

Endoscopic treatment and outcomes of sigmoid volvulus: A single-center experience

Metin Yalçın,¹ Serdar Öter²

¹Department of General Surgery, Antalya Training and Research Hospital, Antalya, Türkiye

²Department of Gastroenterological Surgery, Manisa City Hospital, Manisa, Türkiye

ABSTRACT

Introduction: There are many different approaches in the treatment of sigmoid volvulus (SV) in the literature, the first choice in patients without peritonitis findings is endoscopic treatment, while the standard treatment in complicated cases is surgery. The aim of this study is to evaluate the demographic characteristics, diagnostic methods, and post-treatment results of patients who underwent endoscopic detorsion with the diagnosis of SV in our clinic.

Materials and Methods: Between January 2016 and December 2020, 39 patients with the diagnosis of SV were treated endoscopically or surgically in our clinic. Eighteen SV patients had successful detorsion and decompression procedures were included in the study.

Results: The mean age of 18 patients was 66.55 ± 20.26 years and 14 (77.8%) patients were male. The median time between the onset of symptoms and admission to the hospital was 3.52 ± 2.23 days. Elective surgery was performed in a total of 6 (33.3%) patients whose performance status was appropriate. Hartmann end colostomy was performed in only one patient, while anastomosis was preferred in five patients. Remaining 12 patients whom outpatient follow-up was recommended due to performance status were followed at our outpatients clinic. Eight (66.67%) of these 12 patients were hospitalized for recurrent SV. Six of these patients can be successfully treated with endoscopic redetorsion and two patients were operated urgently.

Conclusion: SV is a surgical emergency with high morbidity and mortality rates if effective treatment is not applied. Endoscopic detorsion can be preferred and safely applied as first-line treatment in non-complicated cases without peritoneal irritation findings.

Keywords: Elective surgery, Emergency surgery, Endoscopic detorsion, Sigmoid volvulus

Introduction

Sigmoid volvulus (SV) is defined as the formation of closed loop obstruction by the rotation of the sigmoid colon meso around itself and is generally seen in elderly patients with chronic constipation and neuropsychiatric diseases.^[1-3]

SV is the most common type of volvulus in the colon, and more rarely, volvulus can occur in the cecum and transverse colon.

SV is a surgical emergency that can result in mortality as a result of complications such as ischemia, necrosis, and



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Correspondence: Serdar Öter, M.D., Department of Gastroenterological Surgery,
Manisa City Hospital, Manisa, Türkiye
e-mail: sdrrr_@hotmail.com



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perforation if left untreated. There are many different approaches in the treatment of SV in the literature, the first choice in patients without peritonitis findings is endoscopic treatment, while the standard treatment in complicated cases is surgery.^[4]

The aim of this study is to evaluate the demographic characteristics, diagnostic methods, and post-treatment results of patients who underwent endoscopic detorsion with the diagnosis of SV in our clinic.

Materials and Methods

After getting local ethical committees approval, patients who underwent endoscopic detorsion in our clinic were evaluated between January 2016 and December 2020. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The study was approved by the Bioethics Committee of the Medical Faculty of Harran University (Date: May 24, 2021; Decision No: HRU/October 21, 2017).

Between January 2016 and December 2020, 39 patients with the diagnosis of SV were treated endoscopically or surgically in our clinic. Of these, 21 patients underwent emergency surgery were excluded from the study.

Twenty-one patients underwent endoscopic detorsion were evaluated. One patient who underwent emergency surgery due to ischemic changes in the colonic mucosa and two patients who underwent emergency surgery because the sigmoid colon could not be detorsion were excluded from the study. Eighteen SV patients had successful detorsion and decompression procedures were included in the study.

Demographic data, admission symptoms, symptom and admission intervals, physical examination findings, laboratory values, radiological findings, endoscopic treatment information, surgical treatment methods, and post-operative results were reviewed retrospectively by scanning patient epicrisis documents and electronic patient files from the hospital database.

