

Paraduodenal Hernia - Abnormal Treitz Ligament

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Abstract: *Paraduodenal hernia, a rare congenital anomaly which arises from an error of rotation of the midgut, is the most common type of intra-abdominal hernia. There are two variants, right and left paraduodenal hernia. The term 'paraduodenal hernia' refers to a hernia of the entire small bowel, or part of it, into a sac derived from folds of peritoneum and fossae normally found at the terminal or 4th portion of the duodenum. We report our experience in the diagnosis and management of a young male presented acutely with a 3 day history of vomiting and absolute constipation. Intestinal obstruction was diagnosed following an abdominal x ray. Correct preoperative diagnosis of Right paraduodenal hernia had been difficult due to non-specific clinical presentations. Due to the risk of obstruction and strangulation, surgical treatment is indicated; however, timely intervention increases the likelihood of a favorable outcome.*

Keywords: hernia, surgery, treitz ligament

1. Introduction

Paraduodenal hernia, a rare congenital anomaly which arises from an error of rotation of the midgut, is the most common type of intra-abdominal hernia. There are two variants, right and left paraduodenal hernia. The term 'paraduodenal hernia' refers to a hernia of the entire small bowel, or part of it, into a sac derived from folds of peritoneum and fossae normally found at the terminal or 4th portion of the duodenum. Paraduodenal hernias are uncommon and account for <1% of all cases of small bowel obstruction. They are associated with a high lifetime risk of causing obstruction and in these cases; mortality rate is up to 20%, probably due to missed diagnosis. Internal hernias are a rare cause for intestinal obstruction. Paraduodenal hernias constitute approximately 53% of all internal hernias, Several studies have demonstrated the value of computed tomography (CT) in confirming the diagnosis and revealing the cause of small bowel obstruction, with a sensitivity of 94-100% and an accuracy of 90-95%³. If diagnosed, herniated loops should be reduced, and the hernia orifice closed or widened. We report our experience in the diagnosis and management of a young male presented acutely with a 3 day history of vomiting and absolute constipation. Intestinal obstruction was diagnosed following an abdominal x ray. Correct preoperative diagnosis of Right paraduodenal hernia had been difficult due to non-specific clinical presentations. Due to the risk of obstruction and strangulation, surgical treatment is indicated; however, timely intervention increases the likelihood of a favorable outcome.

2. Case Report

Patient Mr Ashok chaudheri, 31/m came to MGM casualty on 11/2/2016 at 10am with chief complaint of acute pain in abdomen since 2 days associated with high grade fever,

vomiting since last 2 days with absolute constipation since 1day.

2.1 History of Presenting Illness

- 1) Pain - insidious in onset, gradually progressive in intensity. Pain mainly in Epigastric region followed by radiating to all over abdomen. pain is colicky in nature.
- 2) Vomiting – Non projectile, bilious in nature. Also contain food particle. Vomiting appears with pain. With absolute constipation.

2.2 On evaluation

Patient had Past history of 6-month of intermittent episodes of intestinal obstruction. With no history of previous abdominal surgery. patient appear toxic with haemodynamically unstable. On per abomen

Distension Present- mild ,central ,Tenderness present, Rigidity:- Board like rigidity present, Guarding present, Bowel sounds were absent. Haematological investigations were normal. On X ray abdomen in standing position, multiple air fluid levels were seen, with no air under diaphragm.

2.3 Management

Patient was posted for exploratory laparotomy, Dilated small bowel loops were seen on right site of abdomen which was entering into right paraduodenal space with a massentric defect the wall. About 15 cm of small bowel were injured from ischemic damage and did not benefit from revascularization within time limit. Hence resection followed by termino- terminal anastomosis was performed. With caecostomy done. We diagnose it as Right paraduodenal hernia due to abnormal treitz ligament.



