



A RARE CASE OF ILEO-SIGMOID KNOTTING COMPOUND VOLVULUS CASE REPORT RAJU N NAGAPPAN

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Abstract : Ileosigmoid knotting, also known as compound or double volvulus is a rare cause of intestinal obstruction. In this condition the ileum wraps around the base of the sigmoid colon and forms a knot. The condition is serious, generally progressing rapidly to gangrene. Awareness of the condition is essential for prompt diagnosis and optimal management. This report describes a case of 45year old male presented with features of intestinal obstruction and was taken up for emergency laparotomy which revealed ileo sigmoid knotting. Clinical features and management of this rare condition are discussed with relevant review of literature. Key words Ileosigmoid, knotting, volvulus, intestinal obstruction. Ileosigmoid knotting is a rare cause of intestinal obstruction that rapidly progresses to gangrene of the ileum as well as the sigmoid colon. Preoperative diagnosis is difficult because of its infrequency and atypical radiographic findings. It is essential to differentiate it from sigmoid volvulus because endoscopic reduction is contraindicated in Ileosigmoid knotting. In recent years, CT has been helpful in making the preoperative diagnosis. Generalized peritonitis and sepsis are the main causes for poor outcome. After hemodynamic stabilization, immediate surgical intervention is needed.

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Ileosigmoid knotting is a rare cause of intestinal obstruction that rapidly progresses to gangrene of the ileum as well as the sigmoid colon. Preoperative diagnosis is difficult because of its infrequency and atypical radiographic findings. It is essential to differentiate it from sigmoid volvulus because endoscopic reduction is contraindicated in Ileosigmoid knotting. In recent years, CT has been helpful in making the preoperative diagnosis. Generalized peritonitis and sepsis are the main causes for poor outcome. After hemodynamic stabilization, immediate surgical intervention is needed.

Case report:

A 45year old male with history of diffuse abdominal pain for 4 days, was admitted to hospital with several episodes of vomiting, abdominal distention and obstipation. Examination

revealed severe dehydration, BP of 100/60 mm of hg, pulse rate of 116/min, tachypnoea, and temperature 38.4°C. Per abdominal examination revealed generalised distension with diffuse tenderness, guarding and rigidity. Per rectal examination revealed roomy rectum with altered blood. Investigations showed Hb-8.8g% with TC-16,400, sodium-134, potassium-3.9, blood glucose-100, blood urea 22, serum creatinine-0.8, plain Xray abdomen erect showed Multiple air fluid levels. The patient was resuscitated with IV fluids, IV antibiotics and was taken up for surgery within 3hours from admission. Laparotomy revealed 1000 ml of peritoneal fluid admixed with blood, volvulus of sigmoid with distal ileal knotting, gangrene of sigmoid and distal 25cms of ileum upto 2 cm proximal to ileocaecal junction. So sigmoid colectomy with primary end to end anastomosis was performed, gangrenous segment of ileum was resected and end ileostomy done. Distal end of ileum was closed. Post operative period was uneventful and was readmitted for ileostomy closure 2 months later and ileoascending colon anastomosis was done.



Fig. 1

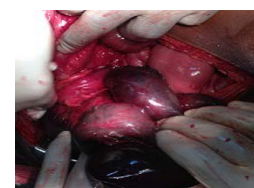


Fig. 2

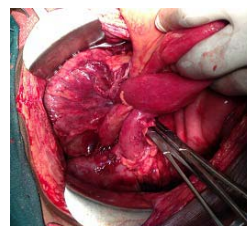


Fig. 3

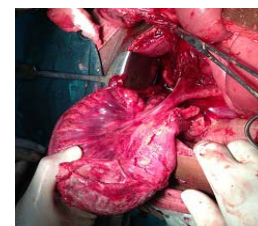


Fig. 4



Fig. 5

Discussion:

