

CASE REPORT**A Rare Case of Compound Volvulus: A Case Report****Dr. Mohammad Shahid Hasnain¹, Dr. Amit Prakash², Dr. Abhishek Kumar³**^{1,2,3} Senior Resident, Department of General Surgery, AIIMS, Patna, Bihar, India**Corresponding Author: Dr. Abhishek Kumar**

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Email ID: abhishekyadavsdm@gmail.comReceived: 28th February, 2024Accepted: 17th March, 2024**Abstract:**

Compound volvulus, also known as double volvulus or Ileosigmoid knotting, is a rare cause of acute intestinal obstruction. In this condition the ileum wraps around the base of the sigmoid colon to form a knot causing intestinal obstruction. This condition generally progresses rapidly to gangrene of both the sigmoid colon and ileum. We are reporting a 52 year old female who presented in our emergency with features of intestinal obstruction. Emergency laparotomy revealed gangrenous sigmoid colon and terminal ileum for which resection of the gangrenous sigmoid colon and ileum was done with end ileostomy and mucus fistula.

Keywords: Ileosigmoid knotting, compound volvulus, intestinal obstruction.**Introduction**

Compound volvulus, also known as double volvulus or Ileosigmoid knotting, is an unusual and rare cause of intestinal obstruction (1). In this condition the ileum encircles the base of the sigmoid colon and forms a knot which causes double obstruction of both the colon and the small bowel (2). It is relatively common in Africa, Asia and the Middle East with a male predilection (3).

This condition rapidly progresses to gangrene of both ileum and sigmoid colon and needs prompt surgery (4). Preoperative diagnosis is difficult and poor surgical outcome is usually expected (5).

Case Report

A 52 year old female was brought to the emergency department of AIIMS, Patna with the complaints of diffuse abdominal pain which was sudden in onset, abdominal distension, 6-8 episodes of vomiting and obstipation for 3 days. She had no comorbidities and had undergone total abdominal hysterectomy 7 years ago.

On examination the patient was afebrile, dehydrated, tachypneic and tachycardic and there was mild pallor. Abdominal examination revealed abdominal distension with diffuse guarding and rigidity in the left side of the abdomen and diffuse tenderness. Digital rectal examination was normal.

Investigations revealed an Hb -10.7 g/dl and WBC -15,590/ml. Renal function test was deranged (creatinine -6.41 mg/dl, Urea-323.3, uric acid-16.40). Coagulation profile was also deranged (PT-20.3 seconds, INR-1.51). Serum amylase and lipase were within normal limits. Plain X ray of abdomen showed dilated bowel loops and multiple air fluid levels (Figure 1). USG Whole abdomen revealed prominent small and large bowel loops with interbowel free fluid and sluggish peristalsis likely sub acute small bowel obstruction.

The patient was resuscitated with IV fluids and IV antibiotics were started. Ryle tube and foleys catheter was inserted. Nephrology call was given in view of deranged renal function test and patient underwent hemodialysis. FFP was transfused to correct coagulation profile.

With a provisional diagnosis of acute intestinal obstruction we proceeded with emergency exploratory laparotomy. On exploration minimal hemorrhagic peritoneal fluid was noted. A gangrenous loop of ileum encircling a loop of gangrenous sigmoid colon was found (Figure 2). After decompressing the gangrenous sigmoid loop unknotting of the ileosigmoid knot was successfully achieved. Gangrenous ileal segment was noted starting 10 cm proximal to IC junction extending 60 cm proximally. Redundant sigmoid colon (Figure 3) and gangrenous distal segment of ileum was resected. End ileostomy was performed and distal end of ileum was closed. Proximal resected end of colon was exteriorized by creating a mucus fistula in the left iliac fossa and distal end was closed (Hartmann's procedure). Peritoneal wash was given and a 28 fr abdominal drain was placed in the pouch of douglas. The patient had an uneventful recovery in the postoperative period and was discharged on the 7th postoperative day.

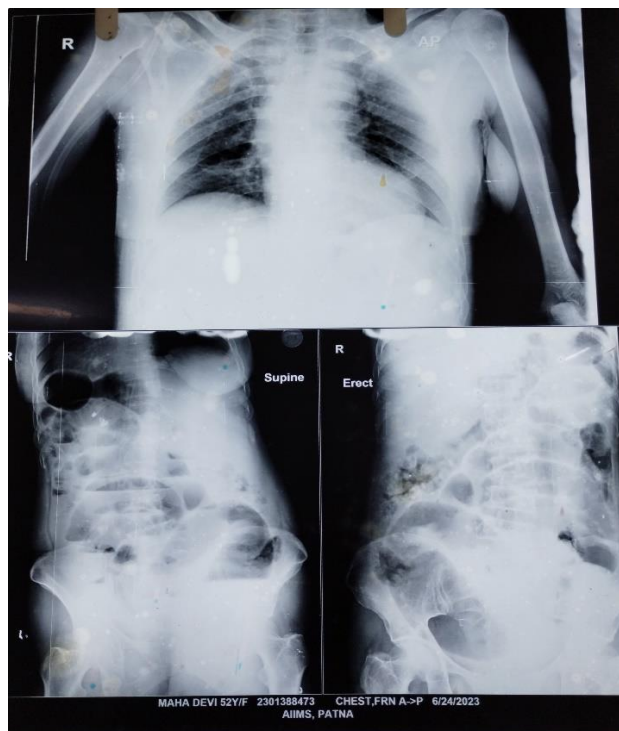


Figure 1: Chest X ray (above) and erect and supine abdominal X rays showing dilated bowel loops with multiple air fluid levels

