



## Caecal Volvulus on a Background of Previous Sigmoid Volvulus: Case Report and Review of Literature

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### Abstract

Caecal volvulus is a rare clinical disorder, caused by an axial twist around the mesenteric pedicle of the ascending colon, caecum and terminal ileum. Absence of familiarity with cases like this creates diagnostic dilemma which can delay management. This paper describes the presentation of a 65-year-old female who was brought into the emergency department with complaints of severe generalized abdominal pain, vomiting and abdominal distension. The patient had a background history of recurrent sigmoid volvulus that required sigmoid colectomy with primary anastomosis. The purpose of this review is to promote understanding of this rather rare disease among clinicians through the presentation of this particular patient, discussion of pathogenesis of disease, clinical attributes and strategies of management.

**Keywords:** Caecal volvulus; Sigmoid volvuli; Colectomy

### Introduction

Caecal volvulus occurs following an axial twist around the ascending colon, caecum and terminal ileum along its mesentery. Although, it generally presents as small bowel obstruction, it is a rare occurrence with an annual incidence of 2.8 to 7.1 per million people [1,2]. If not detected on time, it can lead to bowel necrosis, perforation and faecal peritonitis. Presumably, the age of patients at presentation is influenced by the cultural and nutritional factors and their impact on bowel motility. This results in extremely variable peak age presentation from different parts of the world ranging from 33 years in India to 53 years in Western Europe and North America [2-4]. Laboratory assessments such as complete blood count and blood biochemistry are neither sensitive nor specific in the diagnosis of caecal Volvulus. Laboratory values are often non remarkable in patients with intermittent illnesses and in early acute obstruction, however computed tomography is more diagnostic [5]. In this report, we present a 65-year-old patient with caecal volvulus who has had recurrent sigmoid volvuli in the past.

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### Case Presentation

A 65-year-old woman, who was admitted to the emergency unit after been reviewed by her GP with complaints of severe generalized abdominal pain constipation and vomiting. She had a background history of sigmoid colectomy for a volvulus 7 years prior to presentation and an open mesh repair for an abdominal incisional hernia. Clinical examination showed a distended abdomen which was tender globally with hyperactive bowel sounds. Digital rectal examination showed an empty rectum. Blood investigations we are not remarkable. Plain radiograph of the abdomen showed dilated loops of small bowel and this led to an initial diagnosis of small bowel obstruction secondary to adhesions. CT scan with contrast showed dilated loops of small bowel with mesenteric defect and “whirl” sign leading to a diagnosis of caecal volvulus (Figure 1). Urgent laparotomy was done following adequate resuscitation. Intraoperatively, it was demonstrated that the caecum was very mobile with visceral rotation around its axis which was incomplete. Both the caecum and terminal ileum were viable and there was no evidence of gangrene/perforation (Figure 2). A right hemicolectomy was performed with a side to side stapled ilio-transverse colic anastomosis. Patient had an uneventful recovery postoperatively (Figure 3). She was discharged home on the 5<sup>th</sup> day post-surgery with a good outpatient follow-up outcome. Histopathology examination of the resected bowel showed affirmed same documented findings (Figure 4).

### Discussion

Volvulus is derived from the Latin word Volvo which means to twist. Colonic volvulus occurs when a part of the colon twist on its mesentery. The consequence of this twisting will result in



Figure 1: X-ray image.

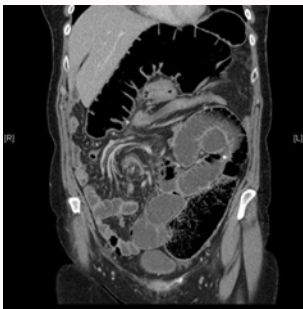


Figure 2: CT image showing the "whirl sign" appearance.

