

Cecal volvulus: a case report of adult intestinal obstruction

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Abstract

Cecal volvulus (CV) is an uncommon cause of intestinal obstruction and strangulation in adults, occurring when the ascending colon and the terminal ileum twist around their mesenteric pedicle. We report a case of a 30-year-old female patient who presented

with a 4-day history of abdominal pain and vomiting. Radiological investigations, including CT scans, revealed findings such as cecal distension, displacement of the cecal apex to the left upper quadrant, mesenteric whirl, and ileocecal twist. The patient underwent a right hemicolectomy with ileotransverse anastomosis. The rarity of CV complicates early diagnosis, leading to higher rates of complications and mortality. Timely diagnosis and urgent intervention are crucial. Abdominal CT scans are essential for diagnosis, and the recommended treatment involves right hemicolectomy with primary anastomosis or ileostomy, depending on the patient's condition.

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Introduction

Cecal volvulus (CV) is a rare condition, accounting for approximately 1-1.5% of all cases of adult intestinal obstruction and 11% of volvulus-related intestinal blockages.¹ It occurs when the ascending colon and the terminal ileum twist around the mesenteric pedicle. Due to its rarity and the variety of clinical presentations, CV is often diagnosed late, which can result in increased morbidity and mortality. Timely diagnosis is crucial to reducing the risk of death, as clinical symptoms can vary widely, leading to delays in diagnosis and treatment. The mortality rate can reach 40%, particularly when gangrene or bowel perforation occur.² Therefore, CV should be considered in any patient presenting with intestinal obstruction. This case is unique because the patient is a young female (30 years old), who is slightly younger than the typical age group (40-60 years) commonly affected by CV. Additionally, the presence of a previous appendectomy may have contributed to an anatomical predisposition for volvulus. Therefore, the originality of this case lies not only in the patient's unusually young age but also in the diagnostic complexity created by low body mass index (BMI) and prior abdominal surgery, which can alter anatomical positioning and delay recognition. This report emphasizes the importance of correlating clinical suspicion with CT-based diagnostic criteria to prevent progression to ischemia or perforation, offering insights into how atypical presentations influence diagnostic and surgical decision-making. Reporting such cases enriches the scientific literature by highlighting variations in patient demographics and surgical history that may influence the presentation and management of CV.

Case Report

A 30-year-old female presented with a 4-day history of abdominal pain, vomiting, and abdominal distension. The patient was unable to pass stool or flatus and experienced episodes of diarrhea. Her medical history included a previous appendectomy performed approximately 5 years prior. Her BMI was 16.5 kg/m², indicating

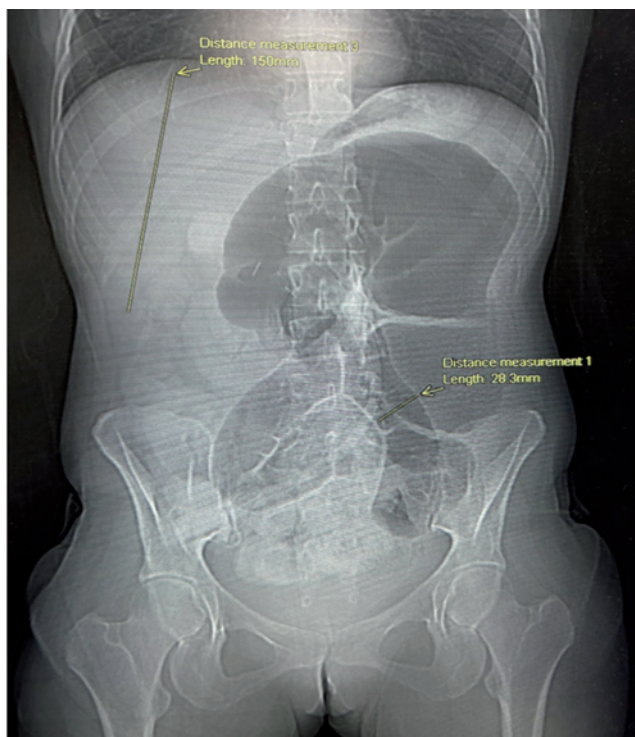


Figure 1. Abdominal x-ray revealed a dramatic dilation of the bowel moving upwards to the left upper quadrant of the abdomen.



Figure 3. Intra-operative photograph showing the twisted, distended cecum with mural necrosis.

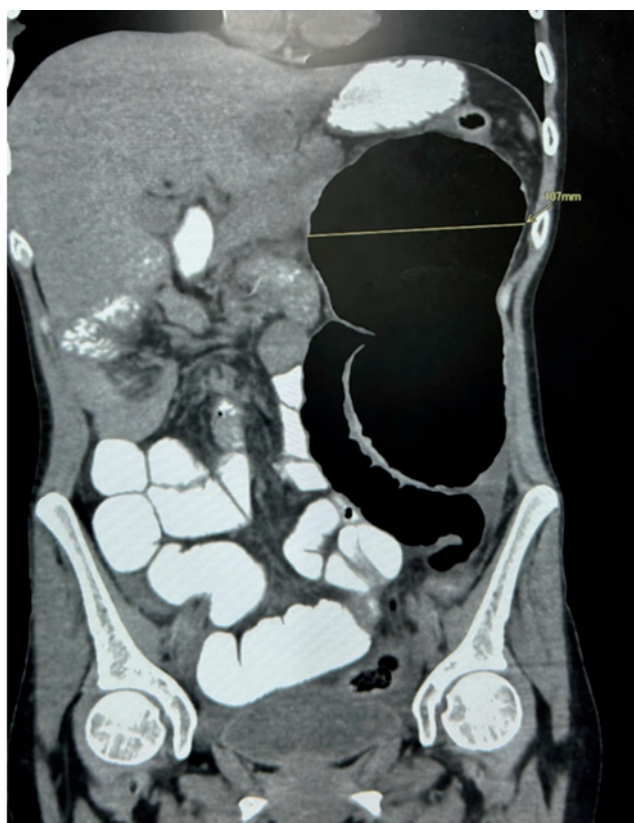


Figure 2. CT-scan showed marked distension of the cecum measuring about 11 cm with counterclockwise twist consistent with a type 2 cecal volvulus.

