Print ISSN: 2321-6379
Online ISSN: 2321-595X
DOI: 10.17354/ijss/2018/204

Original Article

A Rural Center Study of Sigmoid Volvulus

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Abstract

Background: Sigmoid volvulus is a condition in which the sigmoid colon wraps around itself and its own mesentery, causing a closed-loop obstruction. It is the second common cause of intestinal obstruction and surgical emergency in elderly and its mortality remains significant in patients with late diagnosis. Usually, they present with sudden pain abdomen, distention, constipation, and not passing flatus. Delay in diagnosing and intervention leads to serious complications such as intestinal obstruction, bowel gangrene, perforation, peritonitis, and sepsis and may be fatal.

Materials and Methods: Between May 2015 and May 2018, 20 patients of sigmoid volvulus, who reported to the Department of General Surgery, Rajah Muthiah Medical College and Hospital, were included in the study. The aim of this work is to assess the etiological factors which predispose to the sigmoid volvulus, the clinical presentations, modes of remedy, treatment outcomes, and complications in our rural population.

Results: Majority of the sigmoid volvulus occurred in the age group of above 50 years with male predominance. Almost all sufferers had mixed diet more of non-vegetarian food. Most of them belonged to poor socioeconomic group. The overall mortality was 35% in this series.

Conclusion: Sigmoid volvulus is the second common cause of intestinal obstruction in elderly males in this region accounting for 40% of large bowel obstruction cases. The mortality of patients affected by sigmoid volvulus is related to the disease stage, prompt surgical timing, functional status of the patient, and his collaboration with the clinicians in the pre-operative decision-making process. Mortality is higher in both obstructed patients with generalized peritonitis and patients affected by subocclusion with late diagnosis and surgical treatment; in both scenarios, a Hartmann's procedure is the proper operation to be considered.

Key words: Distension, Intestinal obstruction, Sigmoid volvulus

INTRODUCTION

Sigmoid volvulus first described by Von Rokitansky in 1836, is a condition in which the sigmoid colon wraps around itself and its own mesentery, causing a closed-loop obstruction.[1] Overall 2%–3% of all intestinal obstructions are due to sigmoid volvulus. It is the second most common cause of strangulating obstruction of the colon, next to carcinoma.[2] The mean age group is 50–60 years (19–75 years). Typically, the clinical presentation is an elderly person with constipation, stomach pain, and abdominal distention. This classical clinical presentation and X-ray abdomen are normally sufficient for diagnosis. Diagnostic difficulties, however, are not uncommon.[4] Both sexes are affected, with adult males predominance. Wider pelvis in females believed to provide space of spontaneous untwisting.[5]

Access this article online

www.ijss-sn.com

Month of Submission : 05-2018
Month of Peer Review : 06-2018
Month of Acceptance : 07-2018
Month of Publishing : 07-2018

The etiology of sigmoid volvulus is: A. Congenital: Idiopathic, narrow attachment of the sigmoid mesentery, lengthy mobile loop of the sigmoid colon, Hirschprung disease, pseudo megacolon and congenital bands. B. Acquired and predisposing factors: Post-operative adhesions, chronic constipation, dietary-low fiber diet, old age and medications like anti-cholinergics, ganglion blockers anti-parkinsonian drugs-and tranquilizers also cause megacolon or megacolon syndrome.[6] The predisposing factors for the sigmoid volvulus are indeed the length of the sigmoid colon and the colon distension due to chronic constipation. The trigger factor causing the twisting of the sigmoid colon, maximally distended

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by the fecal impaction in constipated patients, is a quick emptying of the terminal fecal column portion in the sigma-rectum. In many instances, X-ray abdomen gives idea about the etiology and level of obstruction. When a dilated loop of bowel is seen, clinicians need to identify the level of obstruction, the loop of dilated bowel proximal to it, in addition to the undilated bowel distal to it. X-ray abdomen is normally sufficient for identifying the level of obstruction. However, surgical exploration itself is the best way; correct pre-operative analysis will reduce the morbidity and mortality.

Delay in analysis and intervention may cause sigmoid ischemia, infarction, peritonitis, and septicemia, ensuing in mortality of as much as 60%.[7] In most instances, decompression may be accomplished with insertion of a rectal tube or by flexible sigmoidoscopy.[8] However, sigmoidoscopy is contraindicated in patients who have developed bowel gangrene (consisting of those with sepsis, fever, or peritonitis).[9]

Emergency laparotomy and resection with or without primary anastomosis is indicated when non-operative techniques fail, or if strangulation, infarction, or perforation is suspected.[10] Post-operative mortality ranges from 6% to 60%. Factors related to poor prognosis encompass advanced age, delayed diagnosis, intestinal infarction, peritonitis, and shock at presentation.

MATERIALS AND METHODS

A total of 20 patients of sigmoid volvulus, admitted in all surgical units of Rajah Muthiah Medical College and Hospital, Annamalainagar, Chidambaram, from May 2015 to May 2018 were studied. The study also includes the etiological factors which predispose to the sigmoid volvulus, the clinical presentations, modes of remedy, the treatment outcomes, and its complications.

