



A Case of Sigmoid Volvulus Treated with Surgery in a Young Patient

Genç Bir Hastada Ameliyatla Tedavi Edilen Sigmoid Volvulus Olgusu

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Abstract

The study aims to present the diagnosis and treatment process of a case of sigmoid volvulus, incurable with colonoscopic detorsion, and requires surgical resection in a young patient. A twenty-seven-year-old man who was admitted with abdominal pain, distension, and nausea with vomiting. He had abdominal pain, defence, rebound at every quadrant, and abdominal distension on the physical examination of the abdomen. There was no stool contamination on the digital rectal examination. Only c-reactive protein level (CRP) (14.1 mg/L) was high in the laboratory. Computed tomography (CT) scan screened dilated colonic loops due to sigmoid volvulus. Since detorsion was not successful with colonoscopy, emergency surgery was operated on the patient. On exploration, there was a 720° torsion on the upper side of the sigmoid; all colonic loops were extremely dilated up to 10 centimeters. Total colectomy with end ileostomy was performed, and the patient was discharged on the fourth postoperative day without complications.

Keywords: Intestinal Obstruction, Sigmoid Colon, Volvulus.

Öz

Genç bir hastada kolonoskopik detorsiyon ile tedavi edilemeyen ve cerrahi rezeksiyon gerektiren sigmoid volvulus olgusunun tanı ve tedavi sürecinin sunulması amaçlanmıştır. Yirmi yedi yaşında erkek hasta karın ağrısı, şişkinlik ve kusma ile birlikte bulantı şikayetleri ile başvurdu. Karın fizik muayenesinde karın ağrısı, defans, her kadranda rebound ve abdominal distansiyon mevcuttu. Parmakla rektal muayenede dışkı kontaminasyonu yoktu. Laboratuvarında sadece c-reaktif protein düzeyi (CRP) (14,1 mg/L) yüksekti. Bilgisayarlı tomografi (BT) taraması, sigmoid volvulus nedeniyle dilate kolon halkaları gösterdi. Kolonoskopi ile detorsiyon başarılı olamadığı için hastaya acil ameliyat uygulandı. Cerrahi sırasında, üst sigmoidal bölgede 720°'lik bir torsiyon vardı; tüm kolon ansları 10 santimetreye kadar aşırı derecede genişlemişti. End ileostomi ile total kolektomi yapıldı. Hasta postoperatif dördüncü günde komplikasyonsuz olarak taburcu edildi.

Anahtar Kelimeler: Bağırsak Tıkanıklığı, Sigmoid Kolon, Volvulus.

Introduction

Sigmoid Volvulus (SV) is an acute intestinal dilatation that is more common in the elderly and men; it needs to be diagnosed and treated quickly. Otherwise, it may cause perforation and intestinal blood supply problems such as necrosis (1). Sigmoid volvulus is the most common aetiology of significant bowel obstruction in Western countries after carcinoma and diverticulitis (2). SV accounts for 2-5% of colonic obstructions in Western countries and 20-50% of obstructions in Eastern countries (3).

Factors such as the presence of a long sigmoid colon and narrow-based sigmoid mesocolon, diet, colonic motility disorder, scleroderma, and Chagas disease play a role in the aetiology of SV. SV can also be seen in patients with Alzheimer's disease, Parkinson's disease, multiple sclerosis, pseudobulbar palsy, and chronic schizophrenia (4). Luminal occlusion and vascular occlusion are the main pathophysiological mechanisms. Besides, mechanical obstruction and bacterial fermentation cause the enlargement of the twisted loop and the proximal colon (3).



The diagnosis of colon volvulus is made by physical examination, direct abdominal radiographs, barium colon radiographs, computed tomography (CT), magnetic resonance imaging (MRI), and endoscopic examination (5). In treating volvulus, surgical and non-surgical methods have been defined depending on the volvulus development area. Surgical methods are simple detorsion, resection and anastomosis, Hartmann's intervention, colopexy, extraperitonealization, mesocoloplasty, mesenteric mesh plasty, and tube sigmoidostomy (6). However, non-surgical methods include rectal tube application, enema, and rigid or flexible endoscopic decompression.

In this case report, we aimed to present the diagnosis and treatment process of a sigmoid volvulus case that was not treated with colonoscopic detorsion and required surgical resection.

