Case Report

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Congenital trans-mesentric internal hernia: a rare cause of acute intestinal obstruction in adult

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Introduction and Importance: Internal hernia is responsible for 0.6–5.8% of all small intestinal obstructions. Only 8% of internal hernias are of the congenital trans mesenteric variant. Urgent surgical intervention should be considered in individuals who exhibit intestinal obstruction before the development of irreversible bowel ischemia and necrosis.
Case Presentation: The authors report a 38-year-old male patient who presented to the emergency department with abdominal pain, distension, and vomiting for the last three days. After an explorative laparotomy, it was confirmed that there was a trans mesenteric hernia defect with strangulated distal ileal loops. End-to-end ileo-ileal anastomosis was done.
Clinical Discussion: Early recognition and subsequent surgical treatment permit proper management and prevent complications. There should be a differential diagnosis. In this case, there is no prior history of abdominal surgery, and the patient presents with recurrent abdominal pain and intestinal obstruction.
Conclusion: Early diagnosis and emergency laparotomy can save the intestine before gangrene, lowering morbidity and mortality, correcting the mesenteric defect to prevent recurrences, and enhancing clinical outcomes because many studies have shown that some cases are missed before radiological investigation. Laparotomy is still the method of choice for acute cases of incarceration with bowel obstruction, strangulation, and ischemia. The entire mesentery needs to be evaluated, and all mesenteric defects need to be sutured to prevent recurrence.

Keywords: internal hernia, intestinal obtruction, morbidity, mortality

Introduction and importance

Internal hernia is defined as the protrusion of abdominal viscera into a normal or aberrant hole within the abdominal and pelvic cavity, most commonly the small bowel[1]. Despite having an overall incidence of less than 1%, it is responsible for 0.6–5.8% of all small intestinal obstructions, and it is interesting to note that only 8% of internal hernias are of the congenital transmesentric variant[2].

Aberrant intestinal rotation that takes place during embryonic development as well as pre-existing anatomical structures can both result in congenital internal hernias (CIHs). Although there are no distinctive symptoms or signs that clearly separate internal hernia from other types of intestinal obstruction, the presentation might be either acute or chronic[3]. Since early diagnosis is often hard and can show up quickly and in an emergency situation, people who have high fevers, persistent low blood pressure, and rigid abdominal muscles should think about having surgery right away. These are the main signs of an acute intestinal obstruction.

This work has been reported in line with the Surgical CAse REport (SCARE) 2020 criteria[4].

HIGHLIGHTS

- Internal hernia is responsible for 0.6–5.8% of all small intestinal obstructions. Only 8% of internal hernias are of the congenital transmesentric variant.
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- Congenital internal hernias (CIHs) can be caused by aberrant intestinal rotation that occurs during embryonic development as well as pre-existing anatomical structures.
- Early recognition and subsequent surgical treatment permit proper management and prevent complications.
- There are no distinctive symptoms or signs that clearly separate internal hernia from other types of intestinal obstruction, the presentation might be either acute or chronic.
- Urgent surgical intervention should be considered in individuals who exhibit the key indicators of acute intestinal obstruction, such as high fever, persistent hypotension, and abdominal rigidity.

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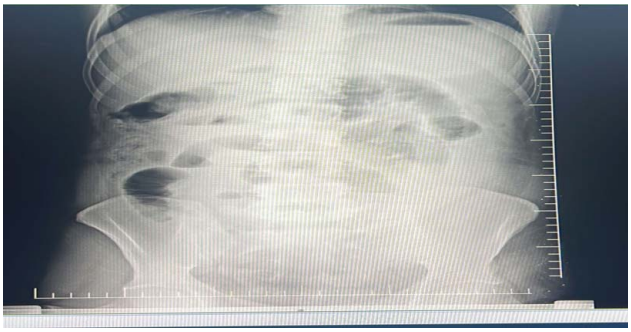

Figure 1. Erect abdominal radiograph reveals multiple irregular small bowel loops without classic small bowel obstruction.

Case presentation

A 38-year-old man with three days of colicky abdominal pain, distension, and vomiting visited the emergency department. His medical history was unknown, including abdominal surgery and trauma. He was fit and healthy. A previous abdominal pain incident resolved spontaneously. This attack started with umbilical pain and became generalized to the abdomen. His general examination revealed fever, dehydration, normal tension, and tachycardia. Distension, rigidity, abdominal peritonitis, and a slow bowel sound were seen on abdominal inspection. Investigation-wise, leukocytosis (WBC 21×1000 mm^3) and increased CRP (153 mg/l) were present, although LDH was normal (210 u/l). An erect abdomen radiograph showed several air-fluid levels (Fig. 1), and an abdominal ultrasound showed pelvic-free fluid and intestinal dilatation. A decompressive NGT tube was introduced to adjust intravenous fluid and electrolyte levels, and explorative laparotomy was planned for acute intestinal obstruction. Exploration revealed a trans mesenteric hernia defect with strangulated distal ileal loops (Figs 2, 3, 4). Retrieving and untwisting strangled intestinal loops from the hernia sac required expanding the sac edge, and bowel viability evaluation revealed impaired blood supply.

