

Clinical features of paraduodenal hernia

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Abstract

Paraduodenal hernia (PDH), though uncommon, is a surgical emergency associated with high risk of strangulation and incarceration. Diagnosis of PDH remains challenging due to its non-specific presentation. We report the presentation and management of PDH in our hospital. All PDHs diagnosed from 2003 to 2014 were identified from a hospital database. Diagnosis of PDH was based on either radiological imaging or intraoperative surgical findings. Eight PDHs were identified during the study period. Median age was 48.5 (24–63) years and five occurred in females. All were left-sided PDHs. Six patients experienced recurrent symptoms prior to presentation. The commonest presenting symptoms were recurrent abdominal pain (four patients) and intestinal obstruction (four patients). Five patients were treated conservatively either because they had no obstructive symptoms or they declined surgery. All of them remained well up to a median of 27 (16–45) months' follow-up. In contrast, three patients with obstructive symptoms underwent surgical repair (laparotomy, hernia repair and adhesiolysis). One patient had sub-acute intestinal obstruction after surgical repair and required re-exploratory surgery. All three PDH patients with obstructive symptoms remained well on follow-up (median 61 (range: 27–114) months) after surgery. In conclusion, PDH is an uncommon cause of intestinal obstruction. A high index of suspicion is required to diagnose PDH.

Keywords

Paraduodenal hernia, clinical features, intestinal obstruction, outcome

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Introduction

Paraduodenal hernia (PDH) is defined as abnormal herniation of the small bowel into the paraduodenal fossa. Although PDH represents less than 1% of intestinal obstructions, it accounts for more than half of internal hernias. Left-sided PDH is three times more common than right-sided PDH, with male predominance.¹ Complications including strangulation and perforation can result in significant mortality as high as 44% without prompt operative correction.^{2,3} The non-specific presenting symptoms and lack of familiarity among physicians makes pre-operative diagnosis of PDH challenging. We report on the presentation and management of PDH in our hospital.

Methods

This is a retrospective case series of PDH diagnosed in Singapore General Hospital (SGH). Medical records from 1 January 2004 to 1 January 2014 were reviewed using the keywords 'hernia' and 'paraduodenal hernia'. Diagnosis of PDH was based on radiological or intraoperative surgical findings. All radiographic images were reviewed by a single consultant radiologist (NL). The study was approved by the Singhealth Centralized Institutional Review Board.

Results

Eight patients with PDH were identified. This constituted 0.07% of all intra-abdominal hernias and accounted for less than 0.01% of intestinal obstructions presenting to the emergency department. Five occurred in females. The median age was 48.5 years (24–63). Clinical features of all PDHs are summarised in Table 1. All were left-sided PDH. The commonest presentation was recurrent abdominal pain (50%) and intestinal obstruction (50%). Three had a past history of abdominal surgery prior to diagnosis of PDH. One patient reported

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significant weight loss from intensive exercise prior to the diagnosis of PDH. All PDHs were diagnosed on computer tomography scan and three were confirmed intraoperatively.

Five patients were treated conservatively either because they had no obstructive symptoms or had declined surgery. During the median follow-up of 27 months (range 16–45 months), none required surgical intervention. Two patients with nonobstructive PDH were lost to follow-up. In contrast, three PDHs with obstructive symptoms eventually underwent surgical repair (laparotomy, reduction and adhesiolysis). One patient required additional re-exploratory surgery for subacute intestinal obstruction following surgical repair. Of note, severe adhesions were found in all PDH patients who underwent surgical repair. All three PDH patients remained well postoperatively during follow-up of 61 (27–114 months). One patient with transient obstructive symptom experienced spontaneous recovery. Although surgical repair was offered, he declined surgery and was lost to follow-up.

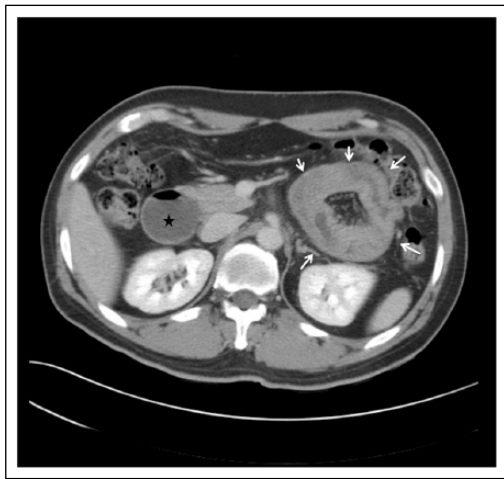


Figure 1. Axial contrast-enhanced computed tomography image showing obstructed left paraduodenal hernia as a cluster of small bowel loops in the left paraduodenal fossa (white arrows) and proximately dilated duodenum (black star).

