

A Clinical Study of Sigmoid Volvulus

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Abstract

Introduction: Volvulus of the sigmoid colon is a common cause of intestinal obstruction. Typically, an elderly patient presents with constipation, abdominal pain, and distension of sudden onset. Delay in the diagnosis and treatment can lead to serious complications such as like bowel gangrene, perforation, peritonitis' and sepsis.

Materials and Methods: This study is a prospective study of 32 cases of sigmoid volvulus, carried out as regards to the etiological factors which predispose to the sigmoid volvulus, the clinical features, modes of treatment and the outcomes, at Mahatma Gandhi Memorial Hospital, Warangal, for a period of 2-year.

Results: Patients were younger relatively healthy, physically active prior to the onset of the volvulus. An absence of associated diseases was a notable feature. Almost all patients were consuming high residual vegetable and cereal diet. Most of them belonged to poor socio-economic group. The overall mortality was 18.75% in this series. Those who survived the episode were able to return to their earlier vocation.

Conclusion: Sigmoid volvulus is a common disorder in this region accounting for 40% of large bowel obstruction cases. Almost all our patients were consuming high residual vegetable and cereal diet. Most of them belonged to poor socio-economic group. The role of strong anterior abdominal wall is not allowing distension of the colon (which is so common in high cereal and vegetable diet), forcing the colon to shift sideways, is the causative factor for volvulus to occur is to be considered.

Key words: Complications, Intestinal obstruction, Mortality, Sigmoid volvulus, Surgery

INTRODUCTION

Sigmoid colon volvulus, defined as an abnormal twisting of the sigmoid colon around its mesentery, is an infrequent cause of colonic obstruction.¹ Sigmoid volvulus accounts for 2-3% of all intestinal obstructions. Yet it is the most common strangulating obstruction of the colon, being second, only to carcinoma as a cause of colonic obstruction.²

The mean age of sigmoid volvulus patients is 49 years (range 19-75).³ Typically, an elderly patient presents with

constipation, abdominal pain, and distension of sudden onset. This classical clinical picture together with plain radiographs is usually sufficient to diagnose the condition. Diagnostic difficulties, however, are not uncommon. A recent report from Finland, where the disease is endemic, confirms the problem of poor diagnostic accuracy.⁴

Sigmoid volvulus affects both sexes, with males being affected more. It is believed that wider pelvis which provides space of spontaneous untwisting, and a lax abdomen are said to be the reasons for lesser rate in females.⁵

The etiology of sigmoid volvulus is:

- Congenital: Idiopathic, narrow attachment of the sigmoid mesentery, long mobile loop of the sigmoid colon, Hirschprung disease, pseudo megacolon and congenital bands.
- Acquired and predisposing factors: Post-operative adhesions, loaded colon resulting from chronic constipation, dietary-large, heavy course diet, old age

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and drugs like anti-cholinergics, ganglion blockers anti-parkinsonian drugs and tranquilizers also have been said to produce megacolon or megacolon syndrome.⁶

In many instances, the etiology and level of obstruction can be identified radiologically. When a dilated loop of bowel is seen, clinicians have to identify the level of obstruction, the loop of dilated bowel proximal to it, as well as the undilated bowel distal to it. An abdominal radiograph is usually sufficient for diagnosing the level of bowel obstruction.

Although surgical exploration itself is an accepted mode for diagnosing acute abdomen, accurate pre-operative diagnosis will reduce the morbidity and mortality. Delay in diagnosis and treatment may lead to sigmoid ischemia, infarction, peritonitis, and septicemia, resulting in mortality of up to 60%.⁷ In most instances, decompression can be done non-operatively with insertion of a rectal tube, or performing flexible sigmoidoscopy.⁸ However, sigmoidoscopy should not be performed in patients who have developed clinical evidence of bowel gangrene (such as those with sepsis, fever, or peritonitis).⁹

Emergency laparotomy and resection with or without primary anastomosis is indicated when non-operative methods fail, or when there is evidence of strangulation, infarction, or perforation.¹⁰ Post-operative mortality ranges from 6% to 60%. Factors associated with poor prognosis include advanced age, delay in diagnosis, presence of intestinal infarction, peritonitis, and shock at presentation.

