



# Simultaneous Volvulus of Transverse Colon and Cecum in a Patient With Down Syndrome: A Case Report



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**Citation:** Babaniamansour S, Aliniagerdroudbari E, Bagherpour Gh, Kheiry F. Simultaneous Volvulus of Transverse Colon and Cecum in a Patient With Down Syndrome: A Case Report. *Case Reports in Clinical Practice*. 2019; 4(2):52-56.

**Running Title:** Simultaneous Volvulus of Transverse Colon and Cecum



## Article info:

**Received:** 01 April 2019

**Revised:** 08 May 2019

**Accepted:** 16 June 2019

## Keywords:

Transverse colon volvulus;  
Intestinal obstruction; Cecal  
volvulus; Down syndrome

## ABSTRACT

Volvulus is a rare cause of intestinal obstruction and occurs mostly in sigmoid colon and cecum. It is more common in patients with Down syndrome. In this condition, it is even more challenging to diagnose the cause of intestinal obstruction through history and physical examination alone. Early diagnosis and intervention are critical in this condition to prevent serious side effects. Simultaneous volvulus is a sporadic case in the surgical entity. We report a very rare case of simultaneous volvulus of cecum and transverse colon, its management, and outcomes in a 20-year-old known case of Down syndrome.

## Introduction

**C**olon volvulus accounts for 3% to 5% of intestinal obstruction cases [1-3]. The most common sites of volvulus in the colon are sigmoid colon and caecum with prevalence rates of 75% and 22%, respectively [4]. Cecal

volvulus affects 2.8 to 7.1 per million people per year. It is not age-related, but gender-related and its prevalence among men is 3 times more than women, and its definitive treatment is operation [5].

Transverse colon volvulus is less common and may be associated with factors such as lengthy transverse co-

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lon, chronic constipation, Hirschsprung's disease, mental retardation, and loose fixation of colonic flexures [1]. Simultaneous volvulus is extremely rare, while reports of simultaneous volvulus of the transverse colon and sigmoid or cecum and sigmoid have been already published [2]. Here we present a rare case of simultaneous volvulus of the cecum and transverse colon, in a 20-year-old male with Down syndrome who underwent a successful operation.

### Case Presentation

We report a 20 years old known case of Down Syndrome male patient, who lived in a welfare center and visited us with complaints of nausea and projectile vomiting after eating that resulted in the ejection of undigested food since three days ago.

He had experienced severe and sudden abdominal pain ten days before the admission. He had visited another treatment center with the same complaints two days before referring to this center. However, the tests and brain CT scan had normal results. No specific treatment was prescribed in that center for the patient. The patient reported no history of gas passing and defecation. Following the intensification of the symptoms such as nausea and vomiting, loss of appetite, lack of oral tolerance, restlessness, increased abdominal size, and inability to urinate or defecate, the patient visited this center. He was also agitated on the time of admission.

The patient reported a history of no major disease other than Down syndrome. He had a history of megacolon and abdominal pain as well as chronic constipation. The patient was diagnosed with volvulus that healed naturally. He also had no history of drug abuse, and his grandfather had died of esophageal cancer.

When the patient stepped into this center, he was conscious yet agitated. He was ill, restless, and pale, but he was not toxic. His initial vital signs were as follows: peripheral capillary oxygen saturation 95%, and respiratory rate about 14 breaths per minute. The blood pressure was 90/70 mm Hg, and pulse rate was 90 per minute. His mucosa was dry. The examination of the head and neck showed no sign of trauma and fracture. A minor ecchymosis was observed beneath the right eyelid, and the jugular venous pressure was flat. The heart and lung auscultation results were normal.