Due to delayed presentation and gangrenous bowel, two-stage segmental ischemic resection, enterostomy, and end-to-end ileo-ileal anastomosis were performed. Uninteresting postoperative. Semisolid food and toleration were introduced on day two of the stoma's postoperative work. The pathological analysis of the resected intestine revealed an ischemic and necrotic state of the small bowel.

Clinical discussion

Internal hernias account for 0.5 to 3% of all cases of intestinal obstruction. A trans mesenteric hernia is a type of internal hernia caused by a congenital mesentery defect. Rokitansky recorded the first trans mesenteric internal hernia in an autopsy in 1836[4]. About 0.5% of all autopsies have mesenteric defects. Intestinal obstructions related to internal hernias, which are viscus protrusions through intra-abdominal apertures without traversing fascial planes, are rare[5]. Predominantly preduodenal (53%), trans mesenteric, and trans mesocolic account for 8%. Although rare, trans mesenteric hernias have increased their incidence after surgical procedures like Roux-en-Y bypass and liver transplant surgeries[6]. 5–10% of internal hernias are CTMH. The mesentery window allows intestinal loops to herniate without a sac in CTMH, causing complications[7]. Due to their particular pathology, only 1% of the population has them, although they cause roughly 6% of small bowel obstruction[8]. This case was extremely unusual because of a congenital sac and a trans mesenteric defect that caused the proximal bowel to herniate. The defect was trapped in the congenital sac, which subsequently became strangled within it.

Due to the lack of clinical indicators, preoperative diagnosis is difficult. An inaccurate diagnosis might cause delayed exploration, which could result in irreversible bowel ischemia and a subsequent increase in morbidity and mortality[9]. An isolated mesenteric defect can be a rare type of intestinal atresia, and in the majority of the reported cases, the diagnosis of an internal hernia was not made prior to surgery in most cases[10]. Clinical symptoms range from moderate digestive issues to significant abdominal pain, depending on hernia size[11]. Although similar to acute small bowel obstruction, a palpable abdominal mass with

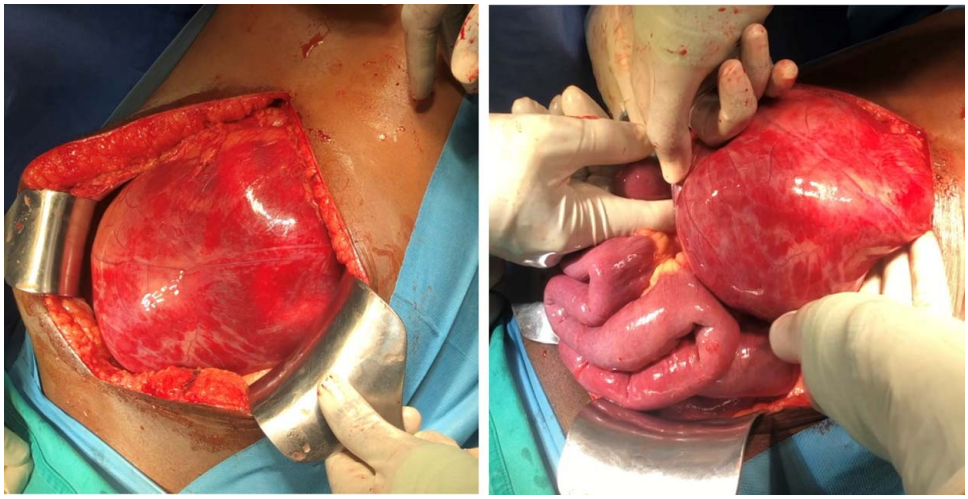

Figure 2. Intraoperativeimage illustrating a huge congenital internal hernia sac was seen occupying infracolic compartment containing multiple loops of ileum.

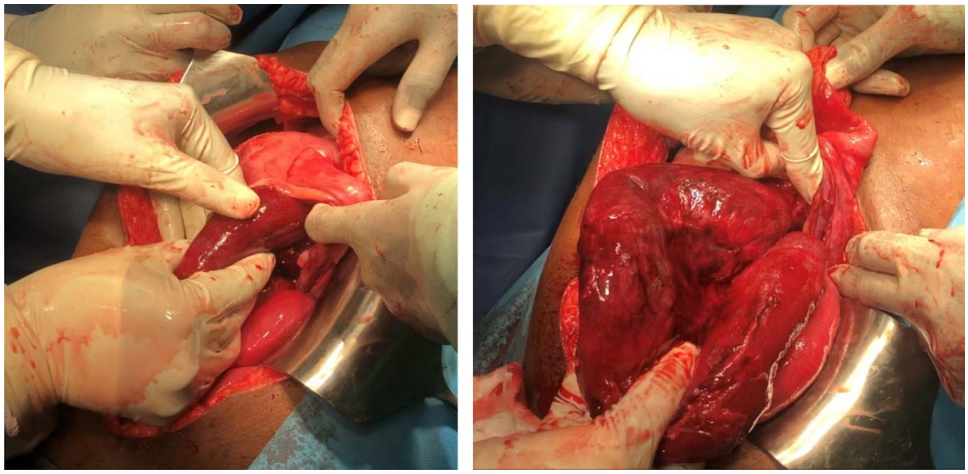

Figure 3. An intraoperative image demonstrated a ischemic small intestinal through mesenteric defect.

