

Right Paraduodenal Hernia

Amanda Morales Joseph, DO; Dustin Huynh, MD; and Philip Chaipis, MD

Clinical suspicion is necessary to prevent possible complications and mortality from paraduodenal hernias, a rare cause of small bowel obstruction.

Paraduodenal hernia, also called mesocolic hernia, is a type of internal hernia that is thought to be caused by a congenital defect involving abnormal retroperitoneal fixation of the mesentery due to abnormal rotation of the midgut.¹ Internal hernias account for only 1% of all hernias, and paraduodenal hernias make up 50% of those.²

Paraduodenal hernias can be classified as left or right with left being far more common than right, 75% and 25%, respectively.² Due to the fixation abnormalities in the midgut, fossae are formed that help to classify left vs right paraduodenal hernias. Herniation through Landzert fossae results in a left paraduodenal hernia with the primary constituents of the hernia sac being the inferior mesenteric artery and vein.¹ This result is due to an in utero defect of the small intestine herniated between the inferior mesenteric vein and posterior parietal attachments of the descending mesocolon to the retroperitoneum.³

In a right paraduodenal hernia, herniation occurs through Waldeyer fossae with the main contents of the hernia sac being the

iliocolic, right colic, and middle colic vessels within the anterior wall and the superior mesenteric artery along the medial border of the hernia.¹ Since there is a failure of rotation around the superior mesenteric artery, the majority of the small intestine remains to the right of the superior mesenteric artery, resulting in the small intestine being trapped between the posteriolateral peritoneum.³ Regardless of the type of paraduodenal hernia, patients usually will present with symptoms of small bowel obstruction. In these types of hernias, a computed tomography (CT) scan with IV contrast may suggest evidence of obstruction between the duodenum and jejunum, but this may be unclear. Although rare, clinical suspicion of paraduodenal hernia is necessary to prevent ensuing complications and mortality.

CASE PRESENTATION

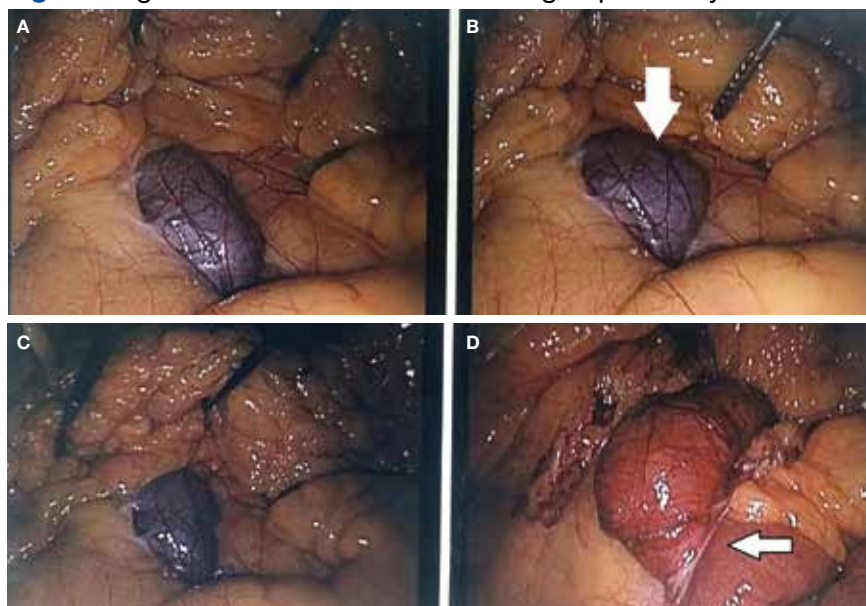
A 43-year-old man presented to the emergency department with symptoms that included nausea, vomiting, intermittent epigastric abdominal pain, and obstipation, which were suggestive of a small bowel obstruction. The patient reported similar intermittent episodes over the past 10 years that had resolved without surgery. The patient had no history of abdomi-

nal surgeries. A nasogastric tube was inserted and immediately drew out a significant amount of bilious contents. A CT scan indicated an obstruction at the proximal jejunum with suspicion of an internal hernia.

