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Type III Ileosigmoid Knotting: A Case Report of Rare Cause of Acute Intestinal Obstruction

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Abstract: ***Ileosigmoid knotting is one of the rare causes of acute abdomen and intestinal obstruction. We present a case of a 36 - year - old male who presented to the emergency department in septic shock with features suggestive of Acute intestinal obstruction and was diagnosed as a case of Type III Ileosigmoid knotting intraoperatively. Although rare, Ileosigmoid knotting should be considered in the differential diagnosis of patients presenting with acute abdominal pain and distention. Early diagnosis and prompt surgical intervention are critical for a favorable outcome. The high mortality rate is mainly due to the rapid progression to gangrene and sepsis.***

Keywords: Acute Intestinal Obstruction, ileosigmoid knotting, Acute Abdomen

1. Introduction

Ileosigmoid knotting (ISK) is a rare but potentially life - threatening condition characterized by the twisting of the ileum and sigmoid colon, leading to bowel obstruction and vascular compromise and subsequent gangrene. Despite its low incidence, ISK is a significant clinical challenge due to its high mortality rate and nonspecific symptoms, often leading to delayed diagnosis and treatment.

This journal article aims to provide a comprehensive overview of Type III ISK, which is the most severe form of the disease, accounting for approximately 50% of all cases. Type III ISK is characterised by the complete wrapping of the ileum around the base of the sigmoid colon, resulting in a closed - loop obstruction and rapid progression to bowel ischemia. This type of ISK is particularly challenging to diagnose and manage, as it can mimic other gastrointestinal conditions and presents with a broad range of symptoms.

Epidemiologically, type III ISK is rare, with only fewer than 200 cases reported in the literature. However, it is more commonly seen in regions with a high incidence of intestinal tuberculosis or chronic constipation, which are risk factors for the condition.

The clinical presentation of type III ISK can vary widely, ranging from intermittent abdominal pain and distension to severe abdominal cramps, nausea, and vomiting. Diagnosis can be challenging, and imaging studies such as CT scan, and MRI can be useful in identifying the knot and determining the extent of the obstruction.

The management of type III ISK requires prompt surgical intervention to relieve the obstruction, restore blood flow to the affected bowel, and prevent complications such as perforation and sepsis. A laparoscopic approach is often preferred, as it is less invasive and associated with a shorter recovery time. However, in majority of cases, an open surgical approach may be necessary due to the severity and complexity of the condition.

In conclusion, Type III ISK is a rare and challenging condition that requires prompt diagnosis and surgical intervention to prevent life - threatening complications. A better understanding of the epidemiology, clinical presentation, diagnostic approach, and management strategies for this condition can help improve outcomes for affected patients.

2. Case Report

A 36 - year - old male presented to the emergency department with complaints of abdominal pain, distention, and constipation for one day. He was HBsAg +ve and had no other significant past medical history, and his vital signs were as follows: heart rate 140 beats per minute, blood pressure 70/40 mmHg, respiratory rate 24 breaths per minute, and oxygen saturation of 90% on room air. The physical examination revealed abdominal distension, diffuse tenderness, and absent bowel sounds.

Initial laboratory investigations revealed leukocytosis (WBC count of 25, 000/µL) and metabolic acidosis (pH 7.20, bicarbonate 10 mEq/L). The patient was resuscitated with intravenous fluids, broad - spectrum antibiotics, and vasopressors. A computed tomography (CT) scan of the abdomen and pelvis showed twisted bowel loops with dilated and small and large bowel loops raising suspicion of a volvulus.

