

ILEOSIGMOID KNOTTING

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SUMMARY: Ileosigmoid knotting ("ISK") is a rare cause of intestinal obstruction. It is related to volvulus of the sigmoid colon and is mainly seen in geographic localizations where volvulus is common. The ileum twists around the base of the sigmoid and both loops are often gangrenous. These patients are usually in poorer general condition. Unfamiliarity with the condition may have disastrous consequences at surgical management. The aim of this case report showing the full-blown clinical features of ISK is to discuss the diagnostic and therapeutic challenges in this special form of bowel volvulus. Vigorous critical care and prompt individualized surgical treatment may improve the survival rate.

Key Words: Acute bowel obstruction, volvulus, ileosigmoidal knot

Ileosigmoid knotting, sometimes referred to as compound, complex or double volvulus, is an unusual form of intestinal obstruction which a loop of ileum wraps around the base of a redundant sigmoid colon and passes beneath itself forming a knot (1-7). This variant of midgut volvulus deserves special mention for a double-loop obstruction with rapid progression to extensive gangrene of the involved loops ensues, as the knot tightens (1-7). Though uncommon, a high index of suspicion taking into account the distinctive clinical features and radiologic findings in conjunction with the use of critical resuscitative measures and urgent resective surgery can save most patients (1-8).

REPORT OF A CASE

A 42-year-old man describing similar, intermittent, self-resolving attacks of ileus was presented with a six-hour history of severe, colicky, generalized abdominal pain. He had indulged large quantities of food and drink that afternoon and then experienced sudden onset of crampy abdominal pain associated with one episode of vomiting, obstipation and distention. The pain rapidly became constant. Physical examination showed a frail, ashen-appearing patient in severe pain. The abdomen was uniformly distended with no definite palpable loop of intestine, rigidity and tenderness in the lower quadrants of the abdomen were marked. Findings from the rest of the examination were normal. The vital functions were as follows: the pulse rate; 121 beats per minute, blood pressure, 100/160 mmHg; and respirations, 30/ min. The temperature was 38.1°C. The white cell count was 18000/cc. mm, with a left shift. Plain erect abdominal X-

rays showed the characteristic double obstruction: the obstructed moderately distended sigmoid loop was pulled over to the right by the winding ileum, and the obstructed proximal small bowel loops were seen to the left. The distended ascending colon and cecum were also visualized (Figs. I and II). At urgent exploration, the congested, distended but viable distal jejunum and entire ileum were wrapped around the base of an infarcted sigmoid colon and formed a knot. The bowel was untied with difficulty, and it was evident that both the small bowel and sigmoid colon were attached to the narrow-based and elongated mesenteries with fibrous adhesions. Hartmann procedure was performed, the patient recovered uneventfully, and the resulting colostomy closed after six months without any complication.

DISCUSSION

ISK is virtually an unusual and mostly a fatal form of volvulus (1,6,7,9). Few textbooks of surgery deal with the subject of ileosigmoid knots and one of the earliest accounts was given by Parker in 1845 originated from developing countries (1,3,4,5,7). Shepherd's observations on 92 patients in Uganda and the excellent postmortem descriptions by Faltin seemed to provide the backbone for the understanding of this rare form of intestinal obstruction (9). Several factors are believed responsible for the ISK (2-9): First, a long small bowel mesentery and a sigmoid colon on a narrow pedicle are thought to be essential prerequisites, and were present in this case. The second factor is the habit of ingestion of a high-bulk food and liquid after a prolonged interval of fasting. In this situation, rapid aboral transit of the bowel contents into the proximal jejunum twist the distal small bowel (often clockwise), which in turn initiates the midgut volvulus formation. Third, the small bowel is believed to initiate the knot or knuckle for the following reasons: (a) in most of the cases ileum was found to be the active knot component, (b) The incidence of recurrence of a sigmoid volvulus is from 20% to 90% and of the 25 patients in the Uganda series not

