



(CASE REPORT)



GIANT RIGHT PARADUODENAL HERNIA WITH INCARCERATION OF THE ENTIRE SMALL BOWEL: A RARE CAUSE OF SMALL BOWEL OBSTRUCTION IN A VIRGIN ABDOMEN. A CASE REPORT

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ABSTRACT

Introduction: Internal hernias are protrusions of abdominal viscera through a peritoneal or mesenteric aperture within the abdominal cavity. They account for 0.5–5.8% of intestinal obstructions. Paraduodenal hernias are the classic congenital type, and incarceration of the entire small bowel within the hernia sac is exceptional.

Case presentation: We report the case of a 40-year-old man with no past medical or surgical history who presented with a three-month history of postprandial vomiting and early satiety, progressing to intractable vomiting with cessation of stool and flatus. Examination revealed mild abdominal distension and an empty rectum; laboratory tests were unremarkable. The plain abdominal radiograph showed multiple air-fluid levels, and computed tomography showed small bowel dilatation up to 4 cm, initially attributed to a congenital band. As the patient did not improve after 24 hours of conservative management, a midline laparotomy was performed. Exploration revealed a giant right paraduodenal hernia whose sac contained the entire small bowel. The loops were released by meticulous dissection and were found viable, so no resection was needed; the sac was excised. The postoperative course was uneventful and the patient was discharged on postoperative day 4. At two months, he remained free of vomiting.

Conclusion: Paraduodenal hernia should be considered in any small bowel obstruction occurring in a virgin abdomen. Because the preoperative diagnosis remains difficult, timely surgical exploration is essential to prevent strangulation and preserve bowel length.

Keywords: Right paraduodenal hernia; Internal hernia; Small bowel obstruction; Congenital anomaly; Laparotomy; Case report

1 INTRODUCTION

Small bowel obstruction is one of the most frequent surgical emergencies. Postoperative adhesions account for about 65% of cases, hernias for about 10% and neoplasms for about 5% [1]. In patients without previous abdominal surgery, the so-called virgin abdomen, the usual adhesive mechanism is absent and less common causes, including congenital anomalies, must be actively sought.

Internal hernias are defined as the protrusion of an abdominal viscus, most often the small bowel, through a normal or abnormal peritoneal or mesenteric aperture within the confines of the abdominal cavity [2,3]. They are rare, accounting for approximately 0.5–5.8% of all intestinal obstructions, but their mortality may exceed 50% in some series when strangulation occurs [2]. Congenital internal hernias include paraduodenal, foramen of Winslow, pericecal, intersigmoid, transmesenteric and supramesocolic hernias; paraduodenal hernias have traditionally been described as the most common type [2,3]. A closely related congenital anomaly, congenital peritoneal encapsulation, in which the small bowel is wrapped in an accessory peritoneal membrane, may produce a very similar intraoperative picture [5].

We report an unusual case of a giant right paraduodenal hernia in which the entire small bowel was incarcerated within the hernia sac, causing complete small bowel obstruction in a young adult with a virgin abdomen. This case is reported in line with the CARE guidelines [7].

2 CASE PRESENTATION

2.1 Patient information

A 40-year-old man with no significant past medical history and no previous abdominal surgery presented with a three-month history of postprandial vomiting associated with early satiety. His symptoms progressively worsened, with intractable vomiting followed by complete cessation of stool and flatus, which prompted his admission.

2.2 Clinical findings

Physical examination revealed mild abdominal distension. Digital rectal examination found an empty rectal ampulla. There were no signs of peritonitis, and no external hernia was found.

2.3 Diagnostic assessment

Laboratory investigations were unremarkable. The plain abdominal radiograph in the upright position showed multiple small bowel air-fluid levels (Figure 1). Abdominal computed tomography showed dilatation of the small bowel loops up to 4 cm in diameter, consistent with mechanical small bowel obstruction; a congenital (primary) band was suspected as the cause.



Figure 1: Upright plain abdominal radiograph showing multiple small bowel air-fluid levels, consistent with mechanical small bowel obstruction

2.4 Therapeutic intervention

Conservative management was initiated, but given the absence of clinical improvement after 24 hours, surgical exploration was decided. A midline laparotomy was performed. Exploration revealed a giant right paraduodenal hernia whose sac contained the entire small bowel (Figure 2). The incarcerated loops were freed by careful and meticulous dissection. After complete release, the whole small bowel was found to be viable and well vascularized, so no bowel resection was required. The hernia sac was then excised (Figure 3).

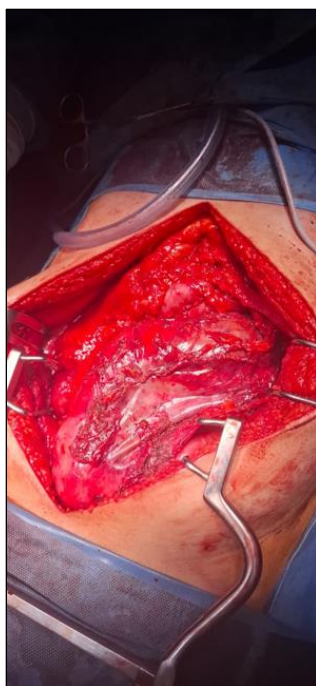


Figure 2: Intraoperative view through a midline laparotomy showing the small bowel loops contained within the right paraduodenal hernia sac



Figure 3: Intraoperative view of the hernia sac after its resection, held with a Duval forceps

2.5 Follow-up and outcomes

The postoperative course was uneventful, with rapid clinical improvement and complete resolution of vomiting. Oral feeding was resumed and the patient was discharged on postoperative day 4. At the last follow-up visit, two months after surgery, the patient showed good clinical improvement, with no further episodes of vomiting.

