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Correspondence to:
Horace Ojobo Agada
Email: horaceag2015@gmail.com
ORCID: 0000-0002-0146-7070

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Case Report

Ileosigmoid Knotting: An Unusual Cause of Acute Abdomen in Jalingo, Taraba State, Nigeria

Horace Ojobo Agada[1], Daniel Adams Marwa[2], Chucks Azubuike[3], Mshelia Joseph Mwajim[3], Kyantiki Peter Adamu[3], Dahiru Ahmadu[3]

1 Consultant General Surgeon, Department of Surgery, Federal University Teaching Hospital, Lafia, Nasarawa State, Nigeria
2 Senior Registrar, Department of Surgery, Federal Medical Centre, Jalingo, Taraba State, Nigeria
3 Principal Medical Officer, Department of Surgery, Federal Medical Centre, Jalingo, Taraba State, Nigeria

ABSTRACT

Ileosigmoid knotting, also known as compound volvulus, is a rare cause of bowel obstruction that is potentially life-threatening. It poses a significant diagnostic challenge due to its rarity as well as non-specific clinical and radiological characteristics. We present a 50-year-old man with clinical features that were consistent with strangulated bowel obstruction who had a laparotomy with intra-operative findings of a gangrenous ileosigmoid knotting. A twisted gangrenous terminal ileum around the base of a twisted gangrenous sigmoid colon was found. He had a right hemicolectomy and sigmoidectomy with a primary ileocolic and colo-colic anastomosis, respectively. This case highlights the need for a high index of suspicion, adequate resuscitation, and prompt surgical intervention to reduce the morbidity and mortality associated with this surgical disease.

Key words: Bowel obstruction, gangrene, ileosigmoid knotting, sigmoid volvulus

INTRODUCTION

Sigmoid volvulus is a clinical condition that is characterized by the wrapping of the sigmoid colon around itself and its mesentery. It is a rare but important cause of large bowel obstruction. It is classified as either primary or secondary, depending on the etiological factor, and acute, subacute, or chronic, based on duration. Additionally, it is categorized as complete or incomplete sigmoid volvulus, based on the severity. Additionally, sigmoid volvulus can be classified into simple or compound sigmoid volvulus, also called ileosigmoid knotting. [1]

Ileosigmoid knotting, also referred to as compound or double volvulus, is a rare cause of bowel obstruction in which the ileum or the sigmoid colon wraps around the other. [2, 3] This may give rise to a closed-loop obstruction that can rapidly progress to gangrene with a high mortality rate that ranges from 20% to 100%. [4]

Ileosigmoid knotting is an unusual cause of bowel obstruction globally. [4] Shepherd in 1967 reported the largest series in Uganda, with 92 cases. [5] The etiopathogenesis of this disease is largely unknown but may be related to dietary peculiarities and the anatomy of the ileum and sigmoid colon. [5] It is predominantly a male disease with a mean age of 43.9 years. [6] The youngest reported case in the English literature is a 2-week-old child. [1]

Simple sigmoid volvulus is the most common preoperative diagnosis following imaging studies. [2–4] Arising from the diagnostic challenges, most cases are diagnosed following exploratory laparotomy. [7] Limited case reports of ileosigmoid knotting exist in Nigeria.

We report the case of a 50-year-old man with gangrenous ileosigmoid knotting and a review of the literature to increase awareness of this disease. The case report was narrated with the Surgical Case Report (SCARE) 2023 guideline.

CASE REPORT

A 50-year-old man presented to the emergency unit with the complaint of abdominal pains of 3 days' duration. It was initially colicky but later became dull and constant with associated bilious vomiting, abdominal distension, and obstipation of 2 days duration. He had no history of fever, anorexia, weight loss, or previous surgery.

Examination revealed an acutely ill-looking middle-aged man in painful distress and was dehydrated. His vital signs were a respiratory rate of 24 cycles per minute, pulse rate of 110 beats per minute, and a blood pressure of 115/75 mmHg. His abdomen was distended with marked generalized tenderness, guarding, and absent bowel sounds. The digital rectal examination was unremarkable.

The laboratory test showed a hemoglobin level of 10 g/dL, and his serum urea, electrolytes, and creatinine were within normal limits. An abdominopelvic ultrasonography scan revealed dilated loops of bowel with ascitic fluid.

A diagnosis of strangulated bowel obstruction was made, and he was optimized and underwent a laparotomy. The intra-operative findings were those of hemorrhagic peritoneal collection, a 360° anticlockwise twist of gangrenous sigmoid colon with loops of gangrenous terminal ileum wrapped around the sigmoid (**Figures 1–4**). The gangrenous segments of bowel were resected, and primary anastomosis was effected.

On the postoperative day-5, he developed a deep incisional surgical site infection that was managed non-operatively. He subsequently did well and was discharged on postoperative day 21.

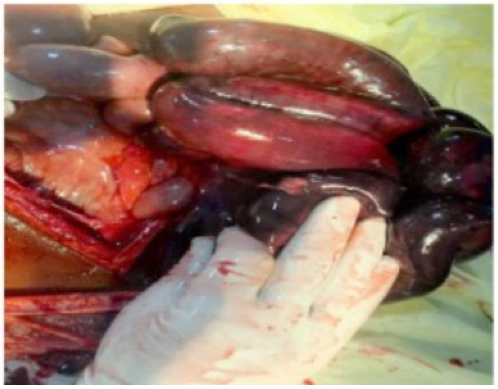

Figure 1: Ileosigmoid knotting with bowel gangrene.