The patient underwent exploratory laparotomy soon after, which confirmed a right paraduodenal hernia (Figure). The surgery began laproscopically by retracting the omentum and transverse colon cranially to expose the ligament of Treitz. The hernia defect was identified on the mesentery where the proximal jejunum twisted on itself in a loop. The hernia was untwisted, and adhesions were removed. The posterior attachment of the hernia sac was freed with harmonic cautery and blunt dissection along with its attachment to the ligament of Treitz. In the process of freeing the herniation, a 1-cm enterotomy ensued, which did not contain succus or spillage of luminal contents at that time. Due to difficulties in visualizing the remainder of the small bowel, the procedure was converted to a laparotomy. This allowed complete freeing of the twisted loop of bowel.

Afterward, there was succus and bile draining from the enterotomy, so it was closed transversely in 2 layers, making sure there was

Dr. Joseph is a PGY-1 psychiatry resident at Medical University of South Carolina in Charleston. **Dr. Huynh** and **Dr. Chaipis** are surgeons at William Jennings Bryan Dorn VAMC in Columbia, South Carolina.

Figure. Right Paraduodenal Hernia During Laparotomy

The omentum and transverse colon are reflected superiorly in all 4 images with the transverse mesocolon viewed at the top of each image. Figures A, B, and C comprise the hernia defect protruding through Waldeyer's fossa within the mesentery. Figure B white arrow illustrates a segment of the jejunum protruding through a weakness in the mesocolic mesentery. Figure D illustrates the twisted small bowel segment at the level of the jejunum due to the herniated segment in the other images. Figure D white arrow portrays that twisted segment of the jejunum, a complication that occurred from this right paraduodenal hernia.

a lumen between the layers. The first and second parts of the duodenum were examined followed by palpitation of the duodenal sweep. The remainder of the small bowel was visualized to the cecum, and the retroperitoneal space was dissected out of the hernia sac space. The abdomen was irrigated, and the omentum was draped back over the intestines. The fascia was closed followed by skin reapproximation with staples. The patient experienced an uneventful recovery and was discharged on day 6 with resolution of his symptoms.

DISCUSSION

Paraduodenal hernias are a type of internal hernia and a rare cause of intestinal obstruction accounting for about 0.5% of all hernias.

Right paraduodenal hernias are far less common than left paraduodenal hernias and occur due to a defect in the jejunum mesentery called Waldeyer fossae.⁴ This is located at the third part of the duodenum and behind the superior mesenteric artery.⁴ Symptoms of paraduodenal hernias are nonspecific and may include nausea, vomiting, and intermittent cramping. Symptoms of obstruction can be intermittent due to the small bowel herniating through the fossae and then retracting.¹ Computed tomography has good specificity and aides in the diagnosis of an internal hernia, but physicians must have a high index of suspicion as well.⁵

Definitive diagnosis and treatment of paraduodenal hernias involves laparoscopy or exploratory

laparotomy to visualize the internal hernia and its surrounding sac.^{4,5} All hernias should be repaired to prevent strangulation of the bowel, but internal hernias are even more important to fix because these hernias may not present until there is severe injury to the bowel.⁵ On identification of the paraduodenal hernia, it is important to release the bowel from the hernia sac, free up adhesions, and place small bowel segments back into the correct anatomical position.^{4,5}

In the event of bowel injury, resection with reanastomosis is indicated. Careful dissection is important to prevent injury to the superior mesenteric artery, which supplies most of the small bowel and ascending colon.^{4,5} Injury to the superior mesenteric artery could lead to ischemia and gangrenous bowel.² Immediate detection and early surgery intervention of these congenital hernias can prevent such complications.² The literature includes reports of paraduodenal hernias with complications of gangrenous bowel that required small bowel resection.² These complications further emphasize the need to proceed immediately with surgery if a paraduodenal hernia is suspected.

CONCLUSION

This rare cause of bowel obstruction was documented in order to emphasize the importance of having a high clinical suspicion for a paraduodenal hernia. This particular patient with no history of abdominal surgeries had previously dealt with bowel obstruction and would likely have this complication again without surgical intervention. Patients with paraduodenal hernias also are at risk for bowel ischemia, other high-risk complications, and even death.⁵ Although a CT scan

provided information about an approximate location of the obstruction, laparoscopy confirmed the diagnosis. Going into the operation with paraduodenal hernia in the differential allowed the surgeon to be prepared for the appropriate anatomy involved with this procedure to minimize damage to important structures, such as the superior mesenteric artery and its branches. ●

Author disclosures

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