The abdominal examinations revealed complete abdominal distention (Figure 1), and the abdomen was symmetrical. There was no surgical scar. Besides, no evidence of abdominal or inguinal hernia was observed in the abdominal exam. The auscultation revealed hyperactive bowel sounds. In the percussion, the entire abdomen was tympanic. The abdomen was also soft without any guarding or tenderness, which may be due to the patient's muscle weakness (Down Syndrome). The inguinal examination results were normal, and the rectum was empty in digital rectal examination. The results from other examinations were normal. The plain abdominal radiography showed a U shaped loop and



**Figure 1.** Abdominal distention of the patient at the time of admission



**Figure 2.** Plain abdominal X-ray revealing U shaped loop and enlargement of the proximal colon



distention of the proximal colon (Figure 2). Considering the test results and images, the patient was put under conservative treatment for two days. Following the diagnosis of volvulus, consult on colonoscopy was requested from the Gastrointestinal Ward.

Colonoscopy report indicated that the mucosa of proximal of sigmoid was congested and friable benign

stenosis was seen which guided to acute volvulus diagnosis.

On colonoscopy, the patient did not respond to conservative colonoscopy for intestinal devolvulation, and he became toxic. Also, his distention increased, and the abdomen turned mute. There was evidence of peritonitis and colon strangulation, and the patient was oper-



**Figure 3.** Cecum and transverse colon were resected from the patient with two points of volvulus and megacolon



ated on November 22, 2017, based on the images of his U-shaped colon and closed-loop obstruction.

In the course of the operation, concurrent cecum and transverse colon volvulus were observed. After examining the comorbid anomalies in the gastrointestinal tract and obtaining evidence of colon strangulation (Figure 3), the patient underwent a subtotal colectomy and ileostomy and Hartmann pouch operation. He was discharged a few days later in good condition. In the next 2 or 3 months, the ileorectal anastomosis was closed in a second operation. Currently, the patient no longer suffers from constipation, abdominal swelling, and megacolon.

## Discussion

Volvulus, with a prevalence of 1-7%, is a rare case for surgeons so that many surgeons did not face volvulus in their professional career [4]. Studies suggest that 75% of volvulus cases happen in the sigmoid, while 22% of the cases belong to the cecum, and only 1.5-3% to the transverse colon [3, 4, 6].

Volvulus is less prevalent among young adults and may occur due to mesenteric disorders, bowel malformation, and severe exercises. Moreover, according to the conducted studies, 35% of volvulus cases had a history of prolonged constipation, especially in patients with mental retardation, myotonic dystrophy, and Hirschsprung's disease [6-8]. The mortality rate of volvulus is estimated 10% in the cecum, 14-33% in the transverse colon, and 21% in the sigmoid colon, and it is higher in multiple volvuli [3, 6].

Different surgical approaches for volvulus included detorsion with or without colopexy, detorsion followed by elective colon resection, resection with primary anastomosis, and resection with colostomy or ileostomy [3, 4, 8]. Our case was a known case of Down syndrome with mental retardation and a history of prolonged constipation.

It is noteworthy that gastrointestinal anomalies are 20 times more common among patients with Down syndrome, and gastrointestinal disorders are seen in 7.3% of these patients [8-10]. Volvulus can lead to intestinal obstruction and compress venous and arterial flow due to the rotation of mobile parts of the colon along the longitudinal axis of the bowel [3, 8].

In this study, volvulus was presented first with severe abdominal pain, mild abdominal distention, and gen-

eralized tenderness, though guarding was not present, which was attributed to muscle weakness in Down syndrome. This was a rare case, but radiologic findings (U shaped loop, proximal bowel distention, and several air-fluid levels in supine abdominal radiograph) confirmed intestinal obstruction. According to evidence of bowel ischemia, peritonitis, and high recurrence rate, the patient underwent laparotomy. Other digestive system anomalies were ruled out by gastrointestinal tract exploration. The patient underwent subtotal colectomy, ileostomy, and Hartmann pouch [1, 3, 4, 7, 8]. We conclude that laparotomy is essential in the treatment of intestinal obstruction in patients with Down syndrome.

## Ethical Considerations

### Compliance with ethical guidelines

All ethical principles were considered in this article. The participant was informed about the purpose of the research and its implementation stages.

### Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

### Conflict of interest

The authors declared no conflict of interest.

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