

Case Report

An unusual case of small bowel obstruction secondary to internal herniation of distal ileum through a rent between adhered inflamed vermiform appendix and appendices epiploicae

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ABSTRACT

Intestinal obstruction secondary to an internal hernia is rare and that occurring through a rent between the adhered inflamed vermiform appendix and appendices epiploicae of the proximal caecum is so rare that this case was the first of its kind ever to be reported. Such a cause for obstruction should be suspected in a patient with a virgin abdomen with no history/clinical features of an obstructing external hernia or abdominal tumor. A 28 year old man presented to the ER with features of intestinal obstruction, in whom CECT abdomen revealed multiple dilated small bowel loops with breaking-of seen in the region of the terminal ileum. Surgical exploration revealed internal herniation of the distal ileum through a rent between the adhered inflamed vermiform appendix and the appendices epiploicae of the proximal caecum; reduction of which was sufficient to relieve the obstruction and demonstrate healthy reperfusion. Adhesiolysis, epiploicae appendectomy and appendectomy was done with no other points of obstruction along the small bowel. Due to its rarity, non-specific presentation pattern and limited usefulness of imaging for diagnosis, a high index of suspicion with prompt early surgical exploration is a must for a successful outcome in such cases intestinal obstruction; especially in a virgin abdomen.

Keywords: Intestinal obstruction, Small bowel obstruction, Internal hernia, Appendices epiploicae, Epiploic appendagitis

INTRODUCTION

The etiology of small bowel obstruction is classified into extrinsic (adhesions, hernia, volvulus), intrinsic (malignancy, strictures) and intraluminal (intussusception, gallstone ileus, bezoars). Extrinsic etiologies are the most common cause for small bowel obstruction, in which adhesive disease is the most common cause followed by hernias.¹ Hernias can be divided into external abdominal hernias (ventral and inguinal hernias being most common) and internal abdominal hernias (which are low in incidence).

Appendices epiploicae are peritoneum-lined protrusions of subserosal fat arising from the surface of the colon; inflammation of which can form a band between itself or

with the adjacent viscera creating a potential space for internal herniation of bowel and subsequent intestinal obstruction.² Internal herniation secondary to such adhesions are very rare with less than six reported cases in literature.³⁻⁸

We presented a rare case-report of a 28 year old man with a virgin abdomen and no significant past medical, surgical or trauma history; who came to the ER with features of intestinal obstruction. CECT abdomen revealed multiple, dilatated small bowel loops near the distal ileum, but the etiology couldn't be identified. On exploration, he was found to have an internal herniation of distal ileum through a rent between the appendices epiploicae of the caecum and the inflamed vermiform appendix. Division of the adhesion was successful to

relieve the obstruction and no bowel resection was required. A high degree of suspicion with early intervention, especially in cases of virgin abdomens, is lifesaving and of utmost importance for a successful outcome of intestinal obstruction.

CASE REPORT

A 28 year old man presented to the ER with sudden onset of intermittent, colicky type of abdominal pain over the right flank, associated with 2-3 episodes of bilious vomiting for 4 days and inability to pass stools with progressive abdominal distension for 2 days. He had no significant past medical, surgical (previous attacks of appendicitis) or trauma history.

On examination, he was mildly dehydrated and anxious, with vitals within normal limits afebrile at 36.9 °C, heart rate 98 beats/minute, blood pressure 134/62 mmHg, respiratory rate 18 breaths/minute and oxygen saturation 97% at room air. His abdomen was diffusely tender and distended with voluntary guarding felt over the right lumbar and iliac regions and no palpable mass, visible peristalsis or signs of peritoneal inflammation.



Figure 1: CECT scan through the mid-abdomen showing dilated fluid filled small bowel loops (thin arrows) and decompressed ascending and descending colon (thick arrows).

His blood parameters were within normal range. An abdominal ultrasonogram demonstrated segmental dilatation of the small bowel loops (upto 3.5 cm diameter) with to and fro peristalsis. CECT abdomen demonstrated multiple, dilated, small bowel loops with breaking-of seen in the region of the terminal ileum (features suggestive of subacute intestinal obstruction); however, the cause of obstruction could not be identified (Figure 1).



Figure 2: Adhesion between the inflamed vermiform appendix anteriorly with the appendices epiploicae posteriorly.

