Treitz Hernia: Report of a Case and Review of the Literature

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Introduction: Congenital hernias are rare findings, and their diagnosis is often delayed due to an incorrect interpretation of the clinical symptoms and/or images. We present a rare case of left-sided paraduodenal hernia at the ligament of Treitz, followed by a review of the literature.

Case Presentation: We report the case of a 20-year-old patient with unusual, recurring abdominal pain in the past 3 months. There were no previous operations or past illnesses in the patient's history. The computed tomographic scan showed a misplacement of small bowel into the lesser sack. With high suspicion of an internal hernia, we performed a diagnostic laparoscopy, which revealed a Treitz hernia. The reduction and fixation could be carried out fully with minimally invasive surgery with an uneventful postoperative course and complete recovery.

Conclusion: A Treitz hernia is a rare cause of unspecific abdominal pain and the clinical signs are difficult to interpret. However, its knowledge may help to avoid emergency procedures and provide quick recovery of the patients. We recommend the laparoscopic approach as the first choice of treatment in all cases of internal hernia in the absence of peritoneal irritation or severe bowel obstruction.

Key Words: Treitz, Treitz hernia, paraduodenal hernia, duodenojejunal fossa

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An internal hernia is defined as the protrusion of an intraperitoneal viscus through an orifice in the peritoneum or mesentery within the abdominal cavity. It may be congenital (due to intestinal malrotation or anatomic variation) or acquired (after trauma, surgery, inflammation, or infection).

Treitz hernia (*Hernia recessus duodenalis*) belongs to the family of the paraduodenal hernias, the most common type of congenital internal hernia (Fig. 1).[2] Paraduodenal hernias can be right-sided or, more commonly, left-sided, on the basis of their position to the inferior mesenteric vessels. They may also be associated with malrotation of the intestine. Clinical symptoms and signs of a Treitz hernia vary, and radiologic findings are difficult to interpret, causing frequent delays in diagnosis.

CASE PRESENTATION

We report the case of a 20-year-old man with intermittent upper abdominal pain who recently came to our clinic for a second opinion. Ambiguous abdominal discomfort had begun 3 months before. The pain usually lasted from a few minutes up to several hours and often occurred at night (the longest episode lasted 12 h). The pain was dull and oppressive, rarely exhibiting colic-like symptoms. No particular body position was able to provide lasting pain relief. Because of these symptoms, he had recently decided to quit fitness training. He reported no weight loss or variation in bowel activity.

The patient reported no past illnesses or previous operations, although a severe abdominal and thoracic trauma occurred at the age of 16 years while roller skating.

Our physical examination and an abdominal ultrasound showed no sign of abdominal cavity or wall pathology. A gastroscopy was negative. In the computed tomographic (CT) scan of the abdomen, we observed an axis variation of the superior mesenteric vessels with misplacement of the proximal small bowel into the lesser sack (Fig. 2).

We performed diagnostic laparoscopy due to the constantly recurring symptoms and strong suspicion of an internal hernia. As shown in the pictures below (Fig. 3), we found a near-complete herniation of the small bowel in a left-sided paraduodenal recess connected with the lesser sack (Fig. 4). No adhesion was found. The small bowel showed good blood supply, and, after a problem-free reduction, we were able to exclude the existence of any form of gut malrotation. We closed the hernial port with a 4-0 PDS suture. The operation lasted 75 minutes and was performed laparoscopically through 4 small incisions.

The postoperative course was uneventful, and the patient was dismissed on day 3 postoperatively.

REVIEW OF THE LITERATURE AND COMPARISON WITH OUR CASE

The ligament of Treitz (also called the suspensory ligament of the duodenum) develops from mesodermal tissue early in gestation and fixes the proximal bowel to the posterior abdominal wall, playing an important role in the embryological rotation of the gut. It defines the formal

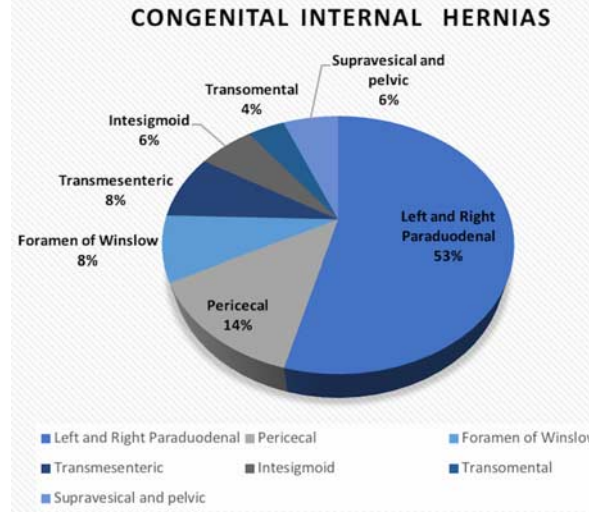

FIGURE 1. Classification of congenital internal hernias by Ghahremani and Mayers.[1]

