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Laparoscopic repair of a left paraduodenal hernia

Paraduodenal herniae (PDH) are the most prevalent of the rare internal herniae accounting for half of all presentations, with approximately three-quarters being left-sided. There is a 3:1 male preponderance. It is a rare cause of small bowel obstruction (<1%) but carries an associated mortality rate of up to 20%, primarily due to delayed diagnosis.[1,2] This case details a patient with a left-sided PDH. Informed consent was obtained from the patient for publication of this case report and accompanying images. Approval was also granted from the ethics committee.

An otherwise healthy 25-year-old male, presented with a 16-h history of left-sided abdominal pain, vomiting and obstipation. This was his first episode with no previous abdominal surgery. On examination, he was haemodynamically stable and afebrile. The abdomen was distended, with left-sided focal peritonism. Bowel sounds were audible. Blood tests were unremarkable. A computed tomography scan revealed distended, faecally loaded small bowel loops with an oedematous mesentery displaced beyond the colon in the left abdomen. After resuscitation, he proceeded to laparoscopy (Fig. 1).

A 10-mm port was inserted infraumbilically using Hasson technique, with an additional two operating ports. Laparoscopy confirmed radiological findings of a left-sided PDH. It contained the majority of the proximal small bowel including the duodenojejunal flexure (DJF), with an intervening loop outside the hernia (Fig. 2a,b).

The sac extended superiorly behind the transverse colon and in front of the structures of the left retroperitoneum. The neck of the hernial sac was formed anteriorly by the free edge of the descending colonic mesentery (containing the inferior mesenteric vein) and posteriorly by retroperitoneum. The neck of the hernia lay posterolateral to the DJF (Fig. 2c,d).

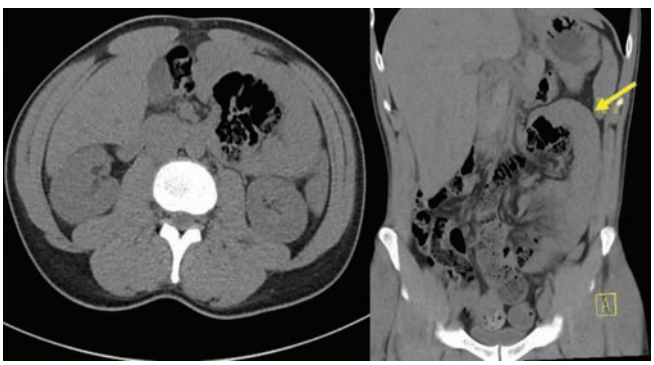

Fig. 1. Axial and coronal views of the patient's computed tomography scan of the abdomen, with arrows outlining a sac containing small bowel loops, left of midline.

There was evidence of small bowel obstruction, with distended bowel loops and constriction at the neck of the sac. The duodenum, DJF, transverse, descending and sigmoid colon were found in the normal anatomical positions. The hernia was reduced by traction and division of the sac, with a combination of diathermy and sharp scissors (Fig. 2e–g). The hernial sac was incised to the area between the DJF and inferior mesenteric vein laterally (Fig. 2h), and the excess sac was excised. No bowel resection was required as the entire small bowel was viable.

The recovery was uncomplicated and the patient was discharged home 2 days post-operatively.

Nine anatomic variants of the paraduodenal folds and fossae are classically described. Landzert's fossa is the only, to the left of the duodenum capable of developing into a left PDH.[2–4] The most accepted mechanism involves malrotation of the midgut during the early weeks of embryological development.[2–4]

In normal embryonic development, the midgut herniates into the umbilical cord in the fifth week. Later, the herniated midgut undergoes a series of rotations around the superior mesenteric artery (SMA). The herniated intestinal loops return to the abdominal cavity by the 10th week. In the end, the prearterial limb lies left to the SMA and the postarterial limb lies superior and right to the SMA. Fusion of the mesocolon with the peritoneum of the body wall follows this process.[2–4]

Failure of the fusion to take place in time leaves a potential space behind the mesocolon (the fossa of Landzert, present in approximately 2% of all autopsy cases[3]). While rotating into the peritoneal cavity, the colonic mesentery fails to fuse with the parietal peritoneum creating a hernia orifice. This is a potential herniation site (Fig. 3). Landzert's fossa is located behind the fourth part of the duodenum and is formed by the lifting up of a peritoneal fold by the inferior mesenteric vein and ascending left colic artery as they run along the lateral side of the fossa. The free edge of hernia thus contains the inferior mesenteric vein and ascending colic artery.[4]

Increasingly, the diagnosis is made on computed tomography scan, superseding contrast small bowel series.[5] Lifetime risk of obstruction is 50%; therefore, elective treatment is recommended.[4] The surgical approach is dictated by the nature of the hernia, sac contents and proximity to inferior mesenteric vessels. The herniated small bowel loops should be reduced. There are a number of techniques described to deal with the hernia sac itself. The orifice can be closed with non-absorbable sutures or widened to prevent future incarceration of bowel loops.[5,6]

