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**Case Report**

# Obstructed giant right paraduodenal hernia presenting as an abdominal mass

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## ABSTRACT

Internal hernias are rare cases of small intestinal obstruction of which Right Paraduodenal hernias through the Fossa of Waldeyer occur only in less than a quarter of all cases. A high index of suspicion and a good understanding about the pathological anatomy is pertinent for the detection and successful management of this condition which has non-specific symptomatology. The gold standard of diagnosis is computed tomography scan, which shows characteristic findings. Surgical correction is often necessary as mortality rates hover above 50% in unintervened cases. Here we present very rare case of an obstructed right paraduodenal hernia which presented as an abdominal mass.

**Keywords:** Congenital hernia, Intestinal obstruction, Internal hernia, Right paraduodenal hernia

## INTRODUCTION

Paraduodenal hernia (PDH) is a herniation resulting from rare anomalies of rotation and reduction of the midgut loop in the embryo. It may be discovered as an incidental finding at laparotomy or may be the cause of acute small bowel obstruction which can go on to strangulation and perforation. Surgical intervention is often necessary due to complications associated with these hernias and in such cases. The mortality rates hover above 50% in unintervened cases.[1,2] This hernia occurs when parts of the small intestine become trapped in a sac lined by peritoneum, behind the mesentery of the colon, either to the left or to the right of the midline.[3]

PDH are classified into left or right sided based on relationship of mesenteric vessels to the small bowel. Left-sided PDH is more common (75%) than right sided (25%) with a slight male preponderance.[4] PDH can present at any age but are typically seen between the 4$^{th}$ and 6$^{th}$ decades of life.[5] To the best of our knowledge an RPDH presenting with an abdominal mass has not yet been reported in literature. Here we present a very rare case of a obstructed right paraduodenal hernia which presented as an abdominal mass.

## CASE REPORT

A 26 year old previously healthy male patient presented with complaints sudden onset progressively worsening, colicky abdominal pain over past 2 days accompanied by constipation and 4 episodes of vomiting. There was no history suggestive of chronic abdominal pain, previous abdominal surgeries, comorbidities, addictions or allergies. General examination was within normal limits. Physical examination revealed a distended abdomen with a well-defined tender mass of 15cm*12cm over the right upper quadrant (Figure 1A).

Bowel sounds was hypoperistaltic. Digital rectal examination was unremarkable. He was afebrile with a heart rate of 74b/min and blood pressure 110/70mmHg.

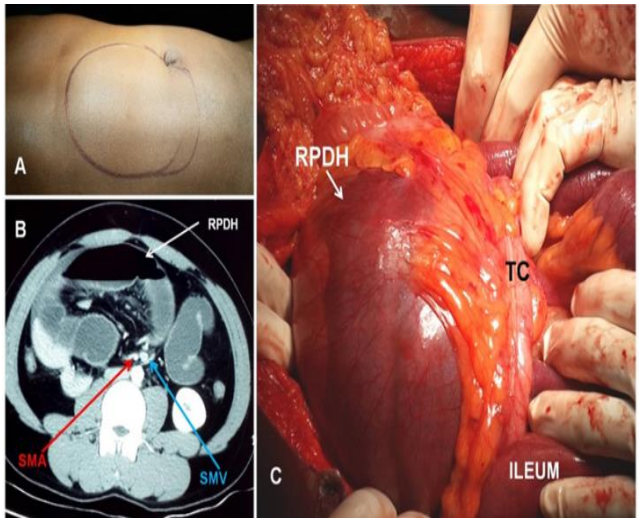


**Figure 1: (A) Palpable abdominal swelling (B) CECT showing clustering of small bowel loops on the right side, SMV towards left of SMA, (C) the right paraduodenal hernia with loops of small bowel within a sac formed by the mesocolon of the transverse-colon (TC).**

blood analysis showed a normal hematology panel and he had a normal urinalysis. Abdominal Ultrasonography report showed multiple dilated small bowel loops and surrounding minimal peritoneal fluid in the region of the mass with reduced peristalsis. CECT Abdomen showed features characteristic of a right paraduodenal hernia (Figure 1B).

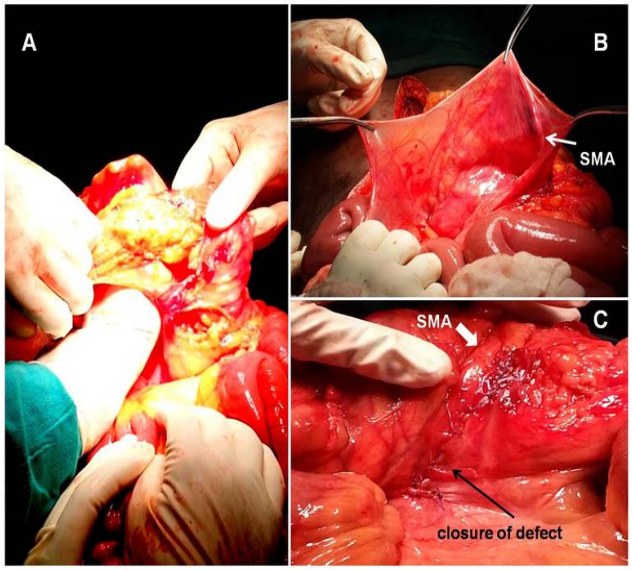


**Figure 2: (A) The large hernial sac admitting the surgeon's hand, (B) The opened-up sac with the Superior Mesenteric Artery (SMA) running in the free border, (C) Closure of the defect after excising the sac.**

An exploratory midline laparotomy was undertaken which revealed the mass to be an obstructed Right Paraduodenal hernia with the major portion of small bowel lying encapsulated in the transverse mesocolonic sac (Figure 1C). Hernial contents appeared viable, thus were manually reduced. The large sac was accurately isolated (Figure 2A). The sac was incised, and the colon was released from the peritoneal attachments. The Superior Mesenteric Artery (SMA) was seen running in the free border of the sac (Figure 2B). The redundant portion of the sac was excised, and free edges of the sac were approximated to obliterate any potential defect. (Figure 2C) The appendix was seen on the left side and a concurrent appendectomy was also performed (Figure 3). The patient had an uneventful post-operative period and normal follow up after 1 year.

