

Small Bowel Strangulation due to Right Para-Duodenal Hernia - A Case Report

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Abstract

Para-duodenal hernias are rare causes of intestinal obstruction and strangulation, are difficult to diagnose preoperatively. It is a rare congenital anomaly which occurs due to defect in the rotation of gut. It is usually discovered incidentally at radiological study or at laparotomy. Here we report of right para-duodenal hernia presented in emergency with signs and symptoms of acute intestinal obstruction. Pre-operative Computer Tomography cuts show hernia sac, filled with loops of small bowel crowded in the right hypochondrium suggesting the rare diagnosis of Waldeyer's hernia. He required resection of the gangrenous segment and primary anastomosis. The mouth of the sac was obliterated with suturing to the posterior abdominal wall. The patient was discharged uneventfully on 7th post-operative day.

Keywords: Internal hernia, Paraduodenal hernia; Small bowel obstruction, Strangulation

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Introduction

Para-duodenal hernia (PDH) is a rare cause of intestinal obstruction that occurs due to malrotation of the gut [1] and is usually found on incidental imaging [2]. First reported by German anatomist Heinrich Wilhelm Gottfried Waldeyer-Hartz, exact incidence of right PDH is not known [3]. They are difficult to diagnose for the treating surgeon and can be easily missed on routine examination because of its rarity but the results can be disastrous if accurate diagnosis and treatment is not instituted on the right time.

Case Report

A 50-year-old man presented to the emergency with diffuse abdominal pain for 10 hrs more on epigastrium, severe in intensity, and was associated with abdominal distension with no passage of flatus and 8 episodes of non-projectile bilious vomiting with reduced urine output. He experienced 3 similar episodes of mild severity in the past which resolved spontaneously on sitting posture; No other history of co-morbidity or previous abdominal surgery. On physical examination, he was dehydrated with mild tachycardia and with normal blood pressure. Per abdomen diffuse abdominal distension, tenderness & diffuse guarding and absent bowel sounds. Per rectal examination revealed roomy rectum with absent faeces. Blood analysis showed mild

leukocytosis. Plain x-ray abdomen showed dilated bowel loops with multiple air fluid levels. CT abdomen showed a sac containing multiple bowel loops found in the right hypochondrium just inferior to liver suggesting the diagnosis of right para duodenal hernia (Figure 1 - Figure 5).



Figure 1: CT scan of abdomen of patient showing Right para-duodenal sac in the right hypochondrial region with multiple bowel loops.



Figure 2: Per-operative view of right para duodenal hernia with sac.



Figure 3: Showing the mouth of the sac.



Figure 4: Sac wall after reduction of gangrenous bowel.



Figure 5: Resection of devitalized bowel segments and anastomosis.

After a period of initial resuscitation, urgent midline laparotomy was done, which revealed hernial sac of size 20 cm approximately noted in right hypochondrium, the herniated contents are located in the right half of the transverse mesocolon and behind the ascending mesocolon. The superior mesenteric artery and right colic vein are located at the anterior-medial border. Hernial orifice was 4 cm in size and directed to downward and to left. Contents were loops of jejunum and ileum which was dilated unhealthy and peristaltic which was not reducible because of very narrow opening. So after securing the SM vessels, opening of the sac was done by opening the avascular area in the mesentery of descending colon all the contents were reduced carefully avoiding bowel rupture and peritoneal contamination. Ischemic segment involved was 70 cm from DJ flexure till 15 cm from ileo-caecal junction. Warm pad was applied, oxygen was increased but bowel remained aperistaltic dilated and color didn't return to normal. So, surgery was preceded with resection of the ischemic bowel and end to end anastomosis. Hernial sac was addressed by approximating the walls sac with vicryl sutures with the posterior abdominal wall. No mesh was kept.

Post-operative bowel sounds returned on day 3 uneventful, orally allowed on 5th day, drain tube removed on 6th day, patient discharged on 7th day.

