

Case Report

Intramesenteric internal hernia with midgut volvulus: a rare case causing small bowel gangrene in an adult

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ABSTRACT

Intramesenteric internal hernia is a rare type of small bowel mesentery related internal hernia which usually occur in pediatric population. It is characterized by herniation of small bowel loops through a congenital or acquired defect in one layer of the mesentery producing a mesenteric pouch type hernia. The defect usually occurs near the ileocaecal valve or ligament of treitz and the herniated bowel loops are prone to strangulation or volvulus, presenting as small bowel obstruction that warrants early recognition and emergency laparotomy to confirm the diagnosis and prevent bowel gangrene and its complication. We present a case of 59 year old male presenting with features of an acute intestinal obstruction since morning and a vague firm mass in the right upper quadrant which was confirmed by CT scan to be an internal hernia and patient was taken up for emergency laparotomy. Intraoperative findings revealed a sac of small bowel loops herniating into the mesentery through a defect near the terminal ileum. Upon reducing the contents a volvulus was evident and resulted in the gangrene of the small bowel loops. The gangrenous bowel was resected and a single layered end to end ileo-ileal anastomosis was done. The diagnosis of internal hernia in a adult with no previous history of abdominal surgery or trauma is a very rare entity and requires a high degree of suspicion and close monitoring of the patient to ensure early surgical intervention and optimal outcome.

Keywords: Internal hernia, Intramesenteric hernia, Small bowel mesentery related hernia, Volvulus, Bowel gangrene

INTRODUCTION

Intramesenteric internal hernia is a rare type of small bowel mesentery related internal hernia which usually occurs in pediatric population.¹ It is characterized by herniation of small bowel loops through a congenital or acquired defect in either of the two layers of the mesentery producing a mesenteric pouch type hernia.¹ The defect usually occurs near the ileocaecal valve or ligament of treitz and the herniated bowel loops are prone to strangulation, presenting as small bowel obstruction.² Multidetector computed tomography (MDCT), has become the first line imaging modality in the pre-operative diagnosis and planning of surgical intervention.¹ It is a surgical emergency with a high

overall mortality rate that can exceed 50% in untreated cases, warranting an early intervention to prevent bowel gangrene and it's associated morbidity and mortality.³

CASE REPORT

A 59 year old Indian male came with the chief complaints of severe abdominal pain for the past 8 hrs. The pain was sudden in onset, severe, colicky type involving the right side of the abdomen with no specific aggravating or relieving factors and no radiation of pain. He had complaints of nausea and vomiting and was passing flatus and stools in the morning. He had no complaints of fever, chills, jaundice, hematemesis or malena. He had no similar complaints in the past with no history of any

previous major surgeries/abdominal injuries. He is a non smoker and doesn't drink alcohol. On examination, persistent tachycardia (110/min) was present with features of dehydration. Abdomen was distended with a vague smooth fullness in the right hypochondrium and lumbar regions and no evidence of visible peristalsis, dilated veins, scars or sinuses. On palpation abdomen was soft with no features of diffuse peritoneal irritation. A smooth large, tender firm immobile mass with diffuse margins was felt in the right lumbar region; deep to the anterior abdominal wall. Bowel sounds were exaggerated. Per rectal examination was normal. X-ray abdomen revealed air fluid levels suggestive of intestinal obstruction. CECT abdomen revealed an internal hernia with a cluster of dilated bowel loops on the right mid-abdomen with bowel wall edema and mesenteric edema and disruption of the normal anatomy of SMA and SMV. Nasogastric tube decompression was done and patient was taken up for emergency laparotomy after adequate preoperative optimization and intravenous fluid replacement. Intraoperative findings revealed a pouch type internal hernia with the small bowel loops herniating into the mesentery through a defect in the anterior layer of the mesentery near the terminal ileum. On reducing the contents, a volvulus, resulting in the gangrene of the small bowel loops, was evident. The gangrenous bowel was resected, after derotating and ensuring nonviability. A double layered end to end ileo-ileal anastomosis was done. The single mesenteric defect, made out after a thorough laparotomy, was closed with interrupted sutures and patient was discharged with an uneventful postoperative stay of 5 days.