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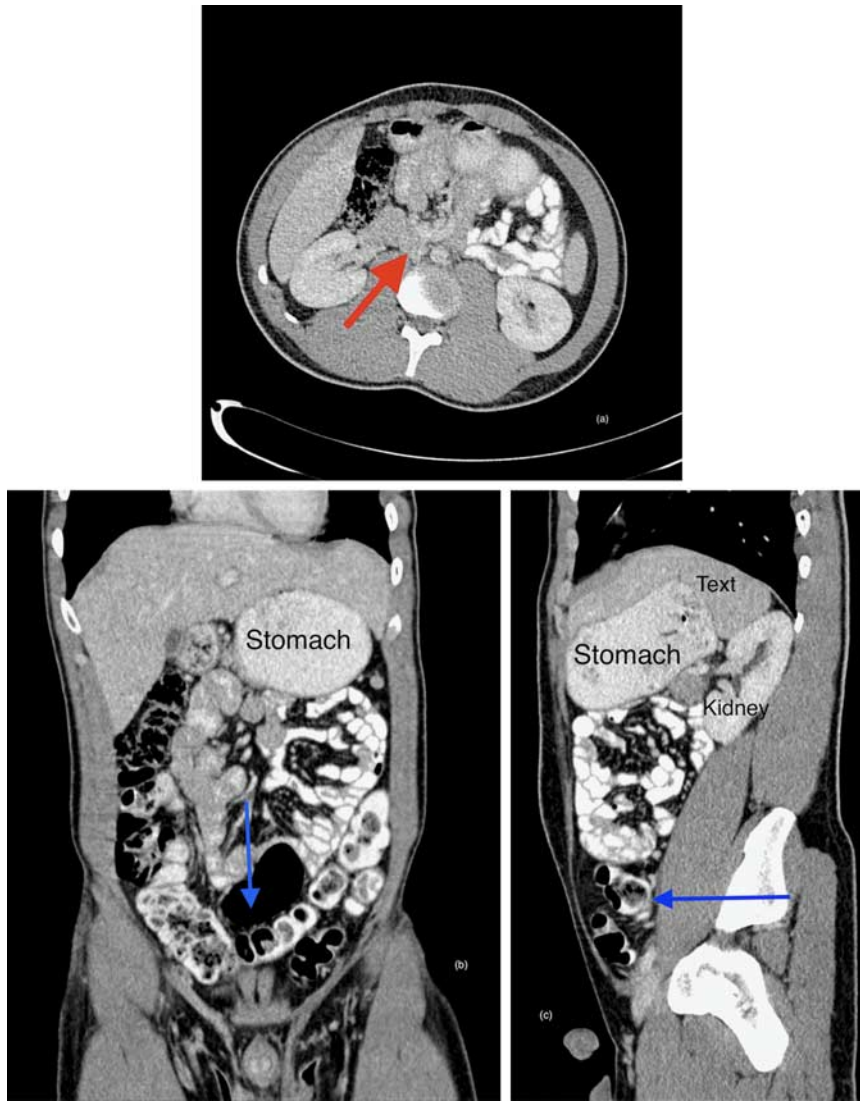

FIGURE 2. Computed tomographic scan of our patient. The images show an almost complete retroperitoneal herniation of the small bowel into the lesser sac (red arrow: hernial port). The transverse colon appears markedly pushed downwards and forward from the small bowel mass (blue arrows).

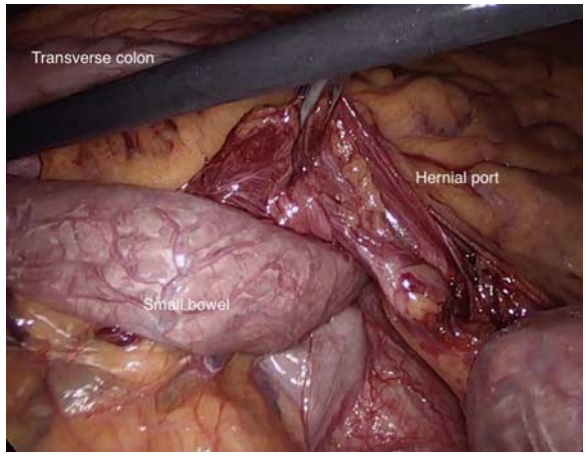

FIGURE 3. Intraoperative findings: small bowel herniating through a paraduodenal hernial port.

