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Review Article

Sigmoid Volvulus: Current Diagnosis and Management: Narrative Review Article

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Abstract: Sigmoid volvulus is a rare cause of acute intestinal obstruction that is seen in elderly patients, and the clinical presentation is that of abdominal pain and distension. The diagnosis of this condition is made by performing an abdominal x-ray or a computerized tomography scan that will show the characteristic features of sigmoid volvulus. The management of sigmoid volvulus can be divided into endoscopic therapy and surgical therapy. Endoscopic therapy involves endoscopic detorsion, but this is associated with a high recurrence rate. Surgical therapy involves performing a sigmoid resection and anastomosis or a Hartmann's procedure. The choice of which surgical procedure will depend on whether the sigmoid volvulus is complicated or uncomplicated. In this review, we will look at the management of sigmoid volvulus by investigating the role of endoscopic detorsion, the surgical management, which includes sigmoid resection and anastomosis, and Hartmann's procedure.

Keywords: Sigmoid Volvulus, Colonic volvulus, Endoscopic detorsion, Sigmoid colectomy. Hartmann's procedure, Intestinal obstruction, Colostomy.

INTRODUCTION

Sigmoid volvulus is characterized by the twisting of a long, redundant sigmoid colon on its narrow mesentery, and it leads to acute intestinal obstruction. It is seen in younger patients in Africa, the Middle East, Central and South Asia, where it is known as the volvulus belt. In Western countries, sigmoid volvulus is seen in older patients, neuropsychiatric patients, and in nursing home patients with underlying co-morbidities and chronic constipation. The clinical presentation is with abdominal pain, abdominal distension, and constipation, and it may progress to ischemia and perforation depending on the degree of twisting of the sigmoid colon on its mesentery(Lou *et al.,*2013; Pattanaik, 2018; Raveenthiran *et al.,*2010). The diagnosis of sigmoid volvulus is obtained by an abdominal x-ray, which will reveal a coffee bean appearance, and a computerized tomography is done if there is doubt about the diagnosis of sigmoid volvulus(Lal *et al.,*2006). The management of sigmoid volvulus can be divided into endoscopic detorsion followed by the insertion of a flatus tube, which is kept for up to 48 hours. The definitive therapy for sigmoid volvulus is by performing a sigmoid resection followed by anastomosis, or by performing a Hartmann's procedure if there is bowel contamination and bowel anastomosis cannot be performed(Gingold & Murrell, 2012; Traoré *et al.,*2014).

The World Society of Emergency Surgeons (WSES) guidelines on the management of sigmoid volvulus have recommended endoscopic decompression as the first-line treatment of patients with sigmoid volvulus with no complications like perforation. If endoscopic decompression fails than an urgent sigmoid resection should be performed. The choice of operation can be a sigmoid resection with anastomosis or a Hartmann's procedure, depending on the patient's clinical condition and the viability of the bowel. For patients who have undergone successful endoscopic detorsion, a sigmoid colectomy should be performed to prevent recurrence. Non-resection procedures like sigmoidoplasty and sigmoidopexy are not recommended for the management of sigmoid volvulus(Tian *et al.,*2023).The American Society of Colon and Rectal surgeons in their clinical practical guidelines for the management of colonic volvulus, has recommended that endoscopy evaluation and detorsion be recommended for stable patients with sigmoid volvulus, and sigmoid resection is reserved for patients who have undergone

failure of endoscopic therapy. Surgical therapy will include sigmoid resection or Hartmann's procedure, depending on the patient's condition(Alavi *et al.,*2021).The American Society for Gastrointestinal Endoscopy guidelines on the role of endoscopy in the management of acute colonic volvulus have recommended endoscopic detorsion for hemodynamically stable patients who have presented with sigmoid volvulus, followed by placement of a flatus tube(Naveed *et al.,*2020).

In this review, we will investigate the role of endoscopic therapy in the management of sigmoid volvulus. The surgical management of sigmoid volvulus will also be assessed, including the role of sigmoid colectomy and anastomosis, and Hartmann's procedure. We will also evaluate the role of percutaneous endoscopic colostomy in the management of sigmoid volvulus. A comprehensive literature review was conducted utilizing PUBMED, the Cochrane Database of Clinical Reviews, and Google Scholar, focusing on clinical trials, observational studies, cohort studies, systematic reviews, and meta-analyses published between 1980 and 2026. The search employed the following keywords: "Sigmoid Volvulus," "Colonic Volvulus," "Endoscopic Detorsion," "Sigmoid colectomy," "Hartmann's procedure," "Intestinal obstruction," and "Colostomy." Only articles published in English were considered. Additional relevant articles were identified through manual cross-referencing of the literature. Exclusion criteria included case reports, studies with fewer than ten patients, and editorials. The study population comprised adult male and female patients, with pediatric patients being excluded.

