CASE REPORT

# APPENDICEAL TIE SYNDROME: A RARE CAUSE OF SMALL BOWEL OBSTRUCTION

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Acute appendicitis and intestinal obstruction are two common surgical emergencies. Acute appendicitis as a cause of closed-loop bowel obstruction is a rare surgical entity. The first case was reported in 1901 and since then only a few cases have been reported. We report an unusual case of a 25-year-old female who presented with the clinical picture of acute small bowel obstruction and was found to have an appendicular knot intraoperatively, through which a small bowel was herniating. The patient was managed via a midline laparotomy and appendectomy.

**Keywords**: Appendicular knot; Appendicular tie; Intestinal obstruction; Laparotomy; Appendectomy

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## INTRODUCTION

Appendiceal tie syndrome is a very rare surgical presentation in which an inflamed appendix forms a constricting ring through which a small bowel loop herniates and causes closed-loop obstruction. It is among the rarest causes of small bowel obstruction. The first case was reported in 1901 and since then only a few cases have been reported.[1] Small bowel obstruction caused by appendicitis has been classified into 4 types: adynamic, mechanical, ischemic and strangulation. Mechanical type is the most common due to its high mobility and variation in the position and length of the appendix that adheres easily to nearby structures producing a mechanical obstruction.[2–4] Appendicular knot, appendicular tourniquet, appendico-ileal knotting and appendicular tie syndrome are different names used in literature for the same entity. Preoperative diagnosis is difficult as patients usually present with acute small bowel obstruction, which clouds the picture of acute appendicitis. Diagnosis is intraoperative and management ranges from simple appendectomy to a right hemi-colectomy depending upon per-operative findings.[5,6]

Here we report an unusual case of a female patient who presented with the clinical picture of acute small bowel obstruction and was found to have an appendicular knot through which small bowel was herniating.

## CASE REPORT

A 25-year-old female patient presented in the emergency department with complaints of absolute constipation, abdominal pain and persistent vomiting for 7 days associated with progressive abdominal distension. There was no associated history of fever, weight loss, previous constipation and per rectal bleeding. There was no history of tuberculosis or any previous surgery. She was married and all of her 3 kids were born via normal vaginal deliveries.

On examination, she was alert, febrile and hemodynamically stable with signs of mild dehydration. On abdominal examination, she was found to have a tense, tender and distended abdomen with absent bowel sounds. A digital rectal examination showed a normal anal tone with an empty rectum. X-ray erect abdomen was done which revealed multiple air fluid levels with a dilated small bowel and no pneumoperitoneum shown in Figure-1: X-ray showing features of small bowel obstruction. Sonography showed dilated gut loops with a diameter of 4cm favouring intestinal obstruction. Routine blood investigations were normal.

Supportive therapy was initiated including intravenous fluids, antibiotics (ceftriaxone) and proton pump inhibitor. Nasogastric intubation and urinary catheterisation were done. The patient was kept nil by mouth and an emergency laparotomy was performed after taking an informed written consent. Intraoperatively, dilated small bowel loops were found along with an inflamed appendix. The gangrenous tip of the appendix was adherent to its base forming a constricting ring through which a small bowel loop was herniating shown in Figure. The small bowel was slowly released from the constricting ring and an appendectomy was performed. There were no intraoperative complications. The post-operative period was uneventful and the patient was managed with IV fluids, antibiotics and analgesia. Oral intake was started after 24 hours and the patient was discharged on the third postoperative day. The patient was then followed 10 days after her discharge from the hospital, with her histopathology report confirming acute appendicitis.

**Figure-1: X-ray showing features of small bowel obstruction**

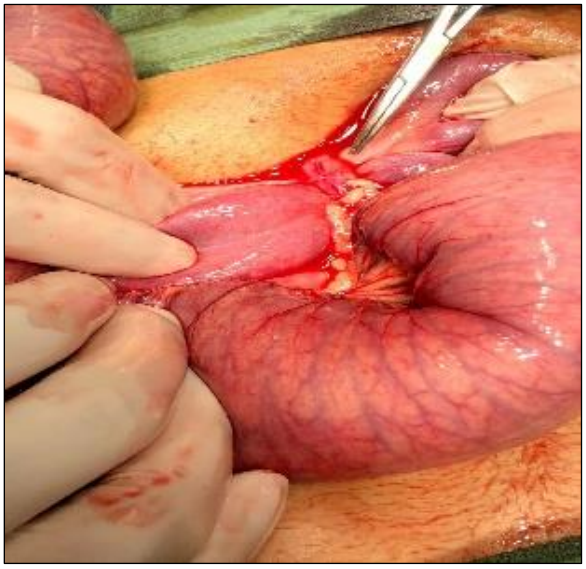

**Figure-2: Appendix constricting a loop of small bowel**

## DISCUSSION

Acute appendicitis and intestinal obstruction are two common surgical emergencies. Perforation with the development of localised or generalised peritonitis, adhesions, mass or abscess formation, and sepsis are common complications of appendicitis while bowel obstruction is the rarest complication.[6] Literature review showed that appendicular tie syndrome may have one of the following three pictures at presentation: a) signs and symptoms of intestinal obstruction predominate over acute appendicitis (b) signs and symptoms of acute appendicitis predominate over the intestinal obstruction and (c) mixed presentation with features of both. The first presentation is the common one whereas the last one is uncommon.[2] In our case, the clinical presentation of intestinal obstruction was found to be dominant. Preoperative diagnosis of this condition is challenging and definitive diagnosis is intraoperative. CT scan of the abdomen was used in almost all previous studies but only two reported diagnosis of bowel obstruction secondary to appendicitis. In all other studies, CT findings favoured intestinal obstruction[4,7,8]. In our case, we used X-rays and ultrasound scans that favoured intestinal obstruction.

As per the literature review, most of the cases were managed by open midline laparotomy.[4,6,7] With the evolution of laparoscopic surgery, it is becoming a standard diagnostic as well as treatment option.[9] But laparotomy is still an option of choice in areas where laparoscopic facilities are unavailable. Appendectomy suffices if bowel loops are viable. Bowel resection/anastomosis or even a right hemicolectomy may be needed depending on the intraoperative condition of the involved bowel loop.[4,6,7]

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