CASE REPORT

Gallstone ileus obstructing within an incarcerated lumbar hernia: an unusual presentation of a rare diagnosis

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SUMMARY

We describe an unusual case of a 74-year-old woman who presented with signs and symptoms of small-bowel obstruction and a clinically appreciable, irreducible, left-sided lumbar hernia associated with previous iliac crest bone graft harvesting. Palpation of the hernia demonstrated a small, firm mass within the loops of herniated bowel. CT scanning recognised an intraluminal gallstone at the transition point, establishing the diagnosis of gallstone ileus within an incarcerated lumbar hernia. The proposed explanatory mechanism is that of a gallstone migrating into an easily reducible hernia containing small bowel causing obstruction at the hernia neck by a ball-valve mechanism, resulting in proximal bowel dilation and thus hernia incarceration; it remains unclear when the stone entered the hernia, and whether it enlarged in situ or prior to entering the enteral tract. This is only the second reported instance in the literature of an intraluminal gallstone causing hernia incarceration.

BACKGROUND

This case represents only the second reported instance in the literature of a gallstone ileus causing hernia incarceration. Furthermore, it underscores the concept that even in the presence of an 'obvious' diagnosis—in this case, an incarcerated hernia—we must always maintain a healthy clinical scepticism and an open mind to other, unexpected aetiologies which may account for the clinical presentation.

CASE PRESENTATION

An 74-year-old woman was referred to the general surgery service after presenting with symptoms of nausea, vomiting and obstipation of several days duration; she noted several previous similar episodes over the preceding several months which had resolved spontaneously. Her medical history was significant for complicated rheumatoid arthritis with previous orthopaedic surgeries and bone graft harvesting from her iliac crests, but she denied prior intraperitoneal surgery. On examination the patient had a large left flank swelling superior and posterior to the iliac spine; within this soft tissue swelling a discreet 3 cm mass of firm, stone-like quality was palpable. The patient was admitted to hospital and a nasogastric tube for enteral decompression was inserted in anticipation of a surgical repair of an incarcerated lumbar hernia.

Unfortunately, the patient suffered a myocardial infarction very early in the course of her admission with resultant flash pulmonary oedema requiring positive pressure ventilation and endotracheal intubation. The subsequent delay in getting the patient to the operating theatre for definitive management prompted us to order a CT scan of the abdomen to look for signs of bowel compromise and assess the anatomy for surgical planning. No bowel compromise was found, and the patient was stabilised in the intensive care unit (ICU) to ensure that there were no further cardiac complications prior to surgery.

INVESTIGATIONS

The CT scan confirmed our suspicion of a large left lumbar hernia with incarcerated loops of small bowel. Within the herniated bowel, a point of obstruction was identified where oral contrast failed to progress and a large intraluminal filling defect was suggested ([figure 1](#)). A differential diagnosis including gallstone ileus, ingested foreign body, food bezoar and small bowel neoplasm was considered.

TREATMENT

After being medically stabilised the patient was extubated and transferred to the ward from the ICU, but remained obstipated. An exploratory laparotomy via a midline incision was performed, and the hernia was reduced from within the peritoneal cavity. A large, mobile, intraluminal mass was identified at the hernia neck as the point of obstruction. As evidence that there was no other cause of narrowing at this point, the mass was milked distally from the point of obstruction before an enterotomy was fashioned and the mass—found to be a large, solitary gallstone—was removed. The remainder of the small bowel was examined and no further stones were found; the gallbladder was left in situ.

Repair of the hernia defect was accomplished by first reducing the contents and then creating a flap of peritoneum. The cavity was plugged with a polypropylene mesh, and a second flat mesh was used to patch the defect; the mesh was secured to the abdominal wall and iliac crest with a laparoscopic tacking device. Finally, the mesh patch was covered with the flap of peritoneum, protecting it from any possible contamination resulting from our enterotomy.

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Figure 1 Axial CT image of gallstone ileus within a lumbar hernia. (A) Lumbar hernia, (B) gallstone, (C) no oral contrast and (D) oral contrast.

OUTCOME AND FOLLOW-UP

Postoperatively the patient recovered well from surgery and began tolerating an oral diet in approximately 1 week, after resolution of a paralytic ileus. She was ultimately transferred to a rehabilitation facility for further physiotherapy due to limitations related primarily to her baseline arthritis.

