CASE REPORT

Left paraduodenal hernia: a rare cause of small bowel obstruction in the elderly

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SUMMARY

Left paraduodenal hernia is a rarely found condition in which the small bowel herniates through a congenital peritoneal defect located behind the 4th portion of duodenum. It usually courses with non-specific symptoms and a widely variable clinical presentation which makes preoperative diagnosis very difficult. It has been associated with a high rate of complications, including bowel strangulation and even death. Prompt surgical intervention consisting of intraoperative surgeon's awareness and recognition of this condition are crucial in order to improve postoperative morbidity and mortality. The authors present a case of a 73-year-old man with acute intestinal obstruction as the first presentation of a left paraduodenal hernia.

BACKGROUND

Internal hernias can be either congenital or acquired and constitute a rare cause of intestinal obstruction.^{1–3} Congenital internal hernias are classified according to their location, with half of them being paraduodenal.¹ Left-sided paraduodenal hernias represent 2/3 of paraduodenal hernias and are defined by small bowel's herniation through the Landzert's fossa.^{1 4} Owing to its rarity and lack of specific symptoms it has been an underdiagnosed condition making the accurate preoperative diagnosis a challenge. Nowadays, with the advances in modern imaging technology, early and correct diagnosis is possible, usually during symptomatic periods.³ At least half of the patients with a paraduodenal hernia will develop intestinal obstruction with a lifetime risk of bowel strangulation around 50% and a mortality rate above 20%.^{5–9} Prompt surgical intervention and intraoperative recognition of this pathological entity are decisive factors for a favourable outcome allowing a decrease in postoperative morbidity and mortality.^{4–8}

The authors report a case of a 73-year-old man with undiagnosed left paraduodenal hernia as the origin of an acute small bowel obstruction.

CASE PRESENTATION

A 73-year-old man, with no prior surgery, was admitted to our hospital with persistent abdominal pain, abdominal distention and vomiting. Physical examination revealed abdominal distension and diffuse rebound tenderness on palpation. Plain abdominal radiograph showed multiple air–fluid levels, evidencing intestinal obstruction (figure 1). The abdominal CT scan demonstrated marked dilated small bowel loops, with wall thickening and apparent obstruction at ileal level (figure 2).

Figure 1 Multiple air–fluid levels on abdominal X-ray.

Figure 2 Dilated small bowel loops with wall thickening on abdominal CT scan.

The patient underwent an exploratory laparotomy that revealed dilated small bowel loops within a hernial sac formed by the posterior transverse mesocolon peritoneum. The hernial sac and its contents pushed down the transverse colon that was then found folded into a pelvic location (figure 3).

The last ileal loop was identified, retracted and herniated through a mesocolon aperture surrounded by left ascending colic artery and inferior mesenteric vein (figure 4).

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Figure 3 Dilated small bowel loops within a hernial sac formed by the posterior transverse mesocolon peritoneum. The hernial sac and its contents pushed down the transverse colon that was then found folded into a pelvic location.

After the detachment of the hernia hole the entire small bowel was reduced from the sac (figure 5) and the Landzert's fossa was recognised. The normal anatomy was restored and the defect closed by suturing the hernial orifice.

OUTCOME AND FOLLOW-UP

Postoperative period coursed with ileus that resolved with conservative treatment. The patient was discharged at the 12th postoperative day. He remained asymptomatic after 12 months of follow-up.