3. Discussion

Treitz defined an internal hernia as a retroperitoneal protrusion of an abdominal organ through a peritoneal fold[1]. These hernias can be classified according to their etiology as either congenital or acquired. Among the numerous etiologies of SBO internal herniation represents only about 1% of all cases, with paraduodenal hernia (PDH) being the most common entity half of the time. The true incidence of these hernias is difficult to establish as many cases are either completely asymptomatic or misdiagnosed as functional gastrointestinal abnormalities. Only around 50% of paraduodenal hernias for example present with SBO or bowel strangulation.

Intestinal maturation starts in the 6 weeks old fetus when the midgut herniates into the umbilical cord. The midgut rotates a full 270° counterclockwise around the superior mesenteric artery by time it re-enters the abdomen. If the prearterial segment rotates but the postarterial segment fails to rotate the small bowel is entrapped in the right mesocolon, and right paraduodenal hernia results.

The pathophysiology of hernia formation is not entirely clear. One theory suggests mechanical forces of undulating intra-abdominal pressure to lead to herniation in places where the peritoneum is yet incompletely fused (as in the case of left PDH)[10]. In the case of right PDH (lateral and posterior to the third portion of the duodenum in Waldeyer's fossa) another mechanism seems to be responsible. Andrews described right PDH as a consequence of malrotation of the prearterial limb of the midgut in embryologic development[11]. In the 5th gestational week the midgut leaves the peritoneal cavity, with the superior mesenteric artery (SMA) defining the long axis of the bowel loop, dividing the midgut into a prearterial and postarterial segment depending on their relationship to the SMA axis. The prearterial limb undergoes a counterclockwise rotation and enters the peritoneal cavity first. After completion of the rotation the prearterial limb and therefore its derivatives lie posterior and to the left of the SMA. The post arterial limb now follows and delivers the cecum into the right lower quadrant. In the case of right PDH, the prearterial loop does not complete its rotation and gets positioned to the right of the SMA. As the postarterial limb now rotates and the

cecum descends, bowel gets trapped behind the ascending mesocolon. In right PDH features of malrotation are often seen on imaging or intraoperatively. In either case, both left and right PDH lack a true hernial sac and therefore should be termed prolapse or procidentia rather than hernia.

The majority of presentations occur between the 4th and 5th decades of life.^{1,3} Internal hernias can be asymptomatic, present as an acute intestinal obstruction or as chronic intermittent abdominal pain, especially after a large meal.^{1,2} Findings on physical examination may be normal, unless the hernia produces a mass or causes intestinal obstruction.^{1,3}

Preoperative diagnosis is difficult.³ Plain abdominal radiography may demonstrate a distended, fluid-filled stomach or reveal dilated loops of small bowel in an ovoid mass lateral from the midline.² Barium-contrast studies may reveal encapsulation of the small bowel within the left upper quadrant.¹ Ultrasonography may demonstrate an abdominal mass or internal tubular cysts that change shape over time and after ingestion of fluid.¹⁻³ Computed tomography may reveal a cluster of small-bowel loops, mainly at the level of the ligament of Treitz or behind the pancreas.^{1,3} Celiac arteriography can demonstrate a displaced spleen.³ Superior mesenteric arteriography can reveal jejunal arteries displaced upward and to the left.

After diagnosis, treatment should be prompt.² Obstruction of the entrapped bowel can lead to ischemia and perforation with a high mortality.⁴ Exploratory laparotomy is mandatory.³ The steps of operation include adequate incision, reduction of the hernia content and repair of the defect.¹ Removal of the sac remains controversial as it is part of the mesocolon and may lead to colonic vascular impairment.

4. Conclusion

Paraduodenal hernia is a rare congenital anomaly arising from an error of rotation of the midgut. The duodenum and small intestine become trapped in a sac, lined by peritoneum, behind the mesentery of the colon, either to the right or left of the midline. This may be an incidental discovery at laparotomy or a rare cause of small bowel obstruction progressing to strangulation and perforation.

Paraduodenal hernias are extremely rare and difficult to diagnose. Acute awareness is required, since without prompt surgical treatment the mortality can be high. Radiologic investigations are helpful but should not delay definitive treatment in an unwell patient.

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