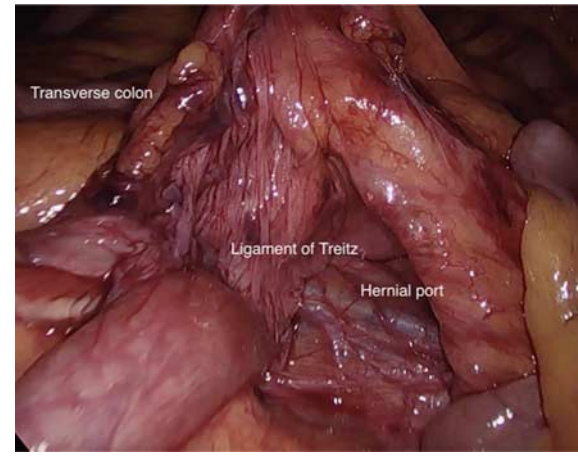

FIGURE 4. Intraoperative findings: frame after hernial reduction.

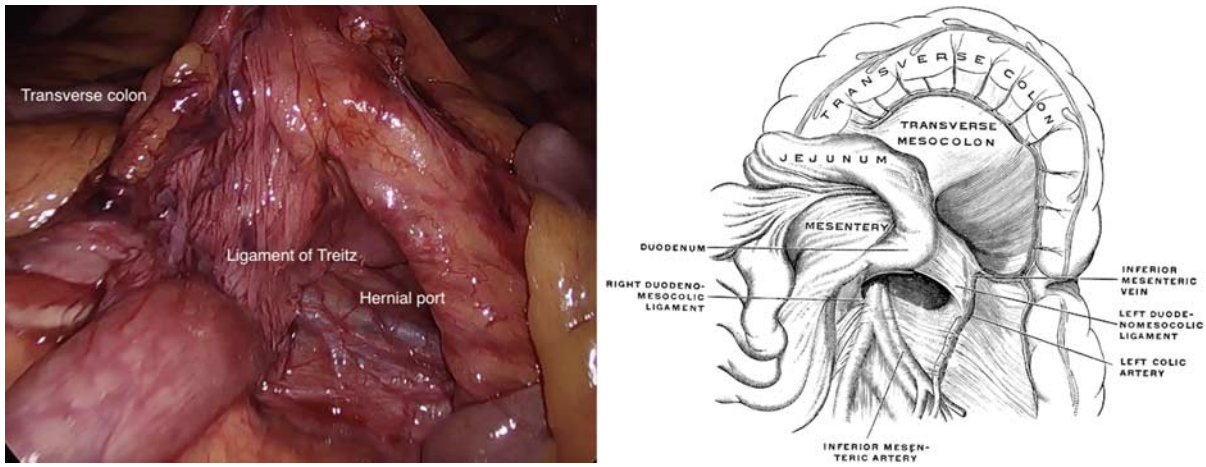

FIGURE 5. Intraoperative findings: comparison between patient's anatomy and drawing of the duodenojejunal fossa by Gray.[6]

division between the duodenum and jejunum and marks the transition between the upper and lower intestinal tract. Its length and point of attachment are variable.[3] In most cases, it also attaches to the third and fourth parts of the duodenum (40% to 60%).

Despite its name, the ligament of Treitz includes an important muscular portion (both skeletal and smooth) and contracts actively, helping to move the intestinal contents. It is also considered one of the fundamental landmarks that define the duodenal fossae: variable peritoneal recesses found among the third/fourth part of the duodenum.

In cases of Treitz hernia, the gut protrudes into the *superior duodenal fossa*,[4,5] a left-sided paraduodenal recess. This type of congenital recess is present in 40% to 50% of autopsies and usually coexists with the *inferior duodenal fossa.*[3,6,7] The *inferior duodenal fossa* alone is the most common finding (60%), whereas, in 15% to 20% of cases, both recesses are replaced by the *duodenojejunal fossa*, which is flanked above by the pancreas, to the right by the aorta, and to the left by the kidney, with the left renal vein below.[6]

Another left-sided peritoneal fold in this area is the *paraduodenal Lanzert's fossa* (also called Recessus paraduodenalis, found in 2% of autopsies).[3,5]

We used the PubMed web search tool to review the literature.[8] Our MeSH-terms included "*Treitz's hernia*" and "*paraduodenal hernia*." All articles without an abstract were excluded. The main limitation of this work was the lack of availability of full texts, which hindered a thorough and systematic analysis of the literature. In addition, many papers were not written in English.