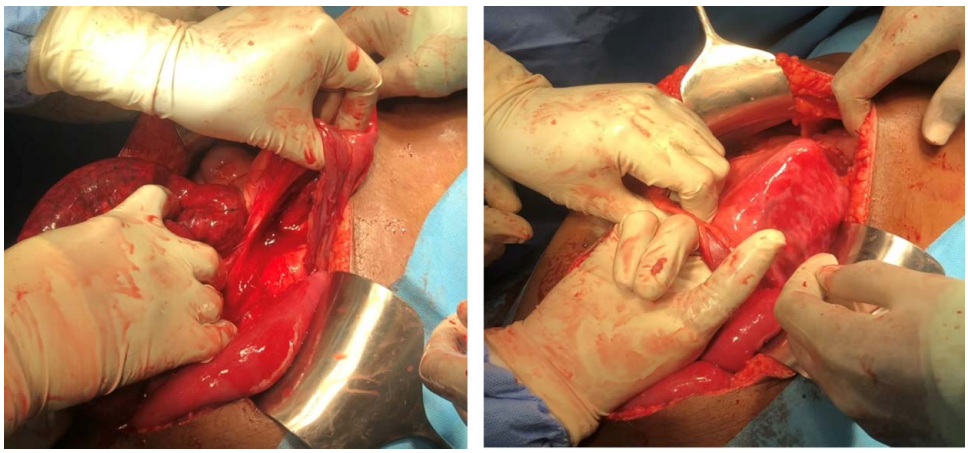

Figure 4. Mesenteric defect through which the hernia occurred. Trans-mesenteric type of congenital internal hernia.

localized discomfort is noted. They include nausea, vomiting, pain in the stomach, distension, and constipation. When a patient has bowel obstructions without having had abdominal surgery, an inflammatory disease, or trauma, a congenital internal hernia should be taken into consideration[12]. The positive prognostic markers for intestinal ischemia included abdominal rebound pain, leukocytosis ($>18\ 000/mm^3$), or a high level of manual band form ($>6\%$); however, a history of chronic intermittent abdominal pain was a negative indicator[1].

In our case, due to peritonitis, distention, and late presentation over 48 h, we decided on an explorative laparotomy and used clinical and abdominal radiograph and ultrasounds to make our decision.

Treatment of this hernia requires reduction of herniated structures and closure of broad ligament defects to prevent recurrence. Surgical management of congenital internal hernias comprises reducing the hernia's closure, resection of the strangulated ischemic bowel[1]. Performing a primary anastomosis or an enterostomy depending on local and systemic factors related to patients, and fixing hernia defects with a nonabsorbable suture[13]. In our cases, we had two problems with congenital masseteric defects. With the congenital sac, we reduced the bowel and the bowel was ischemic. We did resection of the strangulated part of the bowel without anastomosis, resulting in bowel edema, and we closed the defect with a silk nonabsorbable suture. We also resected the congenital sac that trapped the bowel by ligature with an electric vascular and tissue sealer device. We washed the abdomen and the patient followed aggressive in the postoperative period.

Early identification and exploratory laparotomy are the gold standard to prevent fatal complications in congenital trans mesenteric intra-abdominal hernias because bowel strangulation has a high morbidity and mortality rate. Internal hernias have a mortality rate that reportedly ranges from 20 to 75%[14].

Conclusion

A strong index of suspicion is needed in all cases of small intestinal obstruction and nonspecific clinical and radiographic characteristics to diagnose internal hernias, a rare but fatal problem. Congenital trans-mesenteric hernias seldom cause small intestine obstruction in adulthood without surgery, trauma, or

peritoneal inflammation. Internal hernia, especially transmesenteric, can cause intestinal obstruction. Early diagnosis and emergency laparotomy can save the intestine before gangrene, lowering morbidity and mortality, correcting the mesenteric defect to prevent recurrences, and enhancing clinical outcomes because many studies have shown that some cases are missed before radiological investigation. Laparotomy is still the method of choice for acute cases of incarceration with bowel obstruction, strangulation, and ischemia. The entire mesentery needs to be evaluated, and all mesenteric defects need to be sutured to prevent recurrence.

Ethics approval and consent to participate

Ethical approval was not needed for writing a case report in our settings.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Consent for publication: for the publication of this case report and any accompanying pictures, the patient provided written informed consent. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

N.A.Y., A.M.A., A.N.M, and E.M.: wrote the manuscript and corrected the manuscript for its scientific basis; N.A.Y., A.M.A., A.N.M, and E.M.: collected the data for the study. All authors have read and approved the final manuscript.

Conflicts of interest disclosure

The authors declare that they have no conflict of interest in writing this case report.

Research registration unique identifying number (UIN)

Not applicable.

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Availability of data and materials

The author declare that all data in this article are available within the article.

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