Case Report

A twenty-seven-year-old man was admitted to an emergency department of a tertiary health centre with complaints of abdominal pain, distension, and nausea

with vomiting for about two days. He had no other disease and a history of surgery. His vital results on admission were as follows: blood pressure: 118/61 mm Hg, the pulse rate: 104 beats per minute, oxygen saturation on room air: 95%, and body temperature: 37.2° Celsius. He had abdominal pain, defence, rebound at every quadrant, and abdominal distension on the physical examination of the abdomen. There was no stool contamination on the digital rectal examination. Other system examinations were routine.

Only c-reactive protein level (CRP) (14.1 mg/L) was higher in the laboratory. CT scan showed dilated colonic loops due to sigmoid volvulus (Figures 1, 2, and 3). Nasogastric decompression was actualized due to the risk of aspiration. Since detorsion was not successful with colonoscopy, emergency surgery was performed on the patient. On exploration, there was a 720° torsion on the upper side of the sigmoid; all colonic loops were extremely dilated up to 10 centimeters (Figure 4). Total colectomy with end ileostomy was performed (Figure 5). The patient was followed up in the service during the postoperative period. On the first day, gastrointestinal content came from the ileostomy, and then oral

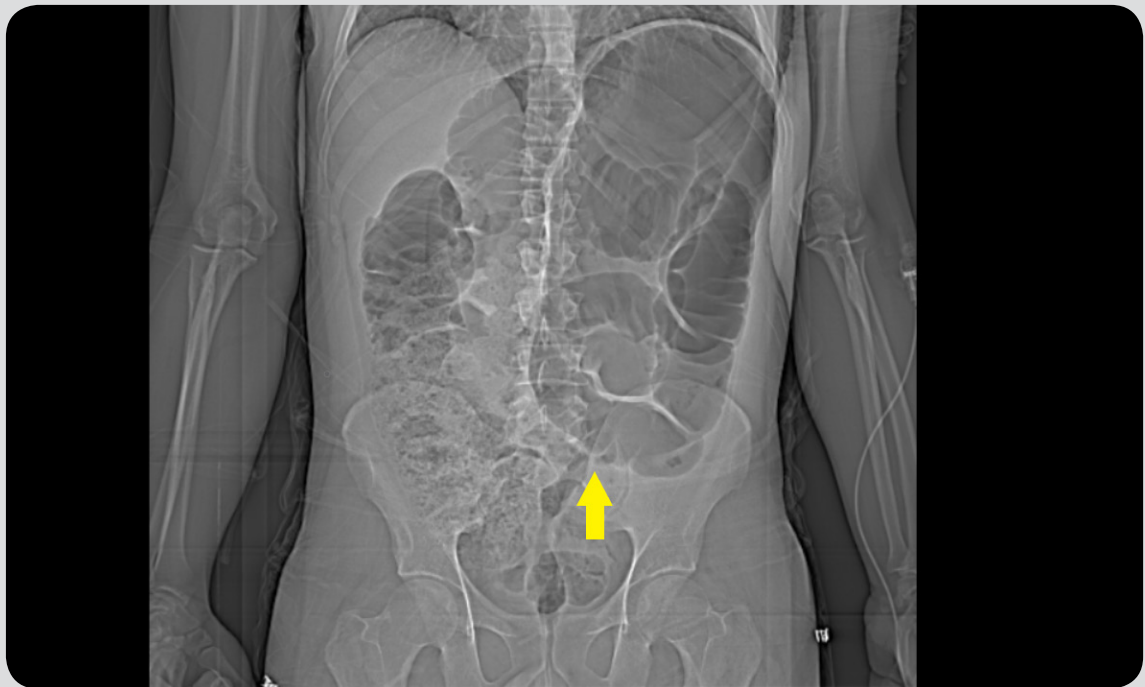


Fig 1. Plain radiography image of sigmoid volvulus (omega sign). The yellow arrow shows the torsion area.