Discussion

PDH is defined as herniation of the small bowel into the paraduodenal fossa located around the duodenum. Left PDHs are more commonly seen.^{4,5} PDH can result in strangulation and incarceration in up to 64%, and reported mortality following strangulated small bowel obstruction can be as high as 44% without correct perioperative diagnosis.^{1,6,7}

The diagnosis of PDH is challenging due to its nonspecific presentation and may be misdiagnosed as functional dyspepsia or irritable bowel syndrome.^{8–10} Historically PDH was either diagnosed intraoperatively or discovered during autopsy as an incidental finding. The widespread availability of computed tomography (CT) enables PDH to be diagnosed promptly in patients with abdominal pain. Typical findings on CT scan include clustering of small bowel loops around the duodenum together with engorgement of mesenteric vessels. In left PDH, small bowel loops herniate through the left paraduodenal fossa to the posterior of the inferior mesenteric vein. In right PDH, small bowel loops herniate through Waldeyer's fossa behind the superior mesenteric artery.^{1,5,11–13}

PDH can also occur from congenital malrotation of the midgut or as a secondary complication from previous intraabdominal surgery including bariatric surgery.^{14–17} The risk of internal herniation following laparoscopic bariatric surgery may be reduced by primary closure of mesenteric defects during laparoscopic surgery.^{18–19}

In view of the risk of strangulations, surgical repair is recommended for PDH. We suggest that any patient with PDH with abdominal pain or obstruction and who is fit for elective surgery should be offered laparoscopic exploration. This is in line with standard thinking on any hernia (especially an internal hernia) – that a previous episode of strangulation or obstruction raises the possibility of another episode. Hence surgical repair should be considered provided the patient is fit for surgery. Elective surgery may have a lower likelihood of bowel loss compared to emergency surgery. Preoperative detection of PDH allows for a laparoscopic approach to bowel reduction and hernia repair. Laparoscopic

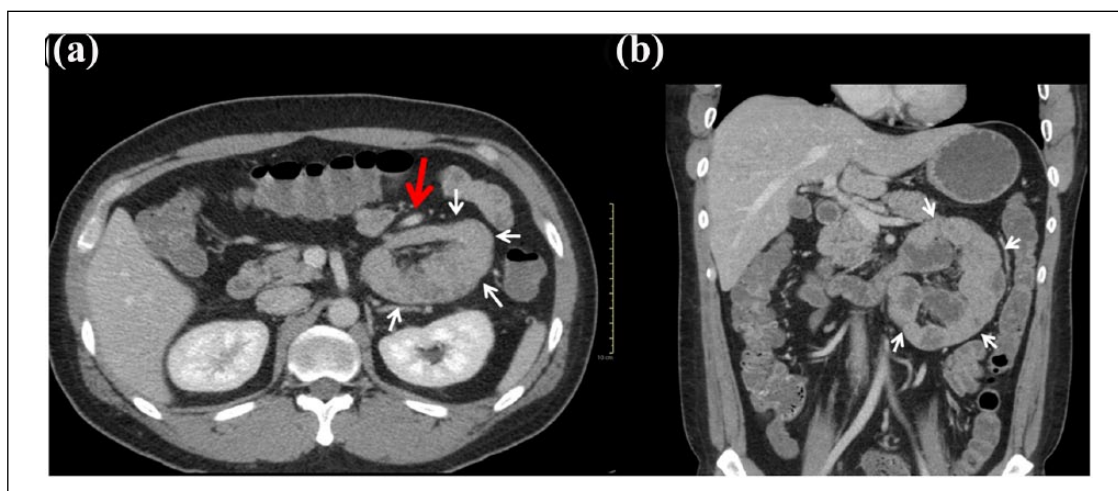


Figure 2. Contrast-enhanced computed tomography axial (a) and coronal (b) images show a nonobstructed left paraduodenal hernia as a cluster of small bowel loops in the left paraduodenal fossa (white arrows), which is bordered anteriorly by the inferior mesenteric vein (red arrow).

Table 1. Summaries on presentation and management of paraduodenal hernia (PDH).

Number	Gender	Age	Types of PDH	Presenting symptoms	Mode of diagnosis	Management	Complication	Risk factors
1	F	63	Left PDH	Abdominal pain	CT KUB non-contrast	Conservative	Nil	Nil
2	F	31	Left PDH	Recurrent abdominal pain	CTAP	Conservative	Nil	Nil
3	F	24	Left PDH	Recurrent abdominal pain	CT colonography	Conservative	Abdominal pain	Previous LSCS, right ovarian cystectomy
4	M	49	Left PDH	Abdominal pain	CTAP	Conservative	Nil	Nil
5	M	48	Left PDH	Intestinal obstruction	CTAP	Surgical	Nil	Previous appendectomy
6	F	55	Left PDH	Intestinal obstruction	CTAP	Surgical	Subacute intestinal obstruction	Nil
7	M	34	Left PDH	Intestinal obstruction, dyspepsia	CT enterography	Conservative	Nil	Nil
8	F	58	Left PDH	Intestinal obstruction	CTAP	Surgical	Nil	Previous right hemicolectomy

F: female; M: male; CT KUB: computed tomography of the kidney, ureter and bladder; CTAP: computed tomography arterial portography; LSCS: lower segment caesarean section.

PDH repair has been associated with shorter hospitalisation, time to first flatus and time to first intake of soft diet.²⁰ In our series, patients without intestinal obstruction were treated conservatively. Although spontaneous resolution of obstructed PDH following conservative treatment has been reported,²¹ controlled studies are required to determine the optimal treatment strategy for incidental or nonobstructive PDH.

Conclusion

In conclusion, PDH is an uncommon cause of intestinal obstruction. A high index of suspicion is required to diagnose PDH.

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Declaration of Conflicting Interest

None declared.

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