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Sigmoid volvulus in a 73-year-old male: A case report

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Abstract
Background: *Colonic volvulus constitutes 5% of all cases of bowel obstruction and 10-15% of all cases of large bowel obstruction.*
Case presentation: *Herein, we report a 73-year-old male who appeared in the emergency department with a three-day history of abdominal pain associated with nausea, vomiting, and constipation. Computed tomography evinced the diagnosis of sigmoid volvulus. The patient underwent an urgent colonoscopy by the experienced gastroenterology team. Endoscopic detorsion was applied, while the gas and faecal particles were aspirated. A soft flatus tube was inserted above the torsion. Sigmoidectomy was not performed due to the patient's severe comorbidities.*
Conclusion*: The initial treatment of sigmoid volvulus is decompression with a flexible endoscope. Surgery is the definitive treatment as endoscopic decompression carries a high recurrence rate (40-50%). Unfortunately, most patients experiencing sigmoid volvulus are old and fragile with several comorbidities. Therefore, great caution is required when one recommends aggressive treatments.*
Keywords: *Volvulus; bowel ischemia; coffee bean sign; whirl sign; endoscopic decompression; surgery.*

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I. Introduction

Sigmoid volvulus is the twisting of the sigmoid colon around its blood supply, which happens at the base of the sigmoid mesentery (1). Colonic volvulus accounts for 5% of all cases of bowel obstruction and 10-15% of all cases of large bowel obstruction. Endemic areas include Africa, Asia, Middle East, East Europe, and South America (2).

The most typical causes of sigmoid volvulus are chronic constipation in Western countries and a high-fibre diet in developing countries. Approximately 60-70% of patients present with acute symptoms, while one third might have an insidious presentation. Typical symptoms of bowel obstruction regardless of etiology are present: distention, constipation, obstipation, cramping abdominal pain, nausea, and vomiting (4).

Plain radiographs confirm the diagnosis of sigmoid volvulus when the characteristic coffee bean sign is present. Computed tomography of the abdomen can confirm the diagnosis, identify the etiology, and demonstrate bowel ischemia (5). The initial treatment is detorsion and decompression through colonoscopy. Surgery is the definitive treatment as the recurrence rate after endoscopic decompression varies between 40-50% (3). Nonetheless, most patients experiencing sigmoid volvulus are old and fragile with several comorbidities. Therefore, great caution is required when one recommends aggressive treatments (1). Here we describe the case of a 73-year-old male who was diagnosed with sigmoid volvulus and treated with endoscopic decompression alone due to severe comorbidities.

II. Case Presentation

A 73-year-old male visited the emergency department with a three-day history of abdominal pain associated with nausea, vomiting, and constipation. The patient reported heart failure with an ejection fraction of 20%, chronic obstructive pulmonary disease requiring oxygen therapy during sleeping, hypertension,

dyslipidemia, and diabetes mellitus type 2. Physical examination disclosed a soft, distended abdomen with diffuse abdominal tenderness and no signs of peritonism. Bowel sounds were hypoactive.

Laboratory studies were within normal limits, and the Covid-19 test was negative. An abdominal x-ray revealed a markedly distended loop of the large bowel arising from the pelvis with the absence of the rectal gas and distention of the descending colon. Computed tomography evinced the diagnosis of sigmoid volvulus as it showed a torsion around the mesentery in the bowel loop at the sigmoid colon. Gas-stool retention and dilatation were present in the colonic loops more proximal to the twist.

The patient underwent an urgent colonoscopy by the experienced gastroenterology team. The endoscope was inserted up to 80 cm through the trans-rectal approach. The sigmoid colon and descending colon were markedly dilated. Endoscopic detorsion was applied, and the gas and fecal particles were aspirated. A soft flatus tube was inserted above the torsion. No intraprocedural complications were noted. The patient recovered uneventfully, and he was discharged after eight days.

III. Discussion

Volvulus is defined as the twisting of the intestine around its blood supply axis leading to acute, subacute, or chronic bowel obstruction. In sigmoid volvulus, the twist happens at the base of the sigmoid mesentery (1). The most typical site of colonic volvulus is the sigmoid colon (80%), followed by the cecum (15%), the transverse colon (3%), and the splenic flexure (2%). In western countries, colonic volvulus constitutes 5% of all cases of bowel obstruction and 10-15% of all cases of large bowel obstruction (2). It usually affects older people with an average age in the eighth decade of life, while the two sexes are equally affected. A higher incidence of colonic volvulus is reported in African, Asian, Middle Eastern, Eastern European, and South American countries. In these endemic areas, patients are usually younger and predominantly male (2, 3).

The most typical causes of sigmoid volvulus are chronic constipation in Western countries and a high-fibre diet in developing countries. They overload the sigmoid colon, making it susceptible to torsion along the axis of the elongated mesentery. Other risk factors encompass Parkinson disease, multiple sclerosis, spinal cord injury, megacolon (congenital or acquired through Chagas disease), and a pelvic mass such as large ovarian tumors or during the pregnancy. Psychotropic drugs interfere with colonic motility and might trigger volvulus. Patients in nursing homes are at greater risk for developing sigmoid volvulus due to prolonged recumbency and chronic constipation. Less frequent causes of sigmoid volvulus include postoperative adhesions, internal herniations, intussusceptions, omphalomesenteric abnormalities, intestinal malrotations, and carcinoma (3).