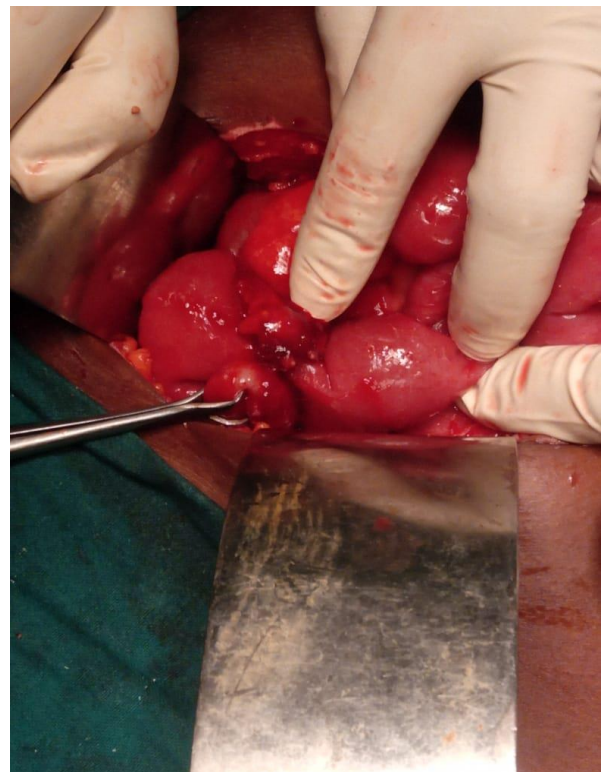


Figure 3: Internal herniation of the distal ileum through a 2 cm rent between the inflamed vermiform appendix anteriorly with the appendices epiploicae posteriorly.

With these findings, the need for operative intervention was discussed and the patient agreed for the same. Through a midline incision, the dilated small bowel was eviscerated and the source of obstruction was an adhesion between the inflamed vermiform appendix (anteriorly) and the appendices epiploicae of proximal caecum (posteriorly) with a potential 2 cm gap through which a 5 cm loop of distal ileum was herniating. On reduction of the hernia, two hyperaemic markings corresponding to the points of incarceration along the bowel were seen. The herniated closed loop of ileum was initially dark and congested but immediately demonstrated signs of healthy reperfusion after reduction; not necessitating any resection of the bowel. Adhesiolysis, excision of the involved epiploicae and appendectomy was done and rest of the bowel was inspected for any other points of obstruction. A pelvic drain placed and secured and the abdomen was closed in layers. The postoperative course was uneventful and the patient was discharged on postoperative day 7 without any complications (Figure 2 and 3).

DISCUSSION

Internal hernia is a rare cause of small bowel obstruction and occurs when a viscus (a part/whole) protrudes through an opening within the abdominal cavity; the cause of which was either congenital or acquired. Any congenital opening, peritoneal recesses (including the retroperitoneal fossa) or acquired mesenteric defect following trauma/surgery could act as potential opening for hernia formation. Internal hernias were further categorized into seven major types: paraduodenal (53%), pericaecal (13%), foramen of Winslow (8%), transmesenteric (8%), sigmoid mesocolon (6%), pelvic/supravesicular (6%) and transomental (4%). It was reported that 5.8% patients with small bowel obstruction have an internal hernia.^{9,10}

Patients usually complained of colicky abdominal pain, multiple episodes of bilious vomiting, progressive gaseous abdominal distention with constipation/obstipation but generally lack characteristic physical signs of a hernia such as an external bulge. Therefore, a CT scan was often required to diagnose and detect the actual cause and site of obstruction.

Appendices epiploicae were 50 to 100, peritoneum-lined, 1.5×3.5 cm protrusions of the subserosal fat, found over the surface of the colon extending from the caecum to the rectosigmoid junction and were distributed longitudinally in two rows on the medial and posterolateral tenia coli.¹¹

Epiploic appendagitis, though rare, can occur in a virgin abdomen and form adhesions between itself or with surrounding viscera and thus the resultant rent formed can become a potential site for internal herniation. Radiology in such cases of intestinal obstruction can only indicate the level of obstruction; the cause of which can be diagnosed only on surgical exploration. Therefore, a

high index of suspicion with timely intervention was lifesaving and can prevent unnecessary bowel resection and its associated morbid outcome.

Internal hernias in a virgin abdomen as such were very rare and that caused by adhesions between appendices epiploicae and adjoining structures or between two appendices themselves was even rarer. Two cases of an internal hernia secondary to adhesions between the tips of two adjacent appendices epiploicae and five cases of an internal hernia secondary to adhesions between appendices epiploicae and surrounding omentum have been reported.^{1,3,4,8}

To the best of our knowledge, a case of small bowel obstruction due to internal herniation of bowel through the rent created by partial adhesion of the inflamed vermiform appendix and the tip of an appendices epiploicae of proximal caecum had never been reported; the cause of the adhesion most probably secondary to chronic mild subclinical inflammation.

While most adhesive small bowel obstructions were managed conservatively, particular consideration towards early-operative management should be made in patients presenting with such symptoms without any external-abdominal hernia or previous surgical history; as closed loop small bowel obstruction from internal hernias can rapidly progress from incarceration to strangulation to full thickness bowel necrosis, needing bowel resection and anastomosis with associated increase in morbidity and mortality, which could have easily been prevented.

CONCLUSION

Adhesiolysis, epiploicae appendectomy and appendectomy were done with no other points of obstruction along the small bowel. Due to its rarity, non-specific presentation pattern and limited usefulness of imaging for diagnosis, a high index of suspicion with prompt early surgical exploration is a must for a successful outcome in such cases intestinal obstruction; especially in a virgin abdomen.

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