone measuring 5x5 cm (a) located at the jejunum, 40 cm distal to the duodenojejunal flexure and another one smaller stone measuring 3x3 cm at the terminal ileum. Figure (b) shows the postoperative view of both stones.

Enterolithotomy in the acute setting remains the preferred choice when dealing with high-risk and unstable patients, followed by second stage fistula repair with cholecystectomy. Open surgery is usually preferred when severe adhesion is anticipated, or diagnosis is uncertain. This approach is effective to relieve the obstruction by surgically removing the impacted gallstone from the small intestine. One-stage surgery - a combined enterolithotomy, cholecystectomy and fistula repair in a single procedure, is mainly reserved for stable patients with good physiological reserve. This approach, if it is performed on a frail elderly and unstable patients, it carries higher risk due to longer operative time with increased complexity.[6]

Two-stage surgical approach is suitable for elderly patients with multiple comorbidities and when there is significant inflammation or oedema around the impacted area. This strategy prioritises patient safety by limiting the extent and duration of surgery during acute phase, allowing for stabilisation and recovery before definitive treatment. In this case, we proceeded with enterolithotomy and decided against repairing the

choleduodenal fistula in a similar setting as this patient is old and frail with grossly dilated bowels. It helped in minimising the operative time and surgical risk.

Clinicians should consider gallstone ileus as a differential diagnosis in elderly patients presenting with small bowel obstruction. A contrast-enhanced CT is crucial in ruling out other causes and confirming the diagnosis. The outcome of this patient demonstrates that a two-stage surgical approach is particularly safe in elderly patients with gallstone ileus.

Abbreviations

CT Computed tomography

Declarations

Conflict of interests

The authors declare no conflict of interests.

Consent

Consent has been obtained from patient's parents for publication.

Acknowledgement

None.

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