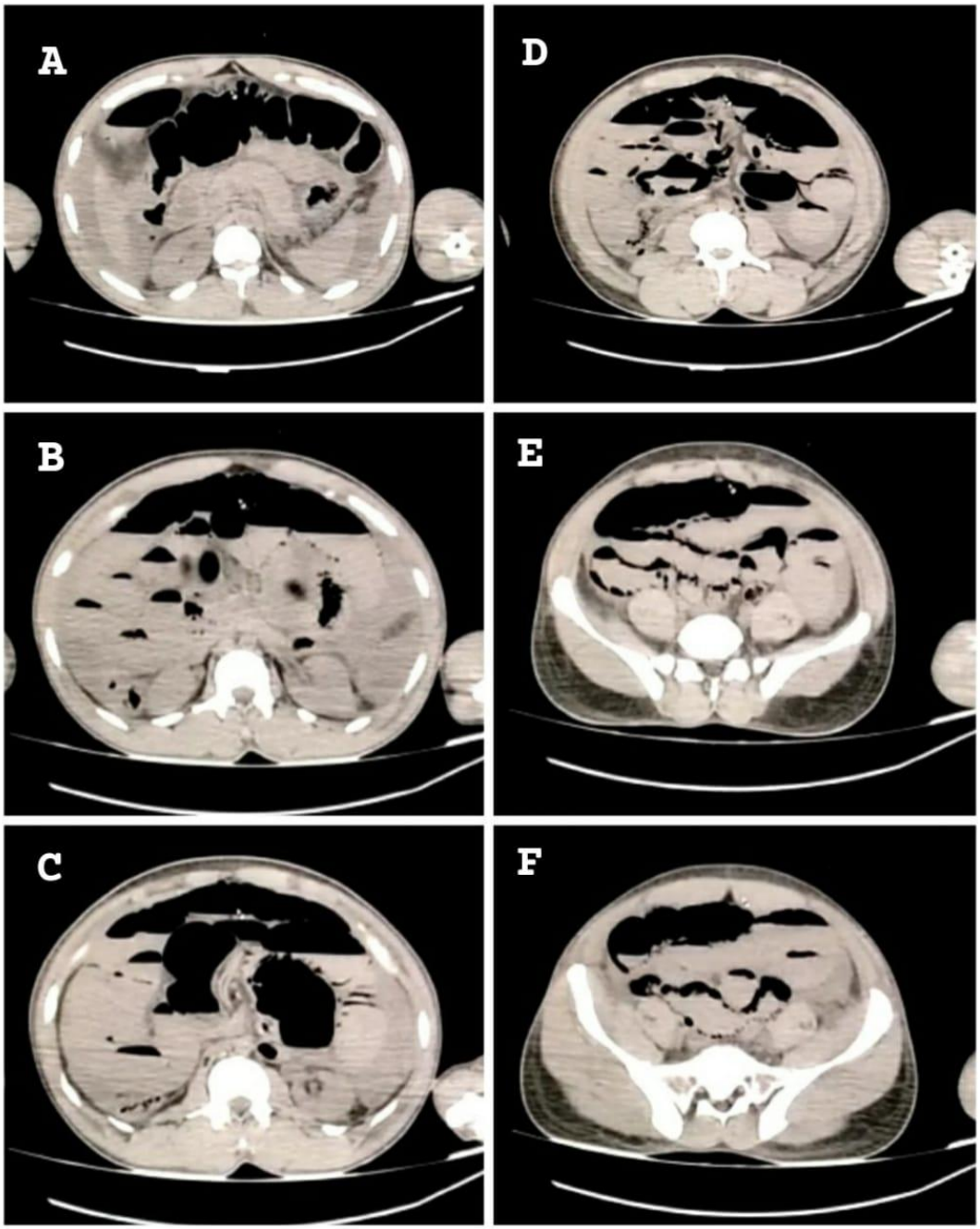

Figure 1: Computed Tomography images of a 36 year old male with Ileosigmoid knotting; (A), (B), (E) and (F) Marked dilatation of both small and large bowel seen with multiple air fluid levels; (C) Twisted Mesentry along with the vessels showing characteristic 'whirl' pattern; (D) Descending colon mesentry seen to be deviated medially with surrounding multiple dilated ileal loops.

The patient was aggressively resuscitated and taken up for exploratory laparotomy, which revealed gangrene involving the jejunum 15 cms from DJ flexure, ileum, and colon till the rectosigmoid junction. The ileum had twisted around the sigmoid colon, creating a knot, which had resulted in bowel ischemia and gangrene. The gangrenous segment was resected, an end jejunostomy was created and the rectal stump was closed. Post operatively, The patient was admitted to the intensive care unit. Unfortunately, despite aggressive management, the patient died due to septic shock on post operative day - 1.