All patients diagnosed with SV at the time of admission were hospitalized and their oral intake was stopped. Nasogastric decompression was applied to all patients and intravenous fluid therapy were started. Patients with signs of peritonitis or clinical and radiological signs of

ischemia, necrosis, or perforation underwent direct emergency surgical treatment. First-line endoscopic detorsion was performed in all patients who did not have signs of peritonitis and had no signs of ischemia, necrosis, or perforation in the radiological evaluation. All endoscopy procedures were performed in the hospital endoscopy unit without routine mechanical bowel preparation. A temporary rectal tube was placed in patients who could successfully undergo detorsion, and the patients were followed up. Elective surgery was performed in all patients whose clinical condition improved and whose performance status was suitable and who accepted the surgical procedure. Patients who could undergo successful detorsion but had high comorbidities or who did not want surgery despite being suitable for surgery were discharged and followed up in the outpatient clinic. While endoscopic detorsion was applied as the first treatment to the patients who developed recurrence without signs of peritonitis, emergency surgery was performed again in the presence of peritonitis findings. Emergency surgical intervention was performed in patients who were found to have mucosal ischemia or necrosis during endoscopy and patients in whom endoscopic detorsion was unsuccessful. As the surgical method, sigmoid resection with or without anastomosis or sigmoidopexy was applied, depending on the patient's condition and intraoperative findings.

Statistical Analysis

Data were analyzed with the IBM Statistical Analyses for Social Sciences 21.0 for Windows. In the evaluation of distribution of normality, Kolmogorov–Smirnov test was used. The quantitative data were presented as mean±standard deviation (minimum–maximum values) and the qualitative data were presented as number (n) and percentage (%).

Results

The mean age of 18 patients was 66.55 ± 20.26 years and 14 (77.8%) patients were male and 4 (23.2%) patients were female. Twelve (66.7 %) of the patients were American Society of Anesthesiology (ASA) III and 6 (33.3%) of whom were ASA IV. It was observed that 5 (27.8%) of the patients had neuropsychiatric diseases such as previous cerebrovascular accident and mental retardation. About half of the patients described chronic constipation and 6 (33.3%) of the patients were using laxatives. There was a history of previous abdominal surgery in 5 (27.8%) of the patients. The most common presenting symptoms were abdominal pain and abdominal distention (94.4% and 88.8%, respec-

tively). The median time between the onset of symptoms and admission to the hospital was 3.52 ± 2.23 days.

Elective surgery was performed in a total of 6 (33.3%) patients who underwent successful endoscopic detorsion and whose performance status was appropriate. Hartmann end colostomy was performed in only one patient, while anastomosis was preferred in five patients. Surgical detorsion and sigmoidopexy were not preferred in any of the patients who underwent elective surgery.

Remaining 12 patients who underwent successful endoscopic detorsion but did not accept surgery or for whom outpatient follow-up was recommended due to performance status were followed at our outpatients clinic.

Eight (66.67%) of these 12 patients were hospitalized for recurrent SV within the first 6 months. The median readmission time was 2 months (min–max: 1–6 months). Six of these patients can be successfully treated with endoscopic re-detorsion and two patients were operated urgently. Sigmoid colon resection and Hartmann end colostomy procedure were performed in these two patients. The treatment algorithm of the patients is summarized in Figure 1.

In the post-operative follow-up of six patients who underwent elective surgery, anastomotic leakage was not observed in any of the patients. Wound infection complication developed in one of these patients and pulmonary complication developed in one patient. No mortality was observed. The mean hospital stay time was 8.8 ± 2.5 days ranging from 7 to 14 days.

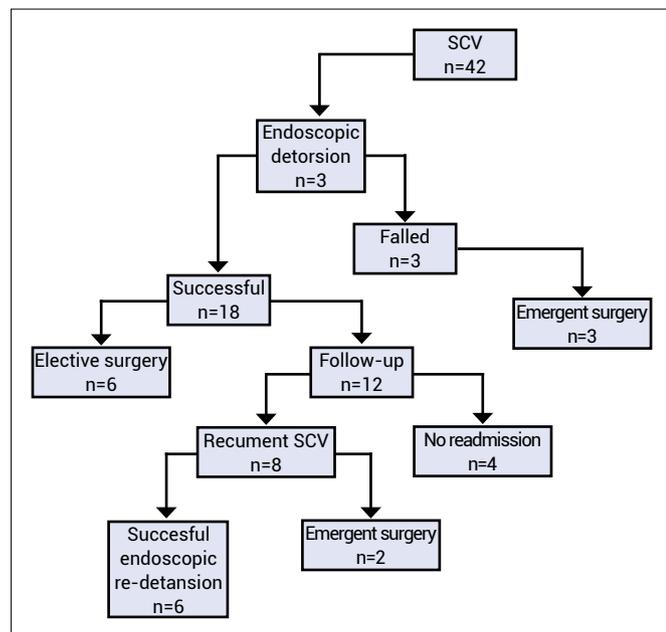


Figure 1. Management algorithm of patients in present study.