3 DISCUSSION

Paraduodenal hernias are an uncommon cause of small bowel obstruction, and the incarceration of the whole small bowel within the hernia sac, as observed in our patient, is exceptional. In a systematic review of 159 patients with paraduodenal hernia from 115 studies, Schizas et al. reported a mean age at diagnosis of 44.1 years and a male-to-female

ratio of about 2:1, with left-sided hernias accounting for about 70% of cases and right-sided hernias for about 30% [4]. Our patient, a 40-year-old man, fits this demographic profile, but presented with the less common right-sided form.

Congenital internal hernias result from anomalies of midgut rotation and of peritoneal fixation during embryogenesis [2,3]. In paraduodenal hernias, the small bowel herniates behind the mesocolon, through the fossa of Landzert on the left, in close relation to the inferior mesenteric vein, or through the fossa of Waldeyer on the right, behind the superior mesenteric artery. Right paraduodenal hernia results from incomplete rotation of the prearterial segment of the midgut: the small bowel remains on the right and becomes trapped behind the mesentery of the ascending colon, so that the superior mesenteric artery and the ileocolic vessels run in the anterior wall of the sac [2,3]. In giant forms, most or all of the small bowel may be trapped within the sac, as in our case. Intraoperatively, a giant paraduodenal hernia must be distinguished from two rare entities that also envelop the small bowel: congenital peritoneal encapsulation, in which a thin, vascularized accessory peritoneal membrane envelops the small bowel [5], and the abdominal cocoon (idiopathic sclerosing encapsulating peritonitis), in which the bowel is wrapped in a thick, fibrotic membrane associated with chronic inflammation [6]. The presence of a true hernia sac with a neck located near the duodenojejunal flexure, in relation to the mesenteric vessels, is the key element supporting the diagnosis of paraduodenal hernia, as in our patient.

The clinical presentation is often nonspecific. Many patients report chronic, intermittent symptoms such as postprandial abdominal pain, nausea, vomiting or early satiety, sometimes for months or years, before an acute obstructive episode [2,4]. Our patient had a three-month history of postprandial vomiting and early satiety before developing complete obstruction, a course that suggests intermittent, partial incarceration followed by complete obstruction. In patients with a virgin abdomen, such a history should raise the suspicion of an internal hernia, and particularly of a paraduodenal hernia.

Preoperative diagnosis remains challenging. The plain abdominal radiograph only shows nonspecific signs of obstruction, as in our case. Computed tomography is the imaging modality of choice [4]. Suggestive signs include a sac-like cluster of dilated small bowel loops in an abnormal position, displacement of adjacent structures, and stretched, crowded or engorged mesenteric vessels at the hernia neck; in left paraduodenal hernia, the loops are typically clustered between the stomach and the pancreatic tail, whereas in right paraduodenal hernia they are clustered in the right mid-abdomen, lateral and inferior to the descending duodenum, with displacement of the superior mesenteric vessels and an abnormal position of the jejunum [8–10]. These signs are subtle and frequently overlooked when the diagnosis is not considered, and many internal hernias are recognized only at surgery or on retrospective review of the images [8]. In our patient, computed tomography confirmed the obstruction but the diagnosis of paraduodenal hernia was not made preoperatively, and a congenital band was suspected. Peritoneal encapsulation may also be suspected preoperatively in some cases [11].

Surgery is the only definitive treatment, because of the risk of incarceration, strangulation and bowel ischemia [2,4]. The principles are reduction of the herniated bowel, assessment of its viability with resection if necessary, and prevention of recurrence by closing the hernia orifice or widely opening the sac; in congenital peritoneal encapsulation, excision of the accessory membrane with complete release of adhesions at the sac neck is recommended [5]. Because the mesenteric vessels run within the wall or the neck of the sac (the inferior mesenteric vein in left paraduodenal hernias, the superior mesenteric artery and ileocolic vessels in right paraduodenal hernias), dissection must be meticulous to avoid vascular injury; in right-sided hernias, the sac is classically opened along its avascular lateral border rather than at its neck [2,4]. Although laparotomy remains the standard approach in the emergency setting, laparoscopic repair has been reported in about one third of paraduodenal hernias and was associated with lower morbidity and a shorter hospital stay [4]. In our patient, failure of 24 hours of conservative management led to surgery; laparotomy allowed complete release of the bowel, which was viable, and excision of the sac, with an uneventful recovery, discharge on postoperative day 4 and no recurrence of symptoms at two months.

4 CONCLUSION

Paraduodenal hernia, and particularly its right-sided form, is a rare but potentially life-threatening cause of small bowel obstruction. It should be considered in any patient presenting with obstruction in a virgin abdomen, particularly when a history of chronic postprandial symptoms precedes the acute episode. Computed tomography signs are subtle and the diagnosis is often made intraoperatively. Timely surgical exploration with meticulous dissection allows release of the bowel, prevents strangulation and leads to an excellent outcome, even when the entire small bowel is incarcerated.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Written informed consent was obtained from the patient for the publication of this case report and the accompanying images.

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