Figure 1: Preoperative picture with a diffuse firm tender mass in the right hypochondrium and lumbar regions.

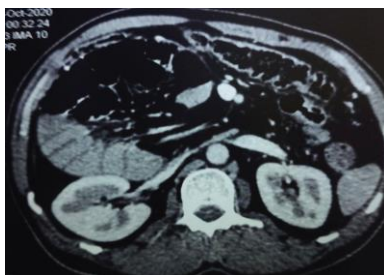


Figure 2: CT abdomen showing a cluster of distended small bowel loops in the right upper abdomen with distorted anatomy of superior mesenteric vessels.



Figure 3: Intra-operative picture showing a pouch type defect extending into the small bowel mesentery.

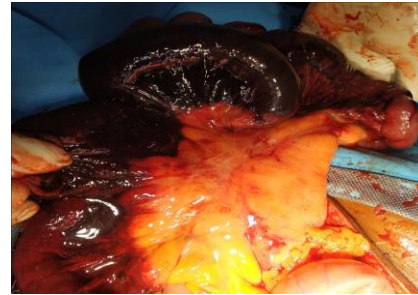


Figure 4: Intraoperative picture showing the gangrene of the herniated bowel loops after reduction and derotation.

DISCUSSION

Internal hernia due to a congenital mesenteric defect causing intestinal obstruction has been reported very rarely in adults.³ Small bowel mesentery-related internal hernias are herniations through or into an abnormal defect in the small bowel mesentery. Two subtypes of small bowel mesentery-related hernias exist: transmesenteric hernia, in which both peritoneal layers are affected and intramesenteric hernia, in which either one of the two peritoneal layers is affected. Intramesenteric hernias, also called mesenteric pouch hernias, are far less frequent and predominantly reported in children.¹ The defects can be acquired due to trauma, infection, inflammation or surgery. The causes of congenital mesentery defect still remain uncertain. A few hypotheses have been reported, such as regression of the dorsal mesentery, developmental enlargement of a hypovascular area, the rapid lengthening of a segment of mesentery and compression of the mesentery by the colon during fetal mid-gut herniation into the yolk sac.^{4,5} It is also reported that congenital mesenteric defect is often associated with other anomalies of the gastro-intestinal tract, especially small bowel atresia. Isolated mesenteric defect can represent an atypical form of intestinal atresia.⁵ The clinical manifestations range from mild digestive symptoms to acute abdomen, as the severity of the symptoms relates to duration and reducibility of the hernia and the presence or absence of strangulation and incarceration. A palpable abdominal mass with localised tenderness representing “the Gordian knot of herniated intestine” may be present in a minority of patients.⁶ Transmesenteric hernias are more liable than other

subtypes to develop volvulus and strangulation or ischemia, with an incidence of 30% and 40% respectively and high mortality rates reaching about of 50% for the treated groups and 100% for untreated groups.⁷ Reported CT findings include a cluster of small bowel encapsulated within a hernia sac and displacement of the superior mesenteric artery and superior mesenteric vein.⁸ Treatment is based on the operative findings. A gangrenous bowel should be resected with an end-to-end anastomosis to restore bowel continuity. Any mesenteric defect, regardless of its size, even when found incidentally, should be closed to avoid future internal hernias.⁹

CONCLUSION

Intramesenteric internal hernia should always be in the differential diagnosis of intestinal obstruction in an adult with no previous history of abdominal trauma or surgery and no evidence of intra-abdominal infection or inflammation. It requires a high degree of suspicion to elicit an early diagnosis by MRCT abdomen. Emergency laparotomy can save the bowel before gangrene ensues, reducing the morbidity & mortality and repairing the mesenteric defect prevents future recurrences.

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