Discussion

Colonic volvulus is the condition in which an unusually long colon segment rotates more than 180 degrees around a long mesocolon with a narrow base and forms a closed loop, and it most commonly (50–90%) occurs in the sigmoid colon.^[5] Sigmoid colon volvulus is usually seen in elderly patients. Etiology is multifactorial. Anatomical variations have contributed to the development of SV. These include dolicolon and redundancy of the sigmoid colon. This means that the mesentery is wider than the length and narrows the sigmoid mesentery.^[3,5] In our study, the majority of the patients were elderly patients too. In studies, the mean age of SV incidence was found to be 40–60 in the developing countries and 60–70 in developed countries.^[6,7] The mean age of our patients was 66.55 ± 20.26 years. This means our results are similar to the results of studies conducted in developed countries in this respect.

In this study, similar to the literature, male patients were found to be more numerous than female patients, and the male/female ratio was found to be 3,5. Many studies show that female anatomical structure is less prone to SV development.^[8] The fact that dolico mesentery development is more common in males and the narrow male pelvic inlet does not allow spontaneous detorsion and predisposes to the development of torsion, explaining the higher incidence of SV in males.^[9]

The fecal burden created by dietary habits with age and the vicious cycle of chronic constipation increases the intraluminal pressure, leading to elongation in the colon and dilatation of the colon, revealing the dolicolon phenomenon that predisposes to volvulus.^[10] In our study, it was observed that 45.2% of the patients had chronic constipation and 26.1% were laxative dependent.

In a study by Khanna et al., it was reported that although SV is an acute clinical presentation, there is an average of 3–4 days delay from the onset of symptoms to presentation in the majority of patients, especially in elderly patients, and only 17% of patients present in the first 48 h.^[11] In our study, the median time between the onset of symptoms and admission to the hospital was found 3.52 ± 2.23 days.

The advantage of successful endoscopic detorsion is that it reduces unnecessary emergency laparotomy in this patient group and allows this patient to be treated with elective surgery with lower morbidity and mortality rates.^[12,14] However, despite the high success rate of endoscopic detorsion, there are also high recurrence rates, and the general con-

sensus reached by the results of the study is that endoscopic detorsion is not a definitive treatment method, but a bridge treatment for definitive treatment. In our study, recurrence was observed in 66.6% of the patients who underwent successful endoscopic detorsion and did not undergo surgery. In many studies, high recurrence rates ranging from 36% to 86.7% have been reported after successful detorsion.^[1,15-17] The accepted general view is that patients with suitable performance status at first hospitalization should be treated with elective surgery before discharge.^[1,2,15,18]

Although there are disagreements about the ideal procedure to be preferred in elective surgery, the preferred method is laparoscopic or open sigmoid resection and anastomosis in well-selected patients.^[3,18,19] In our study, anastomosis was preferred in five of six patients who underwent elective surgery in accordance with the current approach, while colostomy was preferred in only one due to comorbidity.

The main limitation of our study is that it was a single-center retrospective study with relatively low number of patients.

Conclusion

SV is a surgical emergency with high morbidity and mortality rates if effective treatment is not applied. Endoscopic detorsion can be preferred and safely applied as first-line treatment in non-complicated cases without peritoneal irritation findings. Elective prophylactic surgery should be offered to all patients who can undergo successful endoscopic detorsion and whose performance status is suitable, to prevent recurrences in the most effective way. Emergency surgical intervention should be performed in all patients with signs of ischemia, necrosis, or perforation.

Disclosures

Ethics Committee Approval: The study was approved by the Bioethics Committee of the Medical Faculty of Haran University (Date: May 24, 2021; Decision No: HRU/October 21, 2017).

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