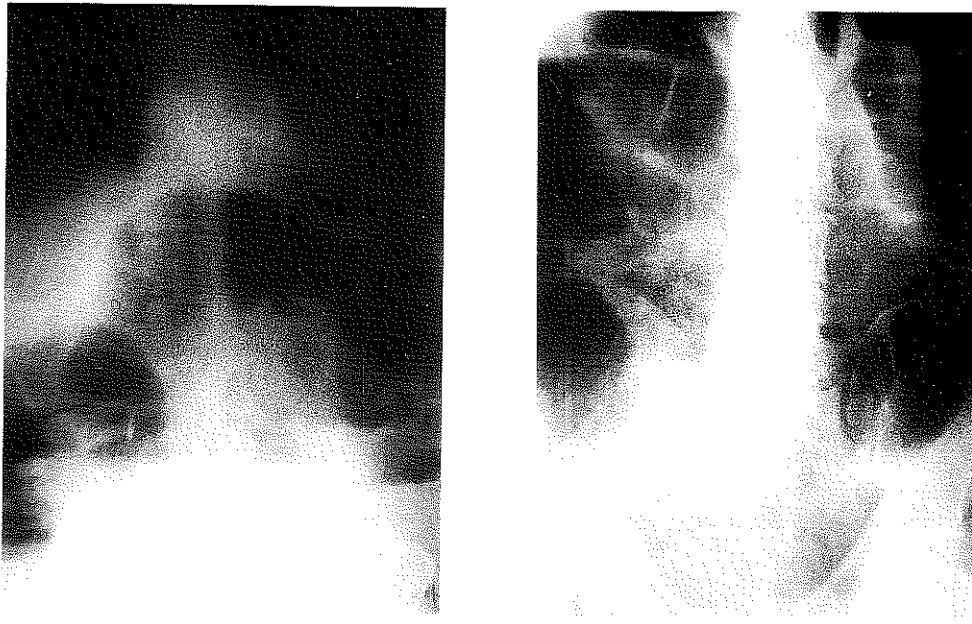
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Fig I and II: Upright x-rays of the abdomen showing a double loop obstruction, with the sigmoid on the right and small bowel loops on the left.



requiring sigmoid resection, none ever returned with a sigmoid volvulus (9). Main radiologic features consist of a disproportionately dilated sigmoid colon ascending from the pelvis to the upper right side of the abdomen similar to simple volvulus pattern, and multiple air-fluid levels suggestive of small bowel obstruction occupying predominantly in the left abdomen (1). Initial symptoms, mainly the pain, may not reflect the severity of the existing clinical findings and the onset of ischemia lead to the detection of rebound tenderness and rapid clinical deterioration. This is the case of vital importance for urgent surgery. These patients usually look very ill and are "shocky" with abdominal pain and distention, guarding, rebound, and tachycardia. The differential diagnosis of this rare entity with either obstructive or nonobstructive abdominal emergencies, particularly internal herniation and mesenteric vascular accident must be kept in mind. The definitive diagnosis of ISK is usually made retrospectively (2-9). At laparotomy, most of the cases will have necrotic bowel, either small bowel alone, or both small and sigmoid colon. Seldom, however, as in this case, are the sigmoid gangrenous and small bowel viable. It was noted that in cases where the gangrenous gut seems fragile, the difficulty experienced in untying the knot can cause rupture and fecal peritonitis (2-9). The operative findings are the essentials to delineate the extent of surgical procedure for the treatment of ISK: the Hartmann procedure is mostly the treatment of choice for the viable distal limbs too short to be exteriorized or mucous fistula construction without undue tension (1-9). Restorative resection was also reported with good results (3,4,5,7). The authors believe that primary resection and anastomosis can be safe when performed by experienced surgical team

equipped with optimal surgical facilities. Because of the fulminant course and the severity of the disease, the prognosis of ISK cases is grave (1-7). The overall mortality rate reported in different series was about 40 percent due to endotoxemia (2,3,5,7). Early differential diagnosis, rapid but not prolonged resuscitation, adequate antibiotic cover and immediate and correct resective surgery may improve the final poor outcome of these patients.

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