underweight status, which may contribute to reduced visceral fat and increased colonic mobility. On admission, vital signs showed mild tachycardia (heart rate 102 bpm), blood pressure of 110/75 mmHg, temperature 37.8°C, respiratory rate 18 breaths/min, and oxygen saturation 98% on room air.

Physical examination revealed abdominal distension with diffuse tenderness, especially in the right lower quadrant and generalized guarding. Bowel sounds were present, but decreased. Laboratory tests showed leukocytosis (white blood cells [WBC]=14,500/mm³) with neutrophilia (85%), elevated C-reactive protein (CRP=60 mg/L), and normal hemoglobin and electrolytes, while the lactic acid value was 4.2 mmol/L. A contrast-enhanced CT scan demonstrated significant cecal distension, displacement of the cecal apex to the left upper quadrant, a mesenteric whirl sign, and an ileocecal twist consistent with CV (Figures 1 and 2).

An emergency laparotomy was performed, revealing a perforated, volvulated cecum with colonic necrosis (Figure 3). A right hemicolectomy with ileotransverse anastomosis was undertaken. The patient's postoperative course was uneventful, with discharge on postoperative day 7. Mid-term follow-up at 20 days, as well as 2 months post-operative, showed no complications or recurrence.

Discussion

CV results from torsion of the cecum, ascending colon, and terminal ileum around their mesenteric axis, causing bowel obstruction and vascular compromise that can progress to gangrene if untreated.³ Predisposing factors include incomplete intestinal rotation, prior abdominal surgeries such as appendectomy, pregnancy (especially in the third trimester), high-fiber diets, pelvic masses, psychotropic medications, and chronic constipation. This case highlights a previous appendectomy as a potential risk factor.

Three types of CV are described: type 1, clockwise axial twisting of the cecum in the right lower quadrant; type 2, twisting of both cecum and terminal ileum, displacing the cecum to an ectopic site, usually the left upper quadrant; type 3, Cecal bascule-folding of the cecum upward without axial twisting.⁴

Types 1 and 2 account for approximately 80% of cases; cecal bascule comprises the remaining 20%. Diagnosis is often confirmed by CT imaging showing characteristic “coffee bean”, “bird beak”, or “whirl” signs.¹ In uncomplicated cases with viable bowel and stable hemodynamics, laparoscopic detorsion with or without cecopexy can be considered as a safe and effective option.⁵ However, this approach requires careful intraoperative assessment because the risk of missed necrosis or incomplete resection could lead to severe complications. Open surgery remains the gold standard in complicated cases, especially when preoperative imaging or intraoperative findings indicate gangrene, perforation, or generalized peritonitis.⁴ Open right hemicolectomy allows better exposure and control in these scenarios, enabling thorough resection of non-viable tissue and safe anastomosis.⁶ Laparoscopic approaches have gained acceptance in selected uncomplicated cases and offer benefits such as reduced postoperative pain, shorter hospital stay, and faster bowel recovery.^{5,7} However, limitations include increased risk of iatrogenic perforation, difficulty handling distended bowel, and challenges in cases with peritonitis or necrosis. Advantages of the open technique include safe manipulation of necrotic or massively dilated bowel, rapid resection in unstable patients, and lower risk of missed ischemic segments.² Conversely, disadvantages include longer recovery time and higher postoperative pain.

Our experience supports a tailored approach, weighing the risks and benefits of each technique based on individual patient factors. While laparoscopy represents the future in managing CV, open surgery is still essential for ensuring optimal outcomes in more severe presentations.^{6,8} Since our patient had elevated values of lactic acid in the arterial blood gas (4.2 mmol/L), indicating possible tissue hypoperfusion and early ischemia, our team proceeded with the open approach.

There are no universally established guidelines specifically for CV, but consensus from surgical literature favors resection of non-viable bowel with primary anastomosis or ileostomy, depending on patient status.⁹ Detorsion alone is discouraged due to high recurrence rates.¹⁰ Laparoscopic approaches are gaining support but remain case-dependent, though they show promising outcomes in viable, uncomplicated cases.¹¹ Overall, while minimally invasive surgery continues to evolve, open surgery remains essential for achieving optimal outcomes in severe or complicated presentations of CV.

Conclusions

The rarity of cecal volvulus complicates early diagnosis, leading to higher rates of complications and mortality. A high index of suspicion and prompt intervention are essential. Abdominal CT remains the most effective diagnostic tool. Surgical treatment, including right hemicolectomy with primary anastomosis or ileostomy, is recommended based on the patient’s condition and perioperative findings. Laparoscopic surgery continues to evolve, offering potential benefits in reducing postoperative morbidity.⁵

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