Parker is credited with having described the first patient with ileosigmoid knotting in 1845(5). It is rare in western world but not uncommon in Africa, Asia, and the Middle East(1). Ileosigmoid knotting accounted for 8.8% of 773 cases of sigmoid volvulus and 1.7% of 4005 cases of all mechanical obstruction in the series from Turkey(1). Sigmoid volvulus is seen five times as often as intestinal knotting in males, whereas in females intestinal knotting is seen nearly twice often as sigmoid volvulus in the series from Uganda(2). Almost 75% of patients from Uganda arrived at hospital on the day of onset compared with 25% of patients with volvulus of sigmoid colon arriving at hospital in first 24 hours(2). Three factors are responsible for the ileosigmoid knot: 1) a long small bowel mesentery and freely mobile small bowel; 2) a long sigmoid colon on a narrow pedicle; 3) and finally the ingestion of a high bulk diet in the presence of an empty small bowel(6,8). When a semiliquid bulky meal progresses into the proximal jejunum it increases the mobility of the intestine and the heavier segments of the proximal jejunum fall into the left lower quadrant. The empty loops of ileum and distal jejunum twist in a clockwise direction around the base of a narrow sigmoid colon. Further peristalsis forms an ileosigmoid knot with two closed loop obstruction, one in the small bowel and other in the sigmoid colon(6). Ileosigmoid knotting is predominantly seen in males (80.2%) with a mean age of 40 years (range, 4-90 years). The evidence of other secondary causative factors including late pregnancy, transmesenteric herniation, Meckel's diverticulitis with a band, ileocecal intussusceptions, and floating caecum(7,8). Ileosigmoid knotting has been categorized into three types. In type I, the ileum (active component) wraps itself around the sigmoid colon (passive component) in a clockwise or anticlockwise direction (type A when clockwise and type B when anticlockwise). In type II, the sigmoid colon (active component) wraps itself around a loop of ileum (passive component) in a clockwise or anticlockwise direction. In type III, the ileocaecal segment (active component) wraps itself around the sigmoid colon (passive component)(6,7). The most common type of ileosigmoid knotting reported is type I, followed by type II(1). The direction of torsion is clockwise in 60% of cases. Ileosigmoid Knotting can rapidly progress to gangrene of the ileum as well as of the sigmoid colon(6,7). Generalized peritonitis, sepsis, and dehydration are the principal complications. The predominant symptoms and signs of presentation include abdominal pain and tenderness (100%), abdominal distension (94% to 100%), nausea and vomiting (87% to 100%), rebound tenderness (69%), and shock (0% to 60%). The diagnostic difficulty is partly caused by the unfamiliarity of this rare entity and the confusing and self-contradictory features of the disease. While clinical features such as vomiting suggest small bowel obstruction, the radiographic findings are that of colonic distension, which is uncommon in small bowel obstruction(7). Radiographically, ileosigmoid knotting is often mistaken for simple sigmoid volvulus. However, unlike sigmoid volvulus, attempts to deflate the distended colon using a sigmoidoscope or a flatus tube, often fails in ileosigmoid knotting. This is because the ileum tightly envelops the base of sigmoid colon, defying any such attempt. These three features of the clinical picture of small bowel obstruction, radiographic evidence of

Predominately large bowel obstruction, and inability to insert a sigmoidoscope could possibly form a useful diagnostic triad. The radiographic findings of ileosigmoid knotting, which include a double loop of dilated sigmoid shadow and multiple air fluid levels in the small intestine, are sporadically described and are difficult to identify as such because of unfamiliarity(6,7,8). The findings in a CT scan suggestive of ileosigmoid knotting include the whirl sign created by the twisted intestine and sigmoid mesocolon in ileosigmoid knot, medial deviation of the cecum, and descending colon. The initial management involves aggressive resuscitation with fluid and electrolytes with the help of central venous pressure monitoring, if required, and the correction of acid-base imbalance if any. After hemodynamic stabilization, laparotomy should not be delayed. Appropriate antibiotic therapy is commenced early and continued after the operation. Paradoxically, the incidence of bowel gangrene was 90.9% in those who presented within 24 hours of their symptoms. Among those who presented after 24 hours after their initial symptoms, bowel gangrene was seen in 57%.

The abdominal cavity usually contains several liters of heavily blood stained fluid. The bowel wall and the lumen was also full of blood, and there is little doubt that most deaths are due to hemorrhagic shock(2). Various surgical procedures have been conducted in these patients. Twelve cases of internal herniation was concurrently seen with ileosigmoid knotting(4). If both loops are viable the knot may be undone by sigmoid enterotomy and traction of the sigmoid loop. This procedure may also be selected when the sigmoid colon alone is viable. When the ileum and the sigmoid colon are gangrenous, it can be difficult to untie the knot, and rupture of the gangrenous loop could lead to spillage of toxic bowel contents causing irreversible septic shock(2). Therefore, intestinal clamps should be applied before dissection or resection of the knot followed by resection of both the loops. The reported mortality from ileosigmoid knotting varies from 0% to 48%. The operating mortality for non gangrenous bowel is 28%(1). The operating mortality for gangrenous bowel is 40-50%(1,2,3). The mortality figures are generally related to the duration of symptoms, the presence or absence of gangrene and the general status of the patient, including the presence of septicemic shock(6,9). In summary, ileosigmoid knotting is a rare cause of intestinal obstruction. Unfamiliarity and diagnostic difficulties have contributed to the high morbidity and mortality of this condition in the past. Better understanding of the problem, and increased probabilities of preoperative diagnosis with the aid of CT scanning, have facilitated early diagnosis and intervention. Aggressive fluid resuscitation, preoperative antibiotics, prompt laparotomy, and effective surgery, including resection and primary anastomosis or mesosigmoidoplasty of viable sigmoid colon and better perioperative care of the shocked patient have optimized the survival of these patients.

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