RESULTS

The total number of patients treated during the study period at the General Surgery Department was 20.

Age-wise distribution of sigmoid volvulus is shown in Table 1.

Majority of the sigmoid volvulus occurred in the age group of above 50 years, 12 out 20 forming 60%. Sigmoid volvulus is seen with same frequency among the age groups 21–30 years, 31–40 years, and 41–50 years and these accounted for remaining 40% of patients. In this study, the youngest patient was 28-year-old female and the oldest patient was 69-year-old male. It is very uncommon beneath the age of 20 years and above 70 years.

Sex-wise distribution of sigmoid volvulus is shown in Figure 1. Males and females were affected in 17 and 03 cases, respectively. We found the majority of sigmoid volvulus occurring in elderly male population. The ratio of male and female is 4:1.

Most of them belonged to poor socioeconomic group. The dietetic habit also plays a major role 90% of our sufferers is mainly non-vegetarians remaining had mixed diet [Table 2].

In the existing observe, distention of the stomach (100%) is the most common symptom accompanied by way of constipation (90%) and abdomen pain (60%) [Table 3].

When the bowel was viable, 65% of the patients survived irrespective of the surgical operation performed. One affected person (35%) died in the hospital [Table 4].

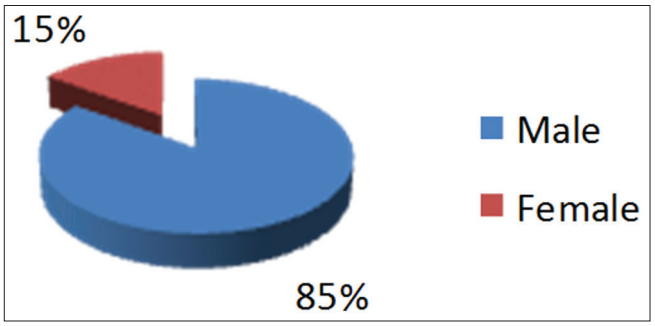

Figure 1: Sex-wise distribution of sigmoid volvulus

Table 1: Age-wise distribution of sigmoid volvulus

Age group	Number of patients
11–20	0
21–30	1
31–40	3
41–50	4
51–60	6
61–70	6
Total	20

Table 2: Occupation of the patients

Occupation	Number of patients (%)
Cooli	13 (65)
Housewife	3 (15)
Agriculture	4 (20)

Table 3: Mode of presentation

Symptoms	Number of patients (%)
Pain in abdomen	12 (60)
Distension of abdomen	20 (100)
Constipation	18 (90)
Vomiting	11 (55)
Retention of urine	1 (5)
Fever	1 (5)

DISCUSSION

Clinical Features

In this study, the most common age group affected is 51–70 years (60%) and the mean age is 55.5 years [Table 5].

We found the majority of sigmoid volvulus occur in elderly males and are less common in females as they have wider pelvis. Many literature shows male preponderance [Table 6].

Treatment

The fact that many operative approaches had been described but no single operation is suitable for all patients. The primary problem is a high prevalence of recurrence after the commonly performed procedures such as rectal tube deflation, laparotomy and simple derotation, and operative derotation, and fixation of the "omega loop" to the lateral or anterior abdominal wall.

Díaz-Plasencia *et al*. subjected 15.4% of the patient for this treatment and found 100% cure rate. In our present study, 10% patients underwent derotation and fixation to abdominal wall procedure with 100% cure rate [Table 7]. High incidence of post-operative recurrence has been noted by Shepherd[17] and Anderson and Lee[8]. Resection of the sigmoid colon nearly prevents recurrence as stated using Hines *et al*.,[18] Chakrabarty *et al*.,[3] Anderson and Lee,[8] and Khanna *et al*.[19,20]

Resection and end-to-end anastomosis as an emergency procedure have its own morbidity and mortality.

Table 4: Various types of surgery performed and outcome of the procedure

Procedure	Number of patients	Cured	Expired
Primary sigmoid resection and end-to-end anastomosis	8	4	4
Primary sigmoid resection and end-to-end anastomosis with diversion colostomy	4	4	-
Hartmann's procedures	6	3	3
Derotation and fixation to abdominal wall	2	2	-

Table 5: Age incidence by various authors

Study group	Mean age (years)
De[13]	45.06
Ballantyne *et al. al*.[11]	68.5
Connolley *et al*.[14]	78
Atamanalp[15]	58.6
Present study	55.5

Díaz-Plasencia *et al*.[8] subjected 56.9% of sufferers for primary resection and end-to-end anastomosis and observed 87% cured and 13% mortality. Peoples *et al*.[10] study 47.6% of patients were subjected to primary resection and end-to-end anastomosis, but 73.7% of patients were cured and 26.3% mortality. In our present examine, 60% of sufferers underwent primary resection and end-to-end anastomosis with cure rate 66.7% and mortality 33.3% [Table 8].