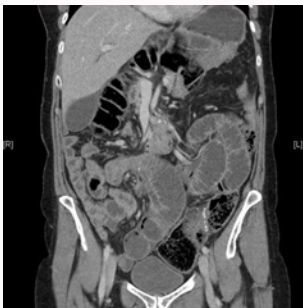


Figure 3: Previous staple line visible.

either a total or partial bowel obstruction with arterial and venous compromise of the affected bowel [6]. Volvulus is an unusual cause of intestinal obstruction accounting for approximately 5% of cases of gastrointestinal obstruction and 10% to 15% of large bowel obstruction. The most common location for colonic volvulus is the sigmoid (75%) the cecum (15%) transverse colon (3%) and the splenic flexure (2%) [3,7,8]. Having a caecal volvulus on a background of having had a sigmoid volvulus is a very rare occurrence. A combination of sigmoid and colonic volvulus might be synchronous or metachronous. We report this case of a metachronous caecal colonic volvulus in a middle-aged woman, who had a history of recurrent large bowel obstruction as a sigmoid volvulus in the past. She had one episode of a colonic decompression and a sigmoidectomy 7 years prior to presentation. Congenital, mechanical and physiological variables are considered as predisposing factors to volvulus. During embryogenesis, intestinal growth is a complicated and sequential event in which the caecum rotates counter-clockwise from the left side of the abdomen to its more permanent position and this could lead to the two congenital causes which are non-fixation and redundancy [5,8]. Mechanical causes can arise from distal colonic obstructions, adhesion, carcinoma, strictures, background of prior sigmoid or



Figure 4: Axial view.

transverse colon volvuli, and iatrogenic malposition of the colon after surgeries. Physiological causes include high roughage diet and large bowel distension secondary to chronic constipation and associated with psychiatric and neurologic diseases [9,10]. Caecal volvulus can present in various ways, ranging from intermittent abdominal pain to severe acute pain resulting from sepsis and intestinal strangulation as a result of ischemia caused by obstructed, twisted mesenteric vessels. Atypical presentations have also been documented. An example was a reported case of a female adolescent with right lower quadrant abdominal pain that resulted in numerous unsatisfactory visits to the emergency department prior to a diagnosis of caecal volvulus [10]. Laboratory findings are neither specific nor sensitive for caecal volvulus diagnosis as was documented in our case. They only reflect the degree of intestinal obstruction and associated abnormalities. Plain radiology is often the first choice in diagnostic imaging in patients presenting with volvulus, it is not specific but sensitive and could lead to an initial diagnosis of small bowel obstruction as was also recorded in our case. Barium enema was the imaging method traditionally used for the confirmation of caecal volvulus with a diagnostic precision of 88%. In addition, occasional effective volvulus reduction and decompression was recorded after barium enema administration. The most prevalent confirmatory finding visualized during barium enema is the "beak" sign or a soft tapering cut off at the efferent limb of the obstruction. An extra benefit of barium enema is distal colon visualization to exclude coexisting abnormalities that may have led to the formation of the volvulus. Because of the time required to complete this procedure and the potential for extravasation of the contrast, barium enema is not usually advocated for evaluating patients in the emergency setting. Abdominal CT is increasingly being used for the assessment of acute abdominal pain, and for this purpose, CT replaces barium enema as the preferred imaging method for the diagnosis of acute caecal volvulus in the emergency setting. "Coffee bean," "bird beak," and "whirl" signs are three prevalent CT signs used in making a diagnosis of acute caecal volvulus [4,5,10]. The success rate of endoscopic decompression for caecal volvulus is only 15% to 20%, and therefore emergency surgery is required. The procedure of choice depends on the clinical condition of the patient at presentation. Caecostomy is a valid choice in severely debilitated patients; however, it is associated with a rate of 40% to 50% wound infection and a rate of recurrence of about 2% to 5%. On the hand, caecopexy which is an extensive form of fixation of the right colon and caecum with a much lower rate of recurrence has been described. The time required for this procedure is as long as, if not longer than, that required for colectomy, which is the definitive procedure [11-14]. Hence, fixation procedures for volvulus are not recommended. Ultimately, if the patient is able to tolerate surgery, the procedure of choice is a right hemicolectomy with primary ileocolic anastomosis as was done in our case.

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