

Intestinal knotting: A case report and brief literature review

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SUMMARY

Ileo-ileal knotting is a rare cause of intestinal obstruction. In this condition, one bowel loop makes a knot with an adjacent bowel loop, resulting in mechanical obstruction and even gangrene of the bowel. We present a case of a young girl with ileo-ileal knotting resulting in a closed-loop obstruction and gangrene of the small bowel loop. This is a difficult condition to diagnose; a high index of suspicion and early surgical intervention are essential to reduce morbidity and mortality.

INTRODUCTION

Strangulated intestinal obstruction is a common acute abdominal condition that requires urgent surgical intervention. Delay in treatment can result in perforation of the bowel, sepsis, and death. Common causes of small bowel strangulation are abdominal hernias, adhesions, bands, primary volvulus, and intussusception. Ileo-ileal knotting is a rare cause of strangulated bowel obstruction.¹ Other types of bowel knotting include ileo-caecal and ileo-sigmoid.^{1,2} We present a rare case of acute strangulated intestinal obstruction caused by an ileo-ileal knot in a young woman who required emergency surgical treatment.

CASE REPORT

A 17-year-old female patient presented to the emergency department of Sarawak General Hospital, Kuching, on 18 January 2020 with a 2-day history of colicky central abdominal pain and several episodes of vomiting. She had undergone an open appendectomy four years previously. The systemic review was unremarkable. On examination, she was tachycardic with a pain score of 7/10; otherwise, her vital signs were within the normal range (pulse rate 110beats/min, blood pressure 110/70mmHg, respiratory rate 14breaths/min, temperature 36.5°C). Abdominal examination revealed a transverse scar 5cm in length in the right lower quadrant. There was no distension, but the abdomen was very tender in the right lower quadrant. A digital rectal examination revealed no abnormalities. Full blood count showed leucocytosis (haemoglobin 12.1g/dL, white cell count $29.9 \times 10^3/\mu\text{L}$, platelets $427 \times 10^3/\mu\text{L}$), and arterial blood gas analysis revealed mild metabolic alkalosis (pH 7.45, PO₂ 102mmHg, PCO₂ 39.5mmHg, base excess -3.6mmol/L, HCO₃ 18.6mmol/L). Serum electrolytes and renal and liver function were normal. Urine test for pregnancy was negative.

Abdominal X-ray showed dilated small bowel loops in the lower abdomen. A contrast-enhanced computed tomography (CT) scan of the abdomen and pelvis suggested a closed-loop obstruction of the distal ileum with suspicion of ischaemia (Figure 1).

The patient underwent emergency laparotomy through a lower midline incision after fluid resuscitation and nasogastric decompression. Haemorrhagic fluid was found in the peritoneal cavity. The caecum was adherent to the previous scar. One loop of the ileum was found to be knotted around another loop of the ileum 5cm from the ileo-caecal junction, resulting in gangrene of the entrapped loop (Figure 2). The proximal small bowel was dilated, while the distal bowel was collapsed. We did not unknot the involved bowel because this could risk perforation and spillage of its contents. About 60–70cm of bowel was resected, including the knotted ileum loops, the caecum, and part of the ascending colon. Functional end-to-end anastomosis between the viable ileum and ascending colon was performed using a linear stapler. The remaining length of viable small bowel, measured from the duodenojejunal flexure, was approximately 300cm. Peritoneal washout was performed with 0.9% saline and the abdomen closed with loop nylon. A 21-French tube drain was left in the pelvis. After surgery, cefoperazone and metronidazole were administered intravenously for 5 days. The patient's recovery was uneventful. She was allowed oral intake of clear fluids on post-operative day-1, nourishing fluids on day-2, and soft diet on day-3. She passed flatus on post-operative day-2 and stool on day-3. The abdominal drain was removed on post-operative day-3, and she was discharged on day-5. During the follow-up period, she reported no further problems, and the abdominal wound healed without any complications. The histopathology report was consistent with bowel ischaemia.

DISCUSSION

Riverius first reported Intestinal knotting in the 16th century and subsequently by Rokitsansky in 1836.¹ Of the several types of intestinal knots, ileo-sigmoid knots are the most common and ileo-ileal knots the rarest.^{1,3} Predisposing factors for ileo-sigmoid knotting include having a redundant sigmoid colon with a long narrow mesentery and consuming a high-fibre, bulky diet,^{1,3,4} but predisposing factors for ileo-ileal knotting are not well known.