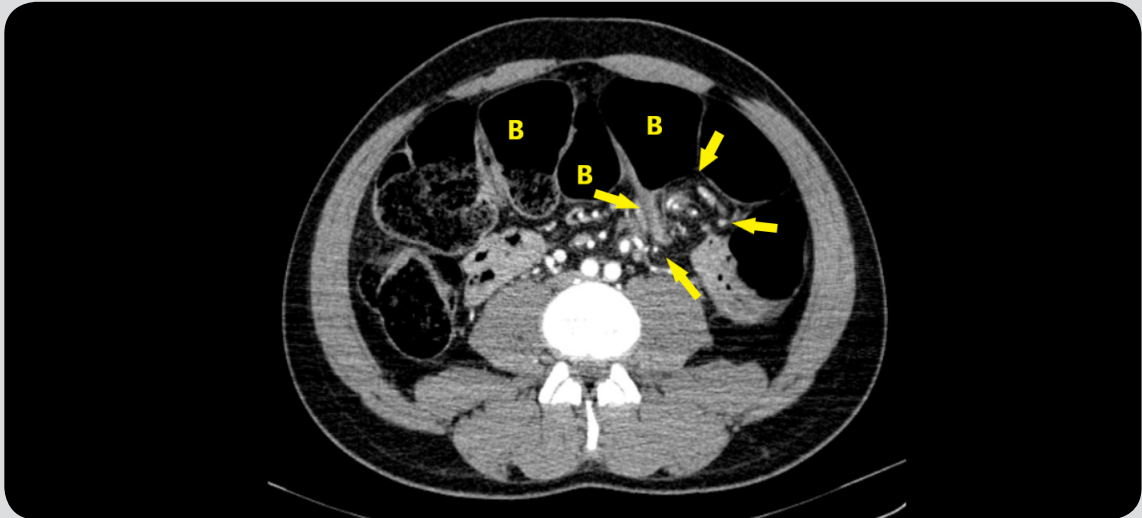


Fig 2. CT view of sigmoid volvulus. 'B' shows dilated bowel segments and yellow arrows indicate the 'whirlpool sign'

feeding restarted. The patient was discharged on the fourth postoperative day without complications.

DISCUSSION

Von Rokitansky first described sigmoid volvulus (SV) as a condition in which the sigmoid colon wraps around itself and its mesentery, causing a closed-loop

obstruction in 1836. SV is the third most common cause of colon obstruction after cancer and diverticular disease in developed countries. SV is responsible for 4% of all colon obstructions in the USA and the UK, while it is responsible for up to 50% in developing countries such as Eastern Europe, Africa, the Middle East, Asia, and South America, including Turkey (3, 7). SV is an acute intestinal dilatation that

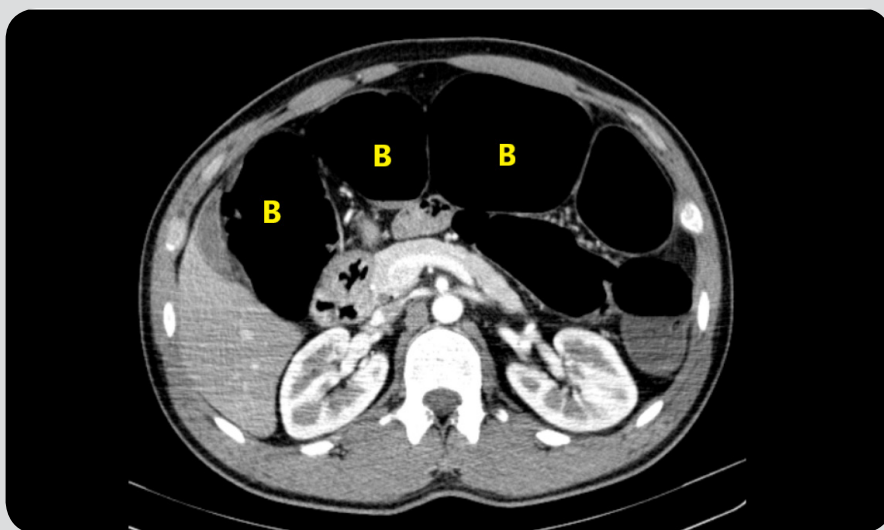


Fig 3. CT view of sigmoid volvulus. 'B' shows dilated bowel segments.

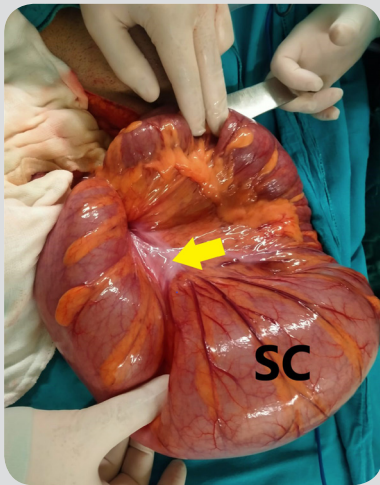


Fig 4. Perioperative image of sigmoid volvulus. The yellow arrow shows the torsion area and 'SC' indicates the sigmoid colon dilatation.

is more common in the elderly and men; it needs to be diagnosed and treated quickly. In cases where early diagnosis and treatment cannot be made, mortality increases significantly. The mortality rate varies depending on the time from the onset of symptoms to diagnosis and administration of treatment, advanced age, and co-morbidities. The mortality rate has been reported as 6-24% in cases without gangrene and 11-80% in patients with necrosis (8).



