

# Ileosigmoid Knotting: A Case Report and Review of Literature

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## I. Introduction

Ileosigmoid knotting (ISK), also known as compound volvulus is the twisting of the ileum around the base of the sigmoid or vice versa [1, 2]. It is an unusual and rare cause of intestinal obstruction [3, 4]. It is a surgical emergency with very high morbidity and mortality because of its rapid progression to gangrene of the part involved [5]. In this condition, loops of ileum wrap around the base of a redundant sigmoid colon to form a “knot”. The knot causes intestinal obstruction and gangrene which usually presents as acute abdomen. Its incidence is higher in males in 4<sup>th</sup> decade of life and in culture where single meal is eaten. Most cases have been described in Africa, Asia and East Europe, the entity being very rare in the west [6]. Pre-operative diagnosis is often difficult due to non-specific features [1, 2].

We, hereby report an unusual case of a patient with Ileosigmoid knotting, who presented with features suggestive of intestinal obstruction and strangulation which was diagnosed intra operatively.

## II. Case Report

A 50 year old male, referred from a peripheral health care centre, presented to Emergency Department (ED) in our tertiary care institute with complaint of generalized pain abdomen, gradual in onset, colicky in nature and progressive since last 2 days. The pain was associated with abdominal distension and multiple episodes of vomiting. There was also history of obstipation since same duration with no relevant past history including any abdominal surgery. On examination, patient was dehydrated and severely ill. His pulse rate was 108 beats per minute, blood pressure 100/64 millimeter of mercury, respiratory rate 24 per minute and temperature was 100.6 degree Fahrenheit. On abdominal examination, it was grossly distended. There was guarding and rebound tenderness present all over abdomen. Bowel sounds were absent. On digital rectal examination, rectum was empty with no growth felt in or outside the lumen. Blood analysis revealed leucocytosis with neutrophilic predominance. His arterial blood gas values were within the normal range. Plain abdominal radiograph showed air fluid levels in both small as well as large bowel with no free air under diaphragm present. Ultrasound abdomen revealed free fluid in the cavity with dilated gut loops. On the basis of above history, clinical, laboratory and radiological findings a presumptive diagnosis of acute abdomen, cause intestinal obstruction was made and patient was planned for urgent laparotomy after initial resuscitation.

On opening the abdominal cavity through a midline incision, about 200 milliliters of dirty colored, blood mixed and foul smelling fluid was aspirated. Both small and large bowel was grossly distended. On further examination, gangrenous sigmoid colon was entangled with ileal loops, strangulating it (Figure 1). Furthermore, some gangrenous loops of ileum were further encircled by another loop rapped at the base of sigmoid colon, thus making a knotted gangrenous ileal and sigmoid mass (Figure 2). As manual spontaneous reduction was not fruitful, a small suction needle was used to deflate the dilated proximal colon, which resulted in gradual reduction of the twisted gut loops. Afterwards, the gangrenous part of the ileum (about 120 centimeters) and sigmoid colon (about 10 centimeters) were resected. End to end anastomosis of the remaining large bowel was done but for small bowel double barrel ileostomy was performed. His post operative period was uneventful and patient was discharged after 10<sup>th</sup> post operative day after removal of sutures. At present, after 6 weeks of surgery patient is in follow up and planned for closure of ileal stoma after suitable time.

### **III. Discussion**

Compound volvulus or Ileosigmoid knotting (ISK) is life threatening closed loop type of intestinal obstruction first reported by Parker in 1845[1,5]. ISK accounts for 18-50% of all cases of sigmoid colon volvulus cases in eastern and 5% in western countries. It is common between 3<sup>rd</sup> and 5<sup>th</sup> decade of life and more often seen in males [7, 8]. The etiology is not well understood till now. However, the predisposing factors of this pathology may be the coexistence of an elongated, mobile, small bowel mesentery and the redundant sigmoid colon with a narrow base [7]. Ingestion of high fiber diet after prolonged period of fasting, lax abdominal wall, post operative adhesions, intestinal herniation, Meckel's diverticulum, malrotation, pregnancy and mesenterico-omphalic abnormalities are in fact some other predisposing factors which have been incriminated in this entity [9, 10].

Alver classified ISK into four types based on the mechanism of formation of knot. In type I, the ileum is the active component, wrapping itself around the sigmoid colon (passive component) to form the knot. It is the commonest type. Type II is other way round. In type III, the ileo-cecal segment acts as the active component, while in type IV (undetermined type); it is not possible to differentiate the two components from each other [3, 11]. Type I and II can be further classified into subtypes A and B depending on whether the torsion is clockwise or counterclockwise, respectively [11].

Clinical presentations of ISK include sudden abdominal pain, colicky in nature with abdominal distension, vomiting and obstipation. On general examination, patient may be dehydrated, toxic and/or febrile. Abdomen is distended with guarding, rigidity and tenderness. Bowel sounds depends on the time of presentation which may be hyperactive or absent [7, 10].

In most cases, the diagnosis is established intra operatively. However, at presentation, plain abdominal radiograph shows features suggestive of acute intestinal obstruction. It is often mistaken for sigmoid volvulus [12]. Computerized Tomography (CT) scan or Magnetic Resonance Imaging (MRI) gives better diagnostic result and are useful in making pre operative diagnosis [10]. CT scan reveals classical "whirl sign" of volvulus, which is created by twisted mesentery and bowel loop, and the afferent and efferent limbs of the sigmoid colon give the appearance of a beak[9].

Immediate resuscitation is very crucial for survival and includes fluid and electrolyte correction, nasogastric tube insertion, urinary catheterization for output monitoring and antibiotics.

The treatment of this acute and rare condition is surgical. Any delay of the surgical procedure result in complications including high mortality rate ranging up to 47% [13, 14]. The operative procedure is dictated by the anatomical and pathological changes present. Distension of the sigmoid loops, ileal loops and intervening bowel between these loops is caused by closed loop obstruction.

The prognosis depends on early presentation, diagnosis and intervention. The mortality rate ranges from 6.8-8% for non gangrenous and 20-100% for gangrenous presentation. Shock is the major cause of death [10].

### **IV. Conclusion**

Ileosigmoid knotting or compound volvulus is a rare surgical emergency, which may be encountered in our practice and should be considered as a cause of acute intestinal obstruction with strangulation. If not promptly identified and treated, it is associated with high morbidity and mortality. Timely resuscitation and surgery will definitely improve prognosis.

#### **Conflict of interests**

None declared

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Figure 1: Gangrenous ileal segment after derotation of ISK. Sigmoid colon is also seen



Figure 2: Gangrenous sigmoid colon after derotation of ISK

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