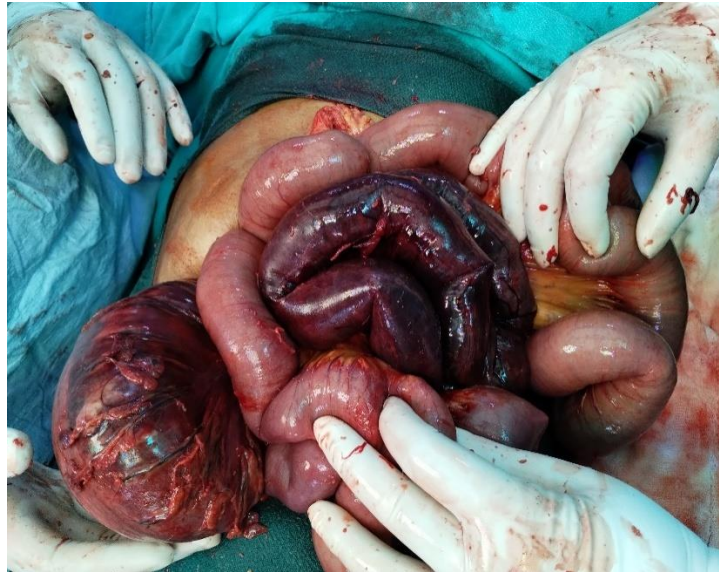


Figure 2: Gangrenous loop of simoid colon and ileum



Figure 3: Resected segment of sigmoid colon

Discussion

Ileosigmoid knotting is a not so common cause of intestinal obstruction that may rapidly progresses to gangrene of the ileum as well as the sigmoid colon. Parker has been credited with having described the first patient with ileosigmoid knotting in 1845. Compound volvulus is usually occurs in the third and fifth decades and its incidence is higher in males (6). Three factors are considered to be responsible for the development of ileosigmoid knot:

- 1) A freely mobile small bowel with a long mesentery;

- 2) A long sigmoid colon on a narrow pedicle;
- 3) The consumption of a high bulky diet in the presence of an empty small bowel (1);

Ileosigmoid knotting has been classified into the following three types by taking the ileum and/or sigmoid colon as the active component and considering the direction of the torsion.

Type I, the ileum which is the active component wraps around the sigmoid colon, the passive component,

Type 1A -Clockwise direction

Type 2 A-Anticlockwise direction

Type II, the sigmoid colon acts as the active component and wraps itself around a loop of ileum the passive component in a clockwise or anticlockwise direction.

Type III, the ileocecal segment is the active component which wraps itself around the sigmoid colon the passive component (2).

The suggested pathogenesis of ileosigmoid knot is that when a high bulky meal passes from the proximal jejunum to the rest of the bowel it causes increase in the mortality in the rest of the bowel which leads to the heavier proximal jejunum to fall into the left lower quadrant. Following this the empty loops of the distal jejunum and the ileum wraps around the base of the narrow sigmoid colon in a clockwise manner. Further peristalsis leads to the formation of an ileosigmoid knot causing double loop obstruction of the small bowel and the sigmoid colon (7).

Accidental protrusion of one or both components of the knot through the mesenteric gap may occur in some cases of ileosigmoid knotting. Increased loops of intestine protrude through the defect and intertwine with each other due to peristalsis (8).

Patient presents clinically with sudden onset abdominal pain, vomiting, abdominal distension and obstipation. On examination, patient may appear anxious and toxic, may be febrile and/or dehydrated and may show features of shock. The abdomen may be distended, tense and tender and may show signs of peritonitis. Hypoactive, hyperactive or absent bowel sounds may be heard and an empty rectum may be present (4).

The radiological features of compound volvulus include a double loop of dilated sigmoid shadow and multiple air fluid levels in the small intestine. The features suggestive of Ileosigmoid volvulus in CT scan include the whirl sign which is created by the twisted intestine and sigmoid mesocolon in ileosigmoid knot, medial deviation of the cecum and descending colon. A radial distribution of the intestine and mesenteric vascular structures on CT scan is also suggestive of the diagnosis (1).

Immediate emergency laparotomy is of utmost importance. Patient's hemodynamic status, effective resuscitation, prompt diagnosis, early surgical intervention and intraoperative findings determine the postoperative mortality and morbidity (3). If a gangrenous bowel is encountered, a single staged procedure of resection and anastomosis as a single staged procedure may be performed or a two-staged procedure consisting of resection and stoma formation may be considered with stoma reversal at a later date depending on the state of the patient. For no gangrenous bowel however, untwisting of the twisted bowel with or without

preventing procedures such as sigmoidopexy, mesopexy, mesoplasty or resection and anastomosis may suffice (4).

Conclusion

Compoundvolvulus is an uncommon cause of intestinal obstruction which usually progresses to gangrene of sigmoid colon and ileum. Preoperative diagnosis requires a high degree of suspicion. Prompt resuscitation, early surgical intervention and extent of gangrene of the bowel and hemodynamic status of the patient determines the prognosis.

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