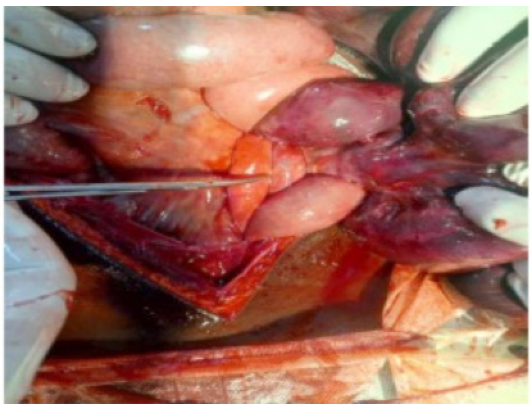

Figure 2: Area of knotting of the ileum and sigmoid colon.

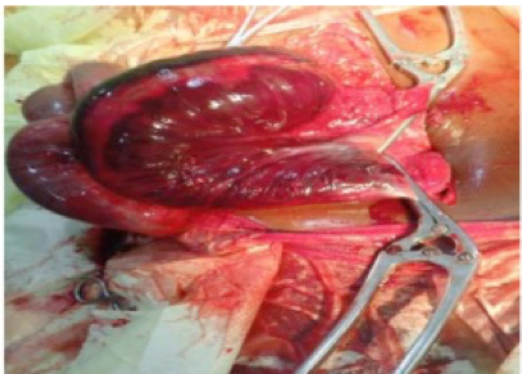

Figure 3: Gangrenous sigmoid colon.

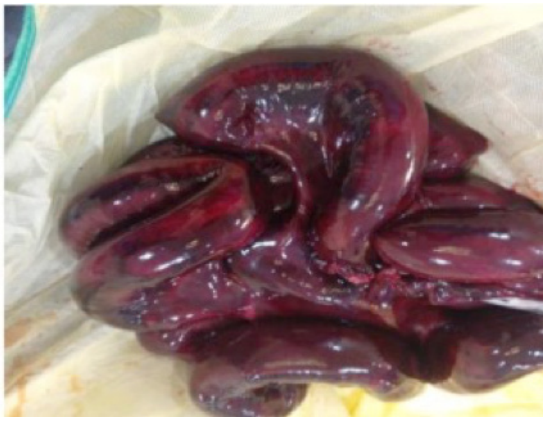

Figure 4: Resected gangrenous ileum.

DISCUSSION

Ileosigmoid knotting was first reported by Parker in 1845. [8] It is a rare cause of intestinal obstruction with a high male predominance. The affected population is usually over 40 years of age. [9, 10] Its incidence is higher in the "volvulus belt" regions of Asia and the African continents. [11]

Abdominal pain is the cardinal symptom of this disease, which is typically of a sudden onset. [10] Clinical features that are consistent with generalized peritonitis are a common pre-operative diagnosis in the majority of cases. [12] This is attributable to the early onset of bowel strangulation with subsequent gangrene or perforation. [2–4]

The preoperative diagnosis is challenging due to its varied clinical and radiological characteristics. [10, 12] However, with the advent of advanced imaging studies such as computerized tomography scan (CT-scan) and magnetic resonance imaging (MRI), few reports have documented preoperative diagnosis of this condition. [13, 14] Abdominal CT-Scan is considered the imaging of choice in patients who are suspected of having ileosigmoid knotting. The characteristic radiological finding is that of a whirl sign created by the twisted mesocolon and bowel. It may also reveal pneumatosis intestinalis, which is suggestive of bowel ischemia. [13, 14] Our patient was unable to have this investigation done due to its non-availability in our center.

Ileosigmoid knotting is classified into three types. In type 1, the ileum, as an active component, revolves around the sigmoid colon as the passive component. In type 2, the sigmoid colon wraps around the ileum. Type 3 is characterized by the wrapping of the ileocecal segment around the sigmoid colon. [14]

The rate of bowel ischemia ranges from 73.5 % to 93.9 %, with both the ileum and sigmoid frequently affected. [14] Following adequate resuscitation, surgical intervention is the mainstay of treatment. [10] Unlike in simple sigmoid volvulus, where colonoscopic detorsion and decompression are an option, it is not the case for ileosigmoid knotting. The surgical treatment of ileosigmoid knotting is dependent on two principal factors, which are the hemodynamic status of the patient and the viability of the bowel. [12–15]

The surgical option of detorsion with or without preventive procedures such as sigmoidopexy, mesosigmoidoplasty, or sigmoidectomy and anastomosis is indicated in patients who are hemodynamically stable with non-gangrenous bowel. [12] In the setting of gangrenous bowel, a single-staged procedure or a 2-staged procedure of resection and stoma creation is done depending on the hemodynamic stability of the patient. [10] In the case highlighted, due to the hemodynamic stability of our patient after adequate resuscitation, segmental resection with primary anastomosis was performed. [13] Similar to our case, Hanna et al. and Bawa et al., in their report, performed ileal and sigmoid resections with primary anastomosis with a good outcome. [8, 15] Early presentation and diagnosis, adequate resuscitation, presence of viable bowel, absence of co-morbidity, and timely intervention are indicators of a good prognostic outcome. [11, 13]

CONCLUSIONS

Ileosigmoid knotting is an unusual and life-threatening cause of bowel obstruction. A high index of suspicion, aggressive resuscitation, and prompt surgical intervention are required to avert a poor outcome of management.

PATIENT CONSENT

Written informed consent was obtained from the patient for publication of this case report.

AUTHORS' CONTRIBUTION

All authors have significantly contributed to the work, whether by following the case at the bedside, conducting literature searches, drafting, revising, or critically reviewing the article. They have given their final approval of the version to be published, have agreed with the journal to which the article has been submitted, and agree to be accountable for all aspects of the work.

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CONFLICT OF INTEREST

None.

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