In this study, 30% of patients underwent Hartmann's procedure with 50% cured and mortality 50% [Table 9]. De *et al*.[13] performed surgical treatment on 196 cases of sigmoid volvulus. Derotation and fixation to abdominal wall for 1 case, primary sigmoid resection and end to end anastomosis in gangrenous bowel of 195 cases, and mortality was 1.01%.

In the prevailing observe, 20 cases of sigmoid volvulus diverse kinds of surgical procedures performed, in instances of derotation and fixation to the abdominal wall, there is no mortality. However, in the case of Hartmann's technique, the mortality rate is excessive, that is, 50%. Hence, the overall mortality is much less in viable bowel in comparison to the gangrenous bowel.

Table 6: Sex incidence by various authors

Study group	M: F ratio
Atamanalp[15]	4.7:1
Sankaran[16]	5:1
De.[13]	2.07:1
Ballantyne *et al*.[11]	1.4:1
Connolley *et al*.[14]	5:3
Khanna *et al*.[19]	2.5:1
Present study	4:1

Table 7: Derotation and fixation to the abdominal wall

Study group	Number of patients	Cured (%)	Expired (%)
Díaz-Plasencia *et al*.[17]	19	19 (100)	0
Present study	2	2 (100)	0

Table 8: Primary sigmoid resection and end-to-end anastomosis/with diversion colostomy

Study group	Number of patients	Cured (%)	Expired (%)
Díaz-Plasencia *et al*.[17]	69	60 (87)	9 (13)
Peoples *et al*.[10]	19	14 (73.7)	5 (26.3)
Present study	12	8 (66.64)	4 (33.36)

Table 9: Hartmann's procedures

Study group	Number of patients	Cured (%)	Expired (%)
Díaz-Plasencia *et al.*[17]	35	24 (68.6)	11 (37.4)
Peoples *et al.*[10]	15	13 (87)	2 (13)
Present study	6	3 (50)	3 (50)

A study of 20 cases who presented with sigmoid volvulus was conducted at Rajah Muthiah Medical College and Hospital, during the period of May 2015–May 2018.

Sigmoid volvulus was found more common in males than females, and the highest incidence is seen in patients above 50 years of age of life. Sigmoid volvulus constituted 50% of the total large bowel obstructions second common cause next to carcinoma of colon in elderly males. Emergency laparotomy was carried out in all patients. The surgeries such as derotation and fixation to abdominal wall had good outcome. It had been executed in viable bowel. Mortality is seen higher with procedures such as resection and anastomosis and Hartmann's methods which were carried out in gangrenous bowel.

The presence of shock, bowel gangrene, colonic perforation, major comorbidity, advanced age, and emergency surgery increases the mortality rate. The overall morbidity is 6%–24%, and wound infection, incisional hernia, wound dehiscence, intra-abdominal abscess, anastomotic leakage, and stomal complications are the main problems.

Nevertheless, emergency surgery is required for patients in whom peritonitis, bowel gangrene, or perforation and intestinal obstruction is present or in those for whom non-operative treatment is unsuccessful.

Although emergency surgery includes various non-definitive or definitive procedures such as derotation, sigmoidopexy, or sigmoid resection with primary anastomosis or stoma. Resection with primary anastomosis, which has an 8%–33% mortality rate, is the most commonly recommended procedure because of the high recurrence rate of non-definitive procedures. After the resection of gangrenous segment, Hartmann's or Mikulicz procedures may be lifesaving, particularly to unstable patients, and the mortality rate of the stoma procedures has been reported to be 25%–67%. Although laparoscopic techniques of sigmoid resection, sigmoidopexy, and extraperitonealization have been described, their role is generally limited to elective surgery.

Although there has been considerable controversy about the ideal definitive procedure, elective sigmoid resection and anastomosis are generally recommended for good-risk patients after a successful nonoperative derotation. These procedures also have a low mortality rate of 0% to 15%. The mortality of patients with sigmoid volvulus treated surgically is closely related to the disease stage, a prompt surgical timing, and the patient functional status. Mortality is higher in both obstructed patients with generalized peritonitis and patients with late diagnosis and delayed surgery in advanced stages.

In this subset of patients, the achievement of an early diagnosis through CT scan performance is strictly advised.

CONCLUSION

- Sigmoid volvulus is more common in this region accounting for 50% of large bowel obstruction.
- Majority of the patients are elderly above the age of 50 years.·
- The male: female ratio is 4:1.·
- Almost all sufferers had mixed diet. Most of them belonged to poor socioeconomic group.·
- Delay in seeking medical aid ended in gangrene.·
- The mortality is more in patients with gangrene than without gangrene.·
- No single established etiological factor noted, and eventually, there is no single operative procedure beneficial in all sufferers.·
- The average mortality was 35%.·

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How to cite this article: Ravisankar P, Swaminathan A, Ali AA, Gopikrishna D. A Rural Center Study of Sigmoid Volvulus. Int J Sci Stud 2018;6(4):45-49.

Source of Support: Nil, **Conflict of Interest:** None declared.