Approximately 60-70% of patients present with acute symptoms, while one third might have an insidious presentation. Initial manifestation encompasses loss of appetite, decreased oral intake, distension, constipation, obstipation, and cramping abdominal pain. As the obstruction progress, nausea and vomiting occur (4). In severe abdominal distention, patients may experience respiratory compromise due to the splinting of the diaphragm because of the colonic distention. The patient might report previous episodes of abdominal pain, distention, and obstipation, indicating repeated episodes of volvulus that spontaneously resolved. Physical examination reveals significant distention and a generalized tympanitic sound in the percussion. Digital rectal examination discloses an empty rectum (1, 3). Indications of strangulation and subsequent perforation encompass steady, severe pain, fever, hematochezia, signs of peritonism (rebound tenderness, muscle guarding, rigidity), and minimal peristalsis or silent abdomen in the auscultation (6).

Laboratory studies that might indicate peritonitis include elevated white blood cell count, left shift, and c-reactive protein, though these tests' sensitivity and specificity are relatively low (7). Although the diagnosis of sigmoid volvulus is clinical, imaging modalities are essential for diagnosing sigmoid volvulus as the clinical manifestation often overlaps with other diseases (1). Plain radiographs display dilatation of the proximal colon and the characteristic coffee bean sign (8). The two side parts of the bean represent the gas-filled segments of the dilated bowel, creating an inverted U-shape, whereas the central cleft of the bean represents the double thickness of opposed bowel walls (5, 9). Worth noting that the proximal colon can decompress into the distal small bowel when the ileocecal valve becomes incompetent. Abdominal computed tomography can confirm the diagnosis, identify the etiology from other causes of large bowel obstruction, and demonstrate ischemia resulting from strangulation. Findings include a distended loop of the sigmoid colon with an air-fluid level and the characteristic whirl sign (1). The whirl sign represents tension on the tightly twisted mesocolon by the afferent and efferent limbs of the dilated colon (5). Signs indicating large bowel ischemia include

- bowel wall thickening,
- engorgement of mesenteric veins and mesenteric edema,
- intramural gas (intestinal pneumatosis),
- mesenteric or portal venous gas, and
- lack of bowel wall enhancement.

In the case of perforation, a large amount of free intraperitoneal gas or fluid may be observed (10).

The initial treatment is decompression with a flexible endoscope. Before any intervention, the patient needs adequate fluid resuscitation to correct fluid deficits, hypovolemia, and electrolyte imbalances (3). An emergency colonoscopy should be carried out for detorsion and decompression of the volvulus as soon as the sigmoid volvulus is recognized. The endoscope inserts gently just below the site of the torsion, and air insufflation is attempted. Occasionally, the air pressure brings about detorsion. If unsuccessful, the tip of the endoscope follows the twisted mucosa and reach the apex. A soft flatus tube can be inserted, leading to detorsion and decompression. The success rate of endoscopic reduction varies between 50-100% (11).

Urgent surgical intervention is recommended in cases of peritonitis, ischemic bowel, or unsuccessful endoscopic decompression. The surgery of choice is sigmoidectomy with either a primary anastomosis or an end colostomy (Hartmann procedure) (1). The decision regarding the surgical operation depends on the intraoperative findings and the patients' physiological reserves. If the divided bowel ends are viable, peritoneal contamination is not evident, and the patient is hemodynamically stable without severe comorbidities, a sigmoidectomy with primary anastomosis can be done. Otherwise, the Hartmann procedure is a safe and efficient alternative. Minimal invasive surgery can be considered depending on the surgeon's skill and experience (12).

Surgery is the definitive treatment of sigmoid volvulus as endoscopic decompression alone carries a 40-50% recurrence rate, with a mortality of 25-30% after surgical treatment of the recurrent volvulus. The suggested interval between endoscopic decompression and definite surgical intervention is 48-72 hours (3). The mortality for emergency procedures is 24% compared to 6% for elective procedures after endoscopic decompression (13). The outcomes for healthy patients after surgery are excellent. Unfortunately, most patients experiencing sigmoid volvulus are old and fragile with several comorbidities. Therefore, great caution is required when one recommends aggressive treatments (1).

IV. Conclusion

Colonic volvulus accounts for 5% of all cases of bowel obstruction and 10-15% of all cases of large bowel obstruction. Approximately 60-70% of patients present with acute symptoms, while one third might have an insidious presentation. Plain radiographs confirm the diagnosis of sigmoid volvulus when the characteristic coffee bean sign is present. Computed tomography of the abdomen can confirm the diagnosis, identify the etiology, and demonstrate bowel ischemia. The initial treatment is endoscopic detorsion and decompression. Surgery is the definitive treatment as endoscopic decompression carries a high recurrence rate (40-50%). Unfortunately, most patients experiencing sigmoid volvulus are old and fragile with several comorbidities. Therefore, great caution is required when one recommends aggressive treatments.

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3. Stefanou CK: Literature search and acquisition of data.
4. Tepelenis k: Literature search and acquisition of data.
5. Kefala MA: Analysis and interpretation of data.
6. Tsoumanis P: Analysis and interpretation of data.
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