Only 5 authors mentioned *Treitz hernia,*[9–13] but used this expression as an eponym and/or synonym for the more general *left paraduodenal hernia*. In these papers, we found no explicit reference to the *recessus duodenalis superior* or to the *fossa duodenojejunalis*.

A total of 159 items with an available abstract were filtered using the keywords *paraduodenal hernia*. Ninety-five of them, including the former,[9–13] with a total of 120 case reports, were about *left-sided* paraduodenal hernias.[13–104]

As we considered the Treitz hernia to be a particular left-sided hernia (as described above), we reviewed these articles to find similarities with our case.

The Lanzert fossa was described in 21 papers,[13,15,16,23–25,27,29–33,37–39,42,51,65–67,69] and only 2 authors named the *duodenojejunal recess.*[83,104] The rest referred generally to a *left paraduodenal* fossa.

According to the anatomy observed in our patient, the recess involved in this internal hernia appeared to be the *fossa duodenalis superior* or the *fossa duodenojejunalis* with their typical landmarks (Fig. 5). We were dealing with a real hernia of Treitz.

Only 7 publications described a hernia that matched our findings[31,32,39,60,81,82,89] and included a bowel protrusion behind the stomach and in the lesser sack, without specifically mentioning *Treitz hernia*. Their clinical presentations were heterogeneous, varying from subtle, intermittent symptoms[39,60,81,82] (as in our patient) to signs of acute abdomen.[31,32,89] The diagnosis was made either intraoperatively or with imaging.

CT of the abdomen—with or without contrast material—represents the gold standard to detect a suspected internal hernia in adults[3] and also plays an important role in the differential diagnosis of intestinal obstruction. It may also help to plan any surgical treatment. Alternatively, magnetic resonance imaging can be used.

However, an internal hernia may not be detected at the time of examination due to spontaneous reduction. As we observed in the CT scan of our patient, an axis variation of the intra-abdominal vessels can be an indirect sign of bowel misplacement (Fig. 2). Similar findings were described by Trigui et al,[39] Shoji et al,[60] and Nishida et al.[81]

Left-sided paraduodenal hernias usually demonstrate a sac-like mass of small bowel loops interposed between the stomach and pancreatic tail and a posterior mass effect on the stomach.[39,60,80–82,105] The mesenteric vessels that supply the herniated small bowel segments are displaced and engorged and represent the landmark above the encapsulated bowel.[3,39,60,81,82,105]

A bowel herniation through the left-sided paraduodenal recesses may involve the left colic artery, and the inferior mesenteric vein on the left and the inferior mesenteric artery on the right. These anatomic landmarks must be taken into consideration when performing surgery for this type of hernia.[6]

As we mentioned previously, we treated our patient fully laparoscopically. Twenty-three authors (with a total of 31 cases) presented successful laparoscopic repair for paraduodenal hernias.[5,14,19,22,23,25,26,28–30,35,43,47,49,53–55,60,67,75,86,92,106] The other cases required open surgery due to advanced intestinal obstruction.

DISCUSSION

Paraduodenal hernias are rare, more frequent in male individuals than in female individuals (3:1),[107] and represent the most common cause of congenital internal hernia. Despite their origin, they manifest later in life (20 to 30 y of age), and surgical repair is strongly recommended even for cases of coincidental diagnosis, because of the 50% lifetime risk of incarceration.[107]

In cases of suspected internal hernia in the absence of peritoneal irritation or severe bowel obstruction, a laparoscopic approach is always recommended as the first choice of treatment. It provides fast recovery of the patient with less short-term and long-term postoperative adverse events. Laparoscopy also enables a hernia reduction and defect repair at the same time. In these cases, there is no need to switch to laparotomy—as long as the surgical team is skilled in minimally invasive procedures.

Because of the difficult interpretation of clinical symptoms and/or imaging, the diagnosis of a paraduodenal hernia is often delayed, and the patient may already present signs of bowel strangulation. In this case, a laparoscopic approach might not be feasible.

CONCLUSIONS

The unusual hernia presentation in our patient may be the result of a congenital or posttraumatic etiology. We suggest a combination of the 2, in which the trauma caused a bowel herniation in the presence of a rare anatomic variation.

We believe that the knowledge of these findings may help in recognizing potential problems on time and encourage a planned surgical procedure, instead of dealing with an emergency setting. In the absence of peritoneal irritation or advanced bowel obstruction, a laparoscopic approach is recommended.

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