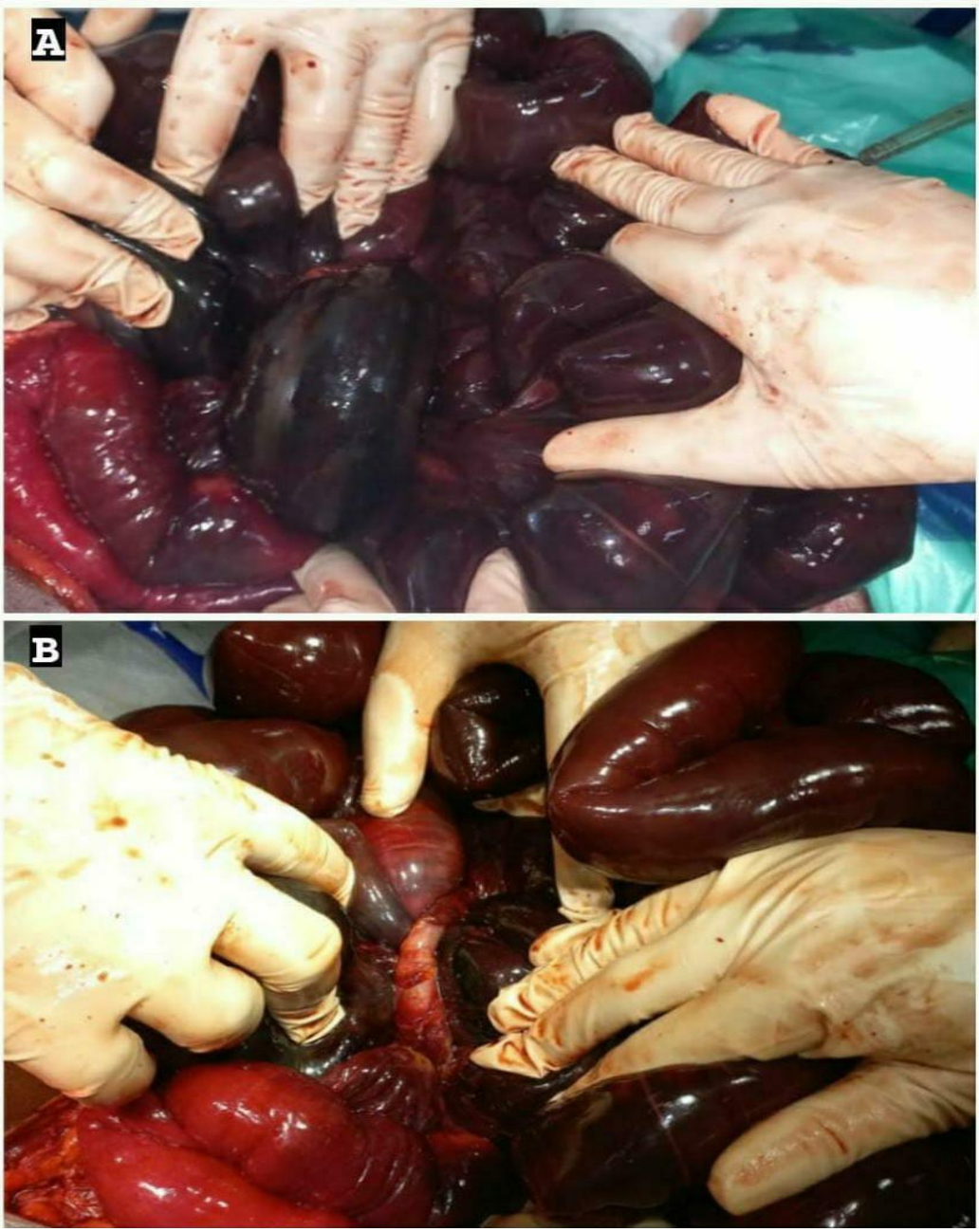

Figure 2: Intra operative images of a 36 year old male with ileosigmoid knotting, Gangrene noted 15cm from DJ flexure till Upper Rectum; (A) Central sigmoid loop with surrounding twisted gangrenous ileal loops; (B) Twisted mesentry causing vascular compromise.

3. Discussion

Type III ileosigmoid knotting is a rare condition with a reported incidence of less than 1% of all cases of intestinal obstruction. This condition is more common in young adult males and is usually associated with a sudden onset of abdominal pain, which rapidly progresses to septic shock and multiorgan failure. The diagnosis of ileosigmoid knotting is challenging and often requires a high index of suspicion due to the lack of specific clinical features. In most cases, the diagnosis is confirmed during exploratory laparotomy.

The pathophysiology of ileosigmoid knotting is not fully understood. However, it is believed to result from the interplay of multiple factors, including a long mesentery, a narrow base of the mesentery, and the presence of a mobile ileocecal valve. These factors allow for the ileum to twist around the sigmoid colon, leading to a knot formation that can rapidly progress to bowel strangulation.

The management of ileosigmoid knotting is primarily surgical, and the mainstay of treatment is early surgical intervention. However, the surgical approach varies depending on the severity of the condition and the patient's overall health status. Mainly, the treatment involves resection of the affected bowel segment with stoma formation or primary anastomosis. However, in cases of severe bowel ischemia or perforation, which is frequently observed, a temporary colostomy is required to allow for adequate healing before the anastomosis.

The prognosis for ileosigmoid knotting is generally poor, with reported mortality rates ranging from 20% to 50%. This

is due to the rapid progression of the condition and the potential for severe sepsis and multiorgan failure. Early recognition and prompt surgical intervention are crucial in improving the outcome of this condition.

4. Conclusion

Type III ileosigmoid knotting is a rare and life - threatening condition that requires a high index of suspicion for early diagnosis and prompt surgical intervention. The prognosis for this condition is generally poor with high mortality rates. Clinicians should be aware of this condition and consider it in the differential diagnosis of patients presenting with abdominal pain, distention, and constipation. Early diagnosis and prompt surgical intervention are crucial in improving the outcome of patients with ileosigmoid knotting.

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