Clinical diagnosis of internal herniae is difficult but failure to do so may have disastrous outcomes. A consideration for internal herniae should be maintained for patients with features of intestinal obstruction, particularly without an alternative cause.[6] Laparoscopic repair is a feasible option for repair of these hernias.[7]

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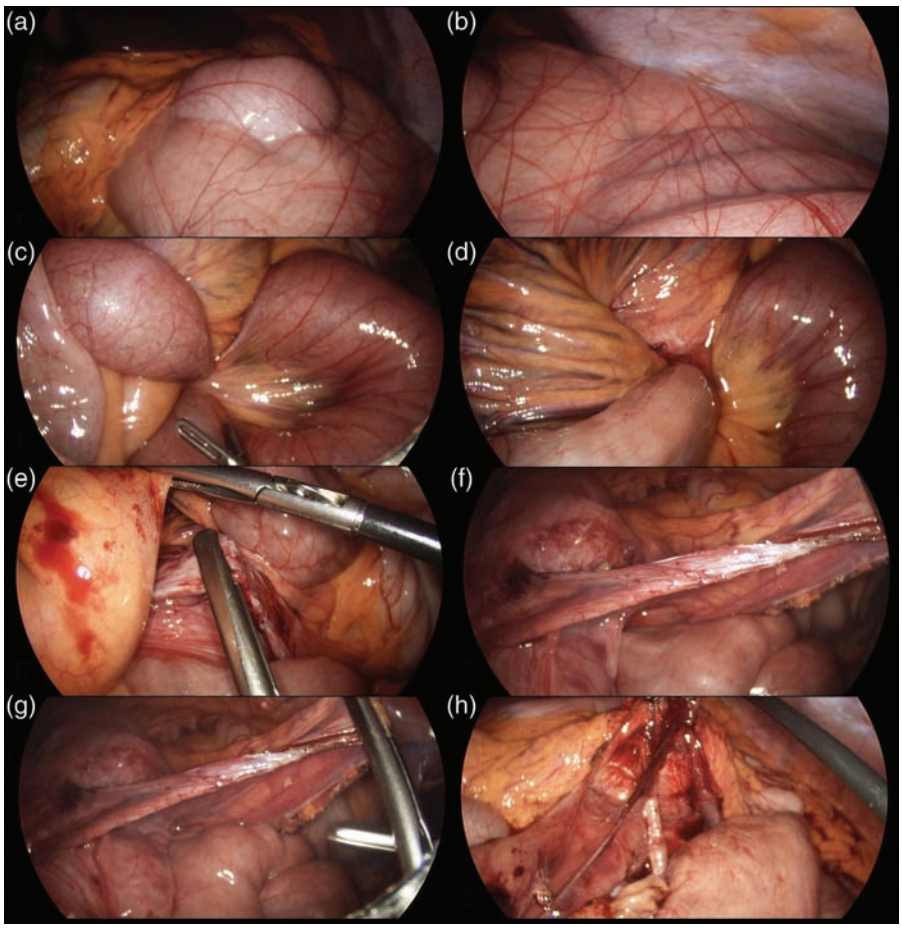

Fig. 2. (a–h) Identification and laparoscopic reduction of paraduodenal hernia in sequence.

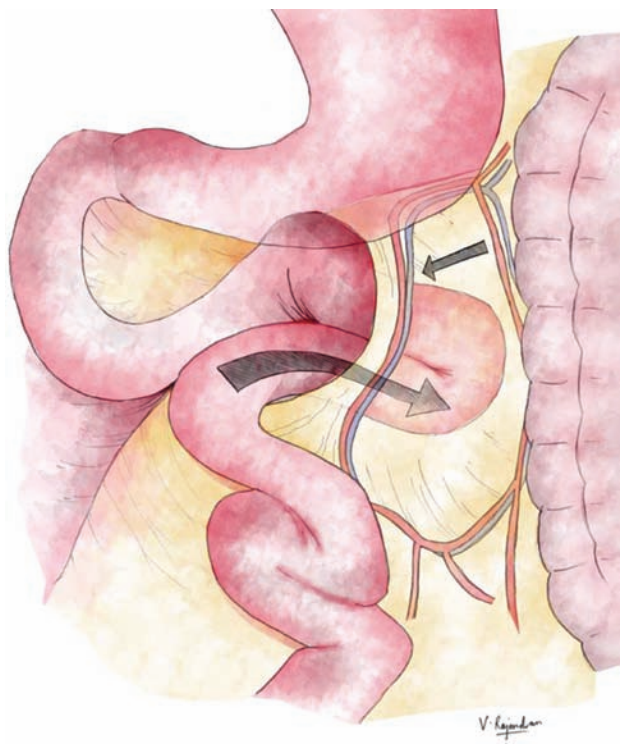

Fig. 3. Graphic illustration of a left paraduodenal hernia, depicting loop of small bowel prolapsing (curved arrow) through Landzert's fossa, located behind the inferior mesenteric vein and ascending left colic artery (straight arrow).

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