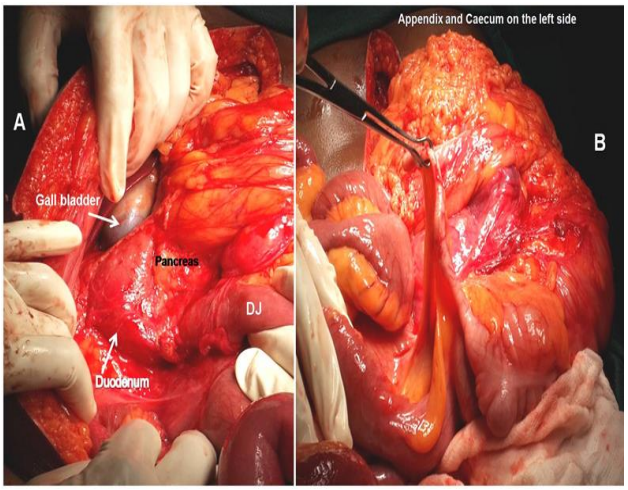


**Figure 3: (A) The duodeno-jejunal junction (DJ) is seen on the right side, (B) The Caecum with the Appendix came to lie on the right side of the abdomen after the peritoneal attachments were released. This is also known as the 'Non-rotational position'.**

## DISCUSSION

Paraduodenal Hernia is the herniation of small bowel into a sac derived from folds of peritoneum normally found at the terminal portion of the duodenum. Approximately 75% of paraduodenal hernias occur on the left side of the abdomen and involve the paraduodenal fossa of Landzert; 25% develop on the right, involving the fossa of Waldeyer, beneath the SMA and immediately below the duodenum. Their presence is more common in men than women, with a ratio of 3:1.[6,8,9]

Embryologically, as the midgut returns from the yolk sac to the abdominal cavity, the small bowel which has rotated 90 degrees counter clockwise does not rotate further, remaining on the right side, so that as the terminal ileum, caecum and colon proceed normally and come to lie anterior to the distal duodenum (Figure 4). Fixation of the cecum and colon to the posterior parietal peritoneum occurs but leaves the small bowel trapped in a sac lined by the peritoneum, in the anterior wall of which are the ileocolic, right and midcolic vessels.

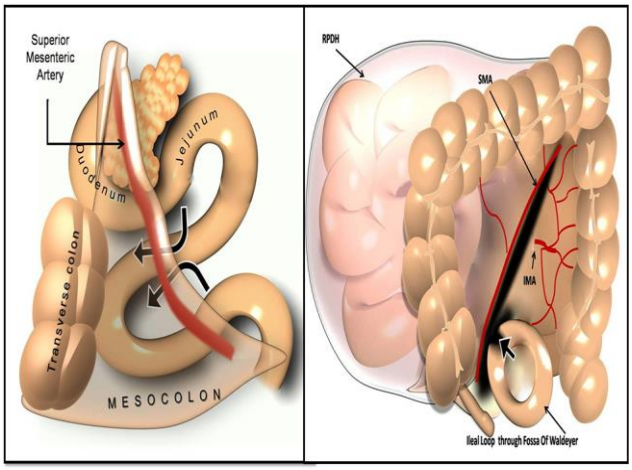


**Figure 4: Schematic representation of the formation of the RPDH. The small bowel loops enter the Fossa of Waldeyer to form the hernia encapsulated in the transverse mesocolon with the superior mesenteric artery running in the free border of the sac.**

In many cases paraduodenal hernia causes no symptoms. The symptomatic cases usually present with small bowel obstruction. If encountered as an incidental finding at laparotomy done for other reasons, the distorted anatomy can present unsurmountable difficulties to the surgeon.

Clinical findings in patients with paraduodenal hernias vary from mostly asymptomatic to mild intermittent gastrointestinal complaints to acute intestinal obstruction with volvulus and infarction.[10] Physical examination is usually not revealing and may be consistent with signs of intestinal obstruction.[11]

Our patient was a non-classical case as he presented in the age group outside the common age group of presentation. Moreover, to the best of our knowledge an RPDH presenting with an abdominal mass has not been reported in literature.

CECT scan is the gold standard for diagnosis of Internal hernias. In Right PDH, encapsulated bowel loops are seen displacing the right colic vein anteriorly. Other CT signs are looping of small bowel behind superior mesenteric vessels below the transverse portion of duodenum. Paraduodenal hernias occurring on the right side are associated with incomplete intestinal rotation. There is absence of normal horizontal duodenum with superior mesenteric vein located ventral and to the left of superior mesenteric artery.

## CONCLUSION

Paraduodenal Hernias are a group of rare clinical entities that may present as acute or subacute intestinal obstruction. A high index of suspicion is required to correctly diagnose this anomaly as symptom complex is vague and inconclusive. CT Imaging is the diagnostic modality of choice in diagnosis. Surgical correction is warranted to prevent inevitable complications like incarceration or strangulation of small bowel as mortality rates are high. Common age of presentation is usually in the 4th and 6th decades. However, our patient had a relatively earlier age of onset in the 3rd decade.

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