International Journal of Academic Health and Medical Research (IJAHMR)
ISSN: 2643-9824
Vol. 9 Issue 10 October - 2025, Pages: 27-29

Acute Intestinal Obstruction due to Type Ib Ileosigmoid Knot: A Case Report and Literature Review

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Abstract: Ileosigmoid knotting (ISK) is a rare but life-threatening cause of intestinal obstruction. It results from the wrapping of the ileum around the base of a redundant sigmoid colon, leading to a closed-loop obstruction. We report a case of a 35-year-old male presenting with acute intestinal obstruction due to a type Ib ileosigmoid knot, managed surgically with a favourable outcome. Early recognition and prompt surgical intervention remain essential to prevent bowel necrosis and improve prognosis.

Introduction

Ileosigmoid knotting (ISK), is a rare surgical emergency characterized by the rotation of small intestinal loops (usually the ileum) around the base of a redundant sigmoid colon, leading to a double closed-loop obstruction involving both segments [1]. This condition is most commonly observed in regions such as Africa, Asia, and the Middle East. Despite its rarity, ISK is associated with high morbidity and mortality, particularly when diagnosis is delayed. We report a case of type Ib ileosigmoid knotting and review the relevant literature.

Keywords: Ileosigmoid knot; Intestinal obstruction; Small bowel volvulus; Emergency surgery

Case Presentation

A 35-year-old male, chronic smoker and cannabis user, presented with 12 hours of abdominal distension, vomiting, and cessation of stool and gas. On admission, he was obnubilated (Glasgow score **13/15**), blood pressure **70/50** mmHg, pulse **115** bpm, and SpO_2 **96%** on room air. Abdominal examination revealed diffuse tenderness and tympany, with no abnormalities on digital rectal examination.

CT scan (figure 1) demonstrated massive intraperitoneal effusion, mild pneumoperitoneum, dilated small bowel loops up to 40 mm, and a characteristic whirl sign with convergence of mesenteric vessels. The sigmoid colon was collapsed with no pneumatosis.

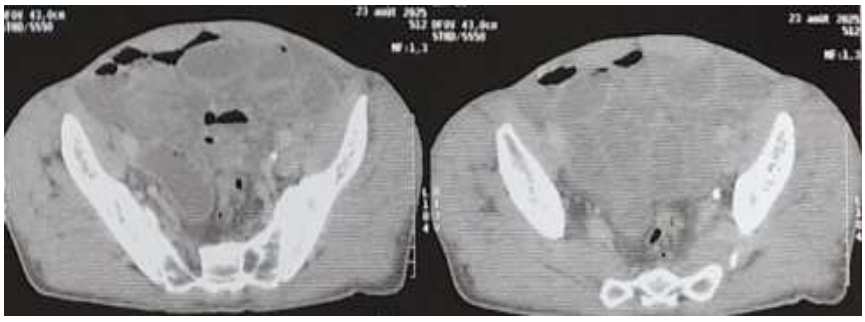


Figure 1: Abdominal CT scan showing pneumoperitoneum, dilated small bowel loops, and mesenteric whirl sign suggestive of ileosigmoid knot.

Exploratory laparotomy (figure 2, 3) revealed a large amount of serohemorrhagic fluid and a type Ib ileosigmoid knot consisting of three ileal loops twisted anticlockwise around a necrotic dolichosigmoid extending to the rectosigmoid junction. A resection of 145 cm of necrotic small bowel and 45 cm of sigmoid colon was performed, followed by peritoneal lavage, a right ileostomy, and a left Hartmann colostomy.
Postoperatively, the patient was admitted to the intensive care unit for 5 days, then transferred to the surgical ward. He was discharged on postoperative day 7. At one-month follow-up, he remained asymptomatic, and histopathology showed no evidence of malignancy.

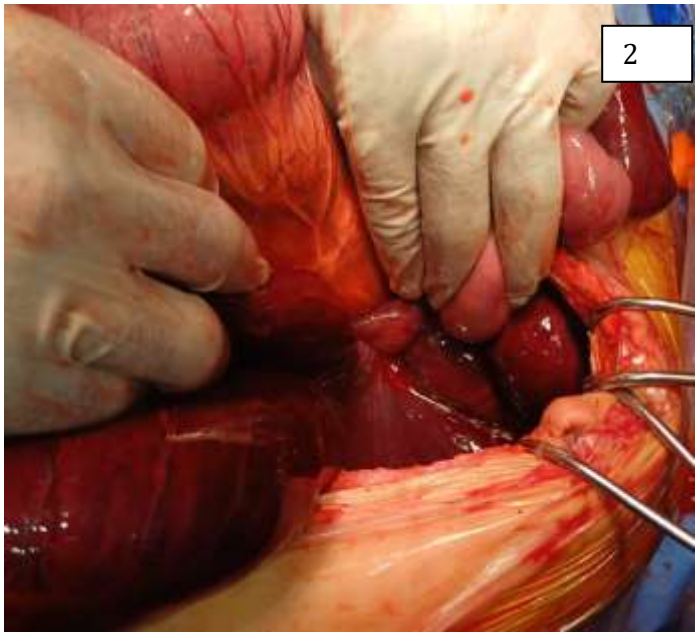
Figure 2, 3: Intraoperative image showing the Type Ib ileosigmoid knot with necrotic sigmoid colon twisted anticlockwise around small bowel loops.

Discussion

Ileosigmoid knotting represents an exceptional cause of bowel obstruction, accounting for less than 0.1% of intestinal occlusion cases worldwide. The condition was first described by Parker in 1845. Alver et al [2] proposed a classification that divides ISK into three types: Type I (ileum active, sigmoid passive), Type II (sigmoid active, ileum passive), and Type III (ileocecal segment active). Our case corresponds to Type Ib, where the ileum wraps the sigmoid colon in an anticlockwise direction.

Predisposing factors include a long small-bowel mesentery, a redundant sigmoid colon with a narrow base, and high-fibre diets. Classically, the clinical presentation of ileosigmoid knotting is non-specific and mimics any other intestinal obstruction. It is characterized by abdominal distension, cessation of stool and gas, and vomiting that rapidly becomes feculent. These symptoms progress quickly to bowel ischemia due to the double closed-loop mechanism [3]. In addition, hemodynamic instability is reported in approximately one-third of patients at admission, reflecting the rapid onset of deshydration, hypovolemia and systemic inflammatory response secondary to bowel strangulation [4, 5].

When performed, abdominal CT scan typically demonstrates the “whirl sign”, which is characteristic of volvulus and



represents the twisted mesenteric vessels. Additional findings may include signs of bowel ischemia, such as bowel wall thickening, decreased mural enhancement, pneumatosis, or free intraperitoneal fluid, indicating digestive suffering secondary to strangulation [6,7].

Surgical treatment remains the cornerstone of management. In viable bowel, gentle detorsion may suffice. However, when necrosis is present, as in our case, en bloc resection of both segments is required. The choice between primary anastomosis and stoma creation depends on the patient’s hemodynamic status, bowel viability, and intra-abdominal contamination.

Recent studies emphasize that delayed diagnosis and ischemia duration are key determinants of mortality, reported between 30% and 50% [8].

Early recognition, aggressive resuscitation, and prompt surgical intervention remain the main predictors of survival.

Conclusion

Ileosigmoid knotting is a rare but severe surgical emergency. Rapid diagnosis based on CT findings and immediate surgery are essential to prevent extensive bowel necrosis and reduce mortality. Awareness of this entity, especially in regions where redundant sigmoid colon is prevalent, can improve outcomes.

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