DISCUSSION

Endoscopic decompression of sigmoid volvulus

Sigmoidoscopy is performed on patients with sigmoid volvulus to establish the diagnosis, with the classical presentation of a spiral-like twist of the lumen about 20cm from the anal verge and inability to pass the endoscope beyond this. Endoscopic detorsion involves inserting the endoscope and rotating the tip to the opposite side while using minimal air insufflation. Endoscopic decompression has a success rate of 48% to 100% and a morbidity rate of 0 to 26.4% (Atamanalp & Atamanalp, 2016). Atamanalp had performed endoscopic decompression in 748 patients with sigmoid volvulus, and the procedure was successful in 83.2% of cases; the mortality rate was 0.5%, morbidity was 1.9%, and the recurrence rate was 5.5% (Atamanalp, 2022).Da Rocha *et al.,* performed endoscopic decompression for debilitated patients with sigmoid volvulus. A total of 52 patients had undergone endoscopic decompression, and the success rate was 86.4%, but the recurrence rate was 81% after 3 months(Da Rocha *et al.,*2020).Tan *et al.,* conducted a retrospective study on the management of sigmoid volvulus. A total of 71 patients were included in this study, and 64 patients underwent endoscopic detorsion. This treatment was successful in 74.6% of the cases(Tan *et al.,*2010).

A randomized controlled trial comparing endoscopic decompression and surgical resection for the management of elderly high-risk patients with sigmoid volvulus was conducted by Negm *et al.,* The study divided a total of 18 patients into two groups: 9 who underwent endoscopic decompression and 9 who underwent surgical resection. Endoscopic decompression was associated with a shorter hospital stay and procedure time, but there were no differences in morbidity and mortality(Negm *et al.,*2023).Yalcin *et al.,* assessed the outcome of endoscopic therapy for sigmoid volvulus. A total of 18 patients were included in this study, and there was a recurrence rate of 66.7%, with elective surgery being performed in 33.3% of patients(Oter, 2022). Moro-Valdezate *et al.,* looked at the outcomes of treatment of sigmoid volvulus. A total of 92 patients were included in this study, with 43 undergoing endoscopic detorsion and 49 undergoing sigmoid resection. Endoscopic detorsion was associated with a success rate of 87.8% and a recurrence rate of 47.2%(Moro-Valdezate *et al.,*2022). The outcomes of endoscopic detorsion as a first-line therapy for sigmoid volvulus were assessed by Queneherve *et al.,* A total of 42 patients were included in this study, and endoscopic detorsion had a success rate of 96%, but it had a recurrence rate of 54% (Quénéhervé *et al.,*2019).

A systematic review and meta-analysis on the safety and efficacy of endoscopic detorsion in colonic volvulus was conducted by Sabatini *et al.,* A total of 19 studies were included in this study, and the success rate was 80%, the recurrence rate was 33.9%, and the mortality rate was 22.6%. This study showed that endoscopic detorsion was an effective first-line therapy for the initial management of uncomplicated sigmoid volvulus (Sabatini *et al.,*2026). The placement of a flatus tube following endoscopic detorsion is performed to prevent recurrence of the sigmoid volvulus. It is kept for a period of 36 to 48 hours, but it is associated with pain and discomfort, and this often leads to its dislodgement and removal (Atamanalp *et al.,*2023; Disci *et al.,*2025).

Table 1: Table showing the success rate and recurrence rate for endoscopic detorsion in the management of sigmoid volvulus

Study	Study Type	Year	N=numbers	Success rate (%)	Recurrence rate (%)
Moro-Valdezate *et al.,*	Observational study	2021	92	87.8%	47.2%
Sabatini *et al.,*	Systematic-Review & Meta-analysis	2026	3285	80% (95% CI:75-83%	33.9% (95% CI:19.5-52.1%

Surgical Management of Sigmoid Volvulus

The surgical management of sigmoid volvulus will depend on the clinical presentation, with stable patients who have undergone a successful endoscopic detorsion being offered an elective sigmoid resection with anastomosis. For patients who have undergone failure of endoscopic detorsion, and the presentation is that of acute intestinal obstruction with an ischemic or gangrenous sigmoid colon, a Hartmann's procedure is performed. If the sigmoid colon is viable than a sigmoid resection and anastomosis can be attempted(Madiba & Thomson, 2000.).The role of definitive surgery in the management of sigmoid volvulus was assessed by a retrospective study by Hardy *et al.,* A total of 25 patients underwent surgical intervention, with 13 undergoing the Hartmann's procedure and 11 undergoing sigmoid resection with anastomosis. Postoperative morbidity was similar between the groups, and there was one mortality in the Hartmann's procedure(Hardy *et al.,*2022).A multicenter observational study on the surgical management of sigmoid volvulus was conducted by Lee *et al.,* A total of 74 patients had undergone a sigmoid resection, with 35 case were done as an emergency and 29 as an elective procedure. Sigmoid resection and anastomosis were done in 46 patients, and Hartmann's procedure in 23 patients. Emergency surgery was associated with higher complications than elective surgery (40% vs 15.4%)(Lee *et al.,*2021).