Fig 5. Resection material.

Anatomical predisposing factors are associated with a diet rich in fibre, chronic constipation, previous abdominal surgery, neurological or psychiatric diseases, pregnancy, high altitude, prolonged bed rest, and the development of SV (9). Patients most frequently apply to the hospital with complaints of abdominal pain, bloating, inability to pass gas and stool, nausea and vomiting (10). The omega ans, horseshoe appearance, and coffee bean appearance showing an enlarged sigmoid colon and multiple small or large intestinal air-fluid levels on plain radiographs are striking. Plain abdominal radiography has been diagnostic in 57%-90% of patients. The coffee bean sign is the classic conventional X-ray finding of SV. The coffee bean emerges from the pelvis and may cover the entire abdomen. Its apex is usually above the level of the T10 spine and may extend to the right or left of the midline. Since the wall is oedematous in the involved bowel segment, adjacent walls are seen as dense white lines on the radiograph (11). Barium or water-soluble contrast enema, which has a low diagnostic role on SV, is also helpful in diagnosis. On CT, a tightly bent mesentery in the centre and the appearance of dilated intestinal loops around it can be observed. This finding is called the 'whirlpool sign' (12). In addition, progressive narrowing of the afferent and efferent loops of the volvulus can be observed. If ischemia due to obstruction has developed, signs of ischemia can be seen on CT. The most common finding of ischemia on CT is a thickening of the intestinal wall, although it is not specific. However, if gangrene occurs in the involved intestinal segment, the intestinal wall may become thin or invisible. Other CT findings of ischemia are low or no contrast enhancement of the intestinal wall, pneumatosis intestinalis, contamination in mesenteric fatty planes, and mesenteric and portal venous gas (13). In the present case, the CT scan showed dilated colonic loops due to SV.

Flexible endoscopy generally shows a spiral sphincter-like twist of the mucosa in the obstructive sigmoid colon, usually 20 cm to 30 cm from the anal verge (14). Therefore, the diagnosis of SV can be difficult, especially when CT, MRI, or flexible endoscopy are not used, and the diagnosis is made at laparotomy or autopsy in 10-15% of patients (3). In the present case, the patient was admitted with abdominal pain, distension, and nausea with vomiting for about two days, and he did not have a predisposing factor. Contrary to expectations, the patient was a young male patient, and to-

mography, colonoscopy, and operative findings were compatible with SV.

Early diagnosis and treatment are essential because SV can cause severe clinical conditions such as hypovolemic shock and toxic shock. After the diagnosis, patients should be evaluated regarding fluid and electrolyte imbalances, decompression should be provided with a nasogastric tube against the risk of aspiration, and parenteral nutrition should be started when necessary. Less invasive procedures should be planned primarily for patients, and detorsion should be tried with flexible colonoscopy as the first-line treatment. The literature has reported that colonoscopic detorsion for SV provides a success rate of 33% to 91% (15). Emergency surgery is inevitable in patients with peritonitis, bowel necrosis, or perforation and in patients who have not been successful with endoscopic detorsion (3). The patient's comorbid conditions, the presence of abdominal sepsis, and the surgical tolerability of the patients are essential criteria when deciding on the type of surgery.

On the other hand, although various surgical procedures have been described, there is no consensus yet on a gold standard surgical procedure. Definitive and non-definitive procedures have been described in the surgical treatment of SV. Detorsion, sigmoidopexy, mesosigmoidoplasty, or sigmoid resection with primary anastomosis or stoma are the definitive procedures. Definitive procedures are preferred over non-definitive procedures because of less risk of recurrence. Although resection with primary anastomosis is currently the most accepted procedure, it has a mortality risk of up to 33% (3). Some studies have stated that anastomosis is not safe in the colon without bowel cleansing, and colonic lavage performed during the surgery may effectively reduce the related complications (16). The advantages of resection with anastomosis are that the definitive treatment is performed in a single surgery and does not require a second operation. The major disadvantage is the risk of anastomotic leakage (17). Due to the large diameter of the colonic loops, resection and end ileostomy were performed in the present patient after perioperative sigmoid detorsion.

Conclusion

Sigmoid volvulus (SV) is an acute intestinal dilatation that is more common in men and the elderly; it needs to be diagnosed and treated quickly. Plain abdominal X-rays and abdominal CT are tools with high diagnostic accuracy. The first-line treatment is endoscopic detorsion, and emergency surgery is indicated in cases where detorsion is unsuccessful. Comorbid conditions, the presence of abdominal sepsis, and the surgical tolerability of the patients are essential criteria when deciding on the type of surgery.

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