DISCUSSION

Gallstone ileus was first described in 1654¹ and is thought to be the underlying aetiology of approximately 1% of all bowel obstructions, though elderly, female patients are disproportionately affected.^{1–3} Multiple reviews of this disease have shown a marked improvement in outcomes over the 20th century, with mortality rates falling from over 40% in the 1890s, to 6% in the modern era.^{1 4 5} The historic description of gallstone ileus is that of an elderly patient with a history of biliary-type symptoms and obstruction in the distal small bowel at the narrowing of the terminal ileum. Despite this common description, reports suggest that up to half of patients will deny previous biliary symptoms,³ and described points of obstruction have included ectopic locations such as the stomach, duodenum, jejunum and colon.^{3 6–10} Only one previous instance of gallstone ileus within a hernia has been described in the literature.¹¹

As an aetiology of bowel obstruction, lumbar hernia incarceration is significantly rarer than gallstone ileus. Lumbar hernias were first described as early as 1672¹² but remain an infrequent finding, with fewer than 300 cases reported by the literature at the start of the 21st century.¹³ These hernias are divided into multiple different forms defined by either anatomy, as in the Gynfeltt and Petit variations^{12 13} or by aetiology being congenital, primarily acquired or secondarily acquired.^{12 13} Secondarily acquired lumbar hernias have been reported as the consequences of retroperitoneal surgeries, blunt abdominal trauma, or, as in our case, in 5–9% of iliac crest bone graft donor sites.^{14–19} Despite their low incidence, lumbar hernias have a high incidence of strangulation reported at 16–20% and thus typically warrant surgical repair when diagnosed.^{12 13 19} While multiple techniques for lumbar hernia repair have been described, modern success in small-defect hernias has been found with a laparoscopic approach.²⁰

Despite the rarity of the individual diagnoses of incarcerated lumbar hernia and gallstone ileus, we present a case where one patient suffered from both pathologies simultaneously and indeed inseparably—should this patient have had either an

intraluminal gallstone or a lumbar hernia, it is unlikely that she would have presented with a bowel obstruction at this time.

Two possible mechanisms may account of the presentation of obstruction in this patient. Under the traditional view of gallstone ileus, a large stone may cause obstruction shortly after entering the enteral tract. Within this model, an intraluminal gallstone may have passed into the bowel contained within a reducible lumbar hernia, causing behind it a relative obstruction with dilation of the proximal bowel loops; the resulting dilation caused a narrowing of the hernia neck, entrapping the stone within the hernia defect and causing as a result a high-grade obstruction by a ball-valve mechanism. An alternative explanation has been proposed in which a small, non-obstructing stone with slow transit through the enteral tract progressively enlarges while contained within the bowel lumen.²¹ In this case, an intraluminal gallstone unable to navigate beyond a narrow hernia neck may undergo months to years of progressive enlargement until reaching sufficient size to cause obstruction. This may account for the lack of biliary symptoms and a history of similar previous self-resolving episodes in this patient. In both instances hernia incarceration is the result of dilation of the proximal bowel within the hernia defect, and is directly attributable to the presence of an obstructing gallstone.

This case represents only the second reported instance of gallstone ileus causing hernia incarceration. While this case is certainly interesting for the reason of absolute rarity of incidence, we believe that it also serves as a reminder to physicians to always be vigilant in considering a wide differential diagnosis, particularly in patients who have undergone previous procedures or present with rare or unexpected pathologies. While the most common diagnosis in a differential is *likely* to represent the underlying pathology, there are instances where physicians will encounter truly unusual pathologies which are in fact the culprit in an individual case. Dr Theodore Woodward's often-repeated proclamation "When you hear hoofbeats, think of horses not zebras," remains sage advice, however, in some rare instances as in the one presented here, the 'zebra' is indeed the unexpected culprit.

Learning points

- ▶ Gallstone ileus may not present in the 'typical' fashion—gallstones may be asymptomatic and the point of obstruction may be anywhere in the gastrointestinal tract.
- ▶ Abdominal wall hernias may result from any abdominal procedure, however minimal the incision.
- ▶ Any underlying structure may become involved in hernias, including solid and hollow organs or, in this instance, an ectopic stone.
- ▶ The elderly are particularly predisposed to gallstone ileus and it must be considered in any high-grade obstruction with a visualised filling defect on gastrointestinal imaging.

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Competing interests None.

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