A retrospective study was conducted by Ifversen *et al.,* on the surgical management of sigmoid volvulus. A total of 61 patients were included in this study; 32 underwent sigmoid resection, and 29 underwent endoscopy detorsion. The patients who underwent surgical resection had reduced morbidity and recurrence rate when compared to endoscopic detorsion(Ifversen & Kjaer, 2014). The outcomes of sigmoid resection and anastomosis and Hartmann's procedure in the surgical management of sigmoid volvulus were assessed by Shahmoradi *et al.,* A total of 102 patients were included, of which 46 had undergone sigmoid resection and anastomosis, and 56 underwent Hartmann's procedure. There were no differences in morbidity and mortality between the procedures, but Hartmann's procedure was associated with a reduced length of hospital stay(Kazem Shahmoradi *et al.,*2021). Bruzzi *et al.,* looked at the role of elective sigmoid resection following endoscopic detorsion in the management of sigmoid volvulus. A total of 33 patients had undergone sigmoid resection and anastomosis following endoscopic detorsion. The morbidity rate was at 6%, and there were no mortalities(Bruzzi *et al.,*2015).

A systematic review and meta-analysis comparing sigmoid resection and anastomosis and Hartmann's procedure in the management of gangrenous sigmoid volvulus was conducted by Awedew *et al.,* A total of 11 studies with 724 patients were included in this study. The mortality rate following sigmoid resection and anastomosis was 15%, and that of the Hartmann's procedure was 19%. There were no differences concerning the morbidity between the procedures. This study showed that both sigmoid resection and anastomosis and Hartmann's procedure were effective in the surgical management of sigmoid volvulus(A *et al.,*2023). A systematic review and meta-analysis comparing the recurrence rate and mortality between surgical resection and non-resection surgery for sigmoid volvulus was conducted by Jiang *et al.,*A total of 28 studies with 1497 patients were included in this study, with 837 undergoing surgical resection and 660 undergoing non-surgical resection. Surgical resection was associated with a reduced recurrence rate, but it was associated with a slightly higher mortality rate when compared with non-surgical resection(Jiang *et al.,*2026).

The safety and efficacy of laparoscopic surgery in the management of sigmoid volvulus were assessed by a systematic review and meta-analysis by Ndong *et al.,* A total of 22 studies with 29,874 patients with sigmoid volvulus were included, of which 2089 underwent laparoscopic surgery. Laparoscopic sigmoid resection and anastomosis were performed for an uncomplicated sigmoid volvulus. Laparoscopic sigmoid resection with anastomosis was associated with reduced postoperative complications when compared to open resection, but further studies are required to assess the efficacy of laparoscopic surgery in the surgical management of sigmoid volvulus(Ndong & Patel, 2022).

Table Ⅱ: Table showing the mortality rate between sigmoid resection with anastomosis and Hartmann's procedure for the surgical management of sigmoid volvulus

Study	Study Type	Year	N=numbers	Mortality Rate-Sigmoid resection & anastomosis (%)	Mortality Rate-Hartmann's procedure (%)
Kazem-Shahmoradi *et al.,*	Retrospective study	2012	102	0%	1.8%
A.F.Awadew *et al.,*	Systematic Review & Meta-analysis	2023	724	15% (95%CI:11-19%	19% (95%CI:65-73%

Percutaneous Endoscopic Colostomy for Sigmoid Volvulus

Percutaneous endoscopic colostomy is an endoscopic procedure that is performed for frail and old patients with sigmoid volvulus who are not fit to undergo

a definitive surgical resection. This procedure involves the use of a multichannel colonoscopy and insertion of a tube into the exterior and is performed under sedation(Tun *et al.,*2016). A systematic review was conducted by Jackson *et al.,* on the role of percutaneous endoscopic colostomy in the management of sigmoid volvulus. A total of 14 studies were included, and percutaneous endoscopic colostomy was associated with a high recurrence rate and mortality. The most common complication from the procedure was the puncture site infection(Jackson *et al.,*2020). Another systematic review on the use of percutaneous endoscopic colostomy in the management of sigmoid volvulus was conducted by Frank *et al.,* A total of 10 studies with 56 patients were included in this study, and the morbidity from the procedure was 21%, and the mortality risk was 5%. More than half of the patients who had undergone percutaneous endoscopic colostomy required the insertion of two tubes. This study endorses the use of percutaneous endoscopic colostomy in frail and old patients with sigmoid volvulus(Frank *et al.,* 2016). Barazza *et al.* prospectively assessed the role of percutaneous endoscopic colostomy in the management of sigmoid volvulus. A total of 33 patients were included in this study, and there was symptomatic relief in 26 of the patients, with morbidity seen in 10 patients and mortality in 1 patient(Baraza *et al.,*2007).

CONCLUSION

Sigmoid volvulus is one of the causes of acute intestinal obstruction that is encountered by the general surgeon. As this condition is seen in elderly patients, a prompt diagnosis is essential, and endoscopic therapy in the form of colonoscopy and detorsion should be attempted in stable patients. A flatus tube should be inserted and kept for up to 48 hours, and once the patient is stable, definitive therapy in the form of a sigmoid resection and anastomosis should be performed. For patients who undergo failure of endoscopy therapy or ischemia of the sigmoid colon, a Hartmann's procedure is performed. Surgery in the form of sigmoid resection is considered a definitive form of therapy for sigmoid volvulus.

Conflict of Interest: There is no conflict of interest.

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