

# Appendiceal knotting causing small bowel strangulation

Chandan Chatterjee, Suvashis Dash, Sahana Gupta, Shibajyoti Ghosh

Department of General Surgery, Medical College and Hospital, Kolkata, West Bengal, India

Small bowel obstruction is a common cause of an emergency admission in the surgical wards. Acute appendicitis presenting with small bowel obstruction due to appendiceal knotting is a very rare and unsuspected condition in an emergency scenario. We report a case of acute small bowel obstruction in a 26-year-old male who, on exploration was found to have small bowel strangulation due to appendiceal knotting. Though rare, the possibilities of such a diagnosis should be kept in mind in patients with small bowel obstruction with no known identifiable etiology.

**Key words:** Appendiceal knotting, appendicitis, strangulation

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## INTRODUCTION

Small bowel obstruction is one of the most common causes of an emergency admission with pain abdomen often requiring surgical intervention. Appendiceal knotting is a rare complication of acute appendicitis, which may give rise to small bowel obstruction. Previously, only six similar cases were reported in English literature. Knowledge of this unusual entity is important for clinical suspicion and successful management.

Here, we report a case of 26-year-old male who presented to us with features of small bowel obstruction and on exploration there was the presence of the terminal ileum due to appendiceal knotting. The patient was treated by segmental ileocolic resection and anastomosis.

## CASE REPORT

A 26-year-old male patient presented to the emergency department of Medical College and hospital, Kolkata, India in the year of 2013 with complaints of generalized abdominal pain, obstipation and bilious vomiting for last 3 days. There was abdominal distension for last 2 days. He also gave a history of vague pain in the lower abdomen 2 weeks ago, which subsided with over the counter medication. There was no history of fever in the recent past. There was no past history of any abdominal surgery.

On physical examination, patient's vitals were stable though he had a persistent tachycardia (122/min) with fever. Abdominal examination revealed features of peritonitis.

A straight X-ray of the abdomen in erect posture showed multiple air fluid levels with distended small gut loops. Blood investigations were normal except the presence of leukocytosis. A provisional diagnosis of small intestinal obstruction was made and an exploratory laparotomy was planned after proper resuscitation.

On exploration through midline laparotomy, ~1 L of hemorrhagic fluid was found within the peritoneal cavity. There was dilatation of the jejunum and ileum [Figure 1]. The tip of the inflamed appendix was adherent to the terminal part of ileum forming a ring like structure with herniation of terminal 60 cm of ileum through the ring [Figure 2]. The entrapped ileal segment was found to be gangrenous. The appendiceal band was released from its attachment to the ileum. Segmental ileocolic resection including the gangrenous ileal segment and ileocolic (end-to-end) anastomosis was done. The post-operative period was uneventful and the patient was discharged on the 10<sup>th</sup> post-operative day. Histopathology of the appendix confirmed acute appendicitis.

## DISCUSSION

A wide range of etiologies has been reported for small bowel obstruction. Acute appendicitis is a very rare cause of small bowel obstruction. The first such case was

**Address for correspondence:** Dr. Chandan Chatterjee, 46, Dr. Jagabandhu Lane, Kolkata - 700 012, West Bengal, India.

E-mail: cchatterjee.chatterjee@gmail.com

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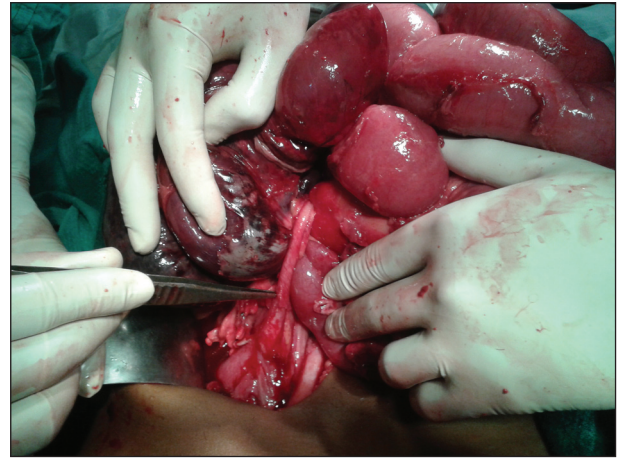
**Figure 1:** Dilated small bowel found on exploratory laparotomy

reported by Hotchkiss in 1901.<sup>[1]</sup> Small bowel obstruction as a complication of acute appendicitis may be a dynamic or mechanical. Paralytic ileus caused by appendicular inflammation is the most common cause of intestinal obstruction in acute appendicitis occurring in 1-5% cases of appendicitis.<sup>[2]</sup>

Mechanical intestinal obstruction with strangulation caused by appendix is rare.<sup>[3]</sup> The first such case was described by Naumov in 1963.<sup>[4]</sup> Mechanical obstruction with or without strangulation may result from wrapping of appendix around a bowel loop or adhesion of the appendicular tip with small bowel, cecum or posterior peritoneum forming a ring like structure known as an appendices knot. A portion of small bowel usually herniates through that ring or knot forming a closed loop obstruction with or without strangulation. In the view of mobility and variable position of the tip of appendix, it is possible that the appendix may get adhered to adjacent structures during the phase of inflammation giving rise to pathology mentioned above.<sup>[5]</sup> In our case, there was a similar appendiceal knot through which a portion of ileum was herniated and resulted in closed loop obstruction with strangulation. As the formation of appendiceal knot is a resultant of acute appendicitis, mechanical small bowel obstruction caused by appendiceal knot usually presents a certain period after the episode of acute appendicitis.

The straight X-ray abdomen may be helpful in diagnosis of small bowel obstruction but it often fails to identify the etiology. Though computed tomography scan of the abdomen is diagnostic of acute appendicitis, but its role in the diagnosis of intestinal obstruction due to appendicitis is questionable.

Early diagnosis and necessary surgical intervention are essential to prevent bowel ischemia and gangrene. A midline laparotomy is advisable to rule out other causes of obstruction. Release of the appendiceal band and



**Figure 2:** Appendiceal knot formed by adherence of appendix with part of terminal ileum

appendectomy is adequate when the herniated bowel is viable. Resection of the non-viable intestine and anastomosis or stoma creation is necessary in the presence of nonviable gut, as in our case.

## CONCLUSION

Small bowel obstruction is a rare complication of an acute appendicitis. Appendiceal knot is a rare cause of this. A high index of clinical suspicion is of utmost importance in identifying and correctly managing this rare condition.

## AUTHORS' CONTRIBUTIONS

All authors have contributed in designing and conducting the study. All authors have assisted in preparation of the first draft of the manuscript or revising it critically for important intellectual content. All authors have read and approved the content of the manuscript and confirmed the accuracy or integrity of any part of the work.

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