DISCUSSION

Internal hernias are defined as the protrusion of viscera through an orifice in the peritoneum. This aperture may be normal, such as the foramen of Winslow or abnormal, usually due to internal malrotations.¹ Internal hernias can be congenital or acquired and constitute a rare cause of intestinal obstruction. They represent 0.2–0.9% of all small intestinal obstructions and 4.1% of acute intestinal obstruction caused by hernia.^{2–3} Congenital internal hernias are classified according to their location with more than half of them being reported as paraduodenal hernias, a result of abnormal midgut rotation during embryonic development.^{1–3} There are few reports of paraduodenal hernias, with <500 cases being reported in the literature.⁵ Two types of paraduodenal hernias have been described, left sided and right sided. Left-sided hernias are the most common representing about 75% of paraduodenal hernias, with a 3:1 male to female predominance.^{1–4} Regardless of their congenital aetiology, most

Figure 5 Aperture detachment and small bowel reduction restoring normal anatomy.

cases are diagnosed between the fourth and sixth decades of life being exceptionally found in patients over 75 years.^{4–6}

The pathophysiology of left paraduodenal hernia formation is not completely understood, it appears to result from incomplete fusion of the posterior parietal peritoneum and the posterior abdominal wall, between the 5th and 11th gestational week.^{7–9} This anomaly creates a peritoneal defect, present in ~2% of the population, named Landzert's fossa. It is located behind the fourth part of the duodenum, posterior to the inferior mesenteric vein and left branches of the middle colic artery.^{1–4} During midgut rotation, small bowel herniates through the Landzert's fossa getting entrapped between the mesocolon and the posterior abdominal wall.^{1–4–7–9}

The most common presentation of left paraduodenal hernia is acute small bowel obstruction but it may also course with a variety of intermittent clinical symptoms such as nausea, postprandial vomiting, abdominal distention, abdominal pain, recurrent intestinal obstruction and occasionally a palpable mass in the left upper quadrant.^{1–6–8} This entity is a diagnostic challenge because of its variable and non-specific presentation, which makes accurate preoperative diagnosis very difficult.

Nowadays with the development of modern imaging technology, early and correct diagnosis is possible, usually during symptomatic periods.^{1–3–7} Although Barium studies, CT and MRI have been used as a diagnostic tool, abdominal CT scan seems to be the modality of choice for the diagnosis of paraduodenal hernias.⁷ In the set of left paraduodenal hernia CT scan typically demonstrates an encapsulated sac containing clustered dilated small bowel loops at or above the ligament of Treitz or behind the stomach causing a mass effect on its posterior wall. Inferior transverse colon displacement as well as inferior mesenteric vessel abnormalities can also be observed.³

At least half of the patients with paraduodenal hernia will develop intestinal obstruction, which, in extreme cases, can lead to bowel ischaemia and perforation.¹⁰ This congenital abnormality is associated with a reported lifetime risk of bowel strangulation around 50% and a mortality rate above 20%.^{6–8}

Paraduodenal hernias demand surgical treatment, whether preoperative diagnosis is correctly settled or not. Facing bowel strangulation risk, timely intervention assumes a crucial role

Figure 4 Hernia orifice (tip of dressing forceps) surrounded by left ascending colic artery (upper left of the dressing forceps) and inferior mesenteric vein (right of the dressing forceps).

once it dictates the likelihood of a favourable outcome.^{4–9} The laparoscopic approach has been considered in recent years since it has the ability of both diagnosis and simultaneous surgical intervention and it is associated with reduced morbidity, post-operative pain and length of hospital stay.^{4 5} However, when facing the need of urgent intervention the laparoscopic approach becomes more difficult and increases the risk of

iatrogenic injuries since the bowel loops are distended and the operative space is reduced.^{5 11}

Competing interests None declared.

Patient consent Obtained.

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Learning points

- ▶ Internal hernias are not often considered in the differential diagnosis of small bowel obstruction. Owing to its rarity and lack of specific symptoms, it has been considered an underdiagnosed condition with a challenging accurate preoperative diagnosis. With the advances in modern imaging technology, left paraduodenal hernias can be timely and correctly diagnosed due to its more specific radiological features, mainly during symptomatic periods, which favours the necessary prompt surgical intervention.
- ▶ Whenever the correct diagnosis is not achieved preoperatively, familiarity with this pathological entity and intraoperative recognition of paraduodenal hernia are crucial to prevent unfavourable outcomes and decrease postoperative morbidity and mortality.

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