Discussion

Para duodenal hernia was first reported by Neubauer in 17864 he ascribed it to faults in peritoneal development. Para duodenal hernias account for 53% of all internal hernias [2,3]. Later Heinrich Wilhelm Gottfried von Waldeyer-Hartz (1836-1921) Berlin reported right para-duodenal hernia. The right and left para duodenal hernia are separate entities which differ in embryologic origin and anatomical position [4,5]. Internal hernias are rare with reported incidence of 0.2% - 0.9% for intestinal obstruction. The incidence of right para-duodenal hernia is still rare compared to the left in the ratio of (3:1). The mean age for diagnosis is 38.5 years often due to imaging taken for chronic intermittent post-prandial abdominal pain. Gut develops around 6 weeks of gestation. There are two commonly accepted theories to explain the development of para-duodenal hernias which are:

1. Andrew's Theory: Para-duodenal hernias develop when the small bowel incarcerates beneath the developing colon due to developmental fusion defects of peritoneum [6,7].
2. Moynihan's Theory: Para-duodenal hernias arise at the time of faulty return of bowel back to the abdomen due to physiological adhesion between the dorsal mesentery and posterior abdominal wall. Nine such fosse was described by him. Most important being fossa of Landzert (for left para-duodenal hernia) and fossa of Waldeyer (for right para-duodenal hernia) [6].

In cases of right para-duodenal hernia, during embryological development there occurs an arrest in counter clockwise rotation of the gut. So that small bowel gets entrapped in a sac formed by the peritoneum, behind the colonic mesentry [8]. The fossa of Waldeyer extends inferior to the third and fourth part of duodenum opening just inferior to duedeno-jejunal junction and bound anteriorly by the inferior mesenteric vein and the ascending left colic artery.

Clinical diagnosis is often very difficult because of variable presentation ranging from asymptomatic to obstruction perforation or strangulation, most patients present with non-specific abdominal pain, associated with cramps or vomiting, which may proceed to partial or complete obstruction or reduce completely relieving signs and symptoms, leading to diagnostic difficulties [9] and are often mislabeled as functional, irritable bowel disease, non-ulcer dyspepsia. Life time risk of obstruction is around 50% [10] and it has a high mortality often due to delay in diagnosis [11].

X-Ray may if taken during the time of obstruction may show dilated bowel loops and clustering of small intestine in the right hypochondriac region. Computed tomography (CT) has now become the method of choice. In emergency laparotomy, high index of suspicion is required because this hernia can reduce spontaneously preoperatively and all the para-duodenal fosses are not routinely examined [2]. Once diagnosed the aim is to re-position the intestine in the normal position. The opening of the sac is narrow and superior mesenteric artery and its branches to the ascending colon lie on the anterior wall of the sac. So manual widening is not advisable due to the concern of injury to these vessels, in such cases the hernia sac is opened by incising on the avascular region on the mesentery of descending colon, thus allowing the small bowel to be delivered into the peritoneal cavity. Then the sac is obliterated by suturing it to the posterior abdominal wall. When the opening is tight or obscured there might be a need to sacrifice the inferior mesenteric vein to widen the orifice [8] this will allow the sac to be part of general peritoneal cavity. If the bowel segment were found to be non-viable then resection of the gangrenous segment and anastomosis is done. Palanivelu et al. [12] have reported four cases which were managed laparoscopically without conversion to open laparotomy with operating time of 55 minutes - 72 minutes. It gives all advantages of minimal access surgery providing a sound repair.

Conclusion

Para-duodenal even though are rare in incidence can pose a challenge in diagnosis and treatment. Therefore, a thorough anatomical knowledge on the anatomy, high degree of suspicion is necessary. Technological advancement in imaging is sought to arrive at right diagnosis thus preventing the high morbidity and mortality associated with this condition.

RR, PB and SR have operated this case. Design and concept was given by RR. Manuscript preparation, editing and literature search was done by RR and SD.

Consent

Written informed consent was obtained from the patient's parents for publication of this case report, and for inclusion of the accompanying image.

Conflict of Interest

All the authors declare that they have no conflict of interest.

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