MATERIALS AND METHODS

Source of Data

For this study, the patients admitted in all surgical units of Mahatma Gandhi Memorial Hospital, Warangal, due to sigmoid volvulus were selected.

This study is a detailed study of 32 cases of sigmoid volvulus, carried out as regards to the etiological factors which predispose to the sigmoid volvulus, the clinical features, modes of treatment and the outcomes. The duration of study was 2 years and was conducted from November 2012 to October 2014.

Inclusion Criteria

All the patients who presented to surgical Outpatient Department at Mahatma Gandhi Memorial Hospital, Warangal, with large bowel obstruction due to sigmoid volvulus.

Exclusion Criteria

All cases of large bowel obstruction other than due to sigmoid volvulus were excluded.

RESULTS

Incidence

Males and females were affected in 25 and 07 cases, respectively (Figure 1).

It would appear that sigmoid volvulus occurs almost with equal frequency between the age groups 21-30 years, 31-40 years, and 41-50 years and these groups accounted for 52.5% of patients. The maximum number, i.e. 25% were belong to 51-60 age group. This disease is very uncommon below the age of 20 years and above the 70 years (Table 1).

All our patients were active and physically fit prior to the onset of the sigmoid volvulus. Majority of these patients (72.5%) were involved in strenuous work for their lively hood.

All our patients belonged to poor socio-economic status and mainly consumed diet rich in roughage and bulky in quantity.

The dietetic habits are also on the general predictable lines. 90% of our patients consumed mainly vegetarian diet and the remaining consumed mixed diet (Table 2).

In the present study distention of the abdomen (100%) was the most common symptom followed by constipation (93.75%) and pain abdomen (75%) (Table 3).

When the bowel was viable, 93.75% of the patients survived irrespective of the surgical procedure carried out. One patient (6.25%) died in the hospital (Table 4).

Table 1: Age distribution of cases

Age in years	Total no	Percentage
11-20	3	7.5
21-30	4	12.5
31-40	6	20.0
41-50	6	20.0
51-60	8	25.0
61-70	4	12.5
71-80	1	2.5

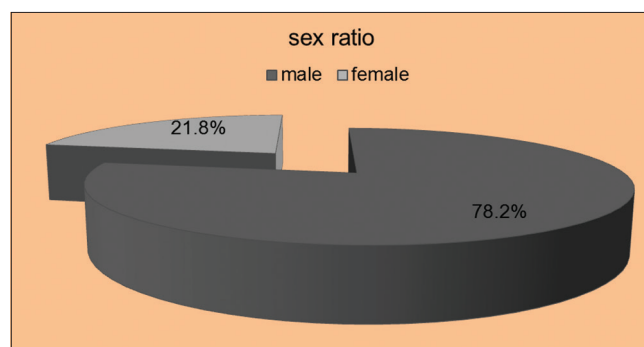


Figure 1: The ratio of male and female is 3.5:1 in this study

Amongst the patients with gangrenous bowel (16), 56.25% (9) patients survived. 5 patients (31.25%) expired and 2 patients (12.5%) left against medical advice. It would be more appropriate to group these patients as probably died (Figure 2).

DISCUSSION

Clinical Features

In the present study of sigmoid volvulus, 80 cases of large bowel obstruction were studied, among which 32 cases were due to sigmoid volvulus (Table 5).

In the present study, the most common age group was 51-60 years (25%) and mean age being 55.5 years (Table 6).

The male to female ratio in patients with sigmoid volvulus is variable. However, the review of the literature indicates that there is a general male preponderance (Table 7).

Treatment

The treatment of sigmoid volvulus has been varied. These variations depended on many factors such as general health of the patient prior to the onset of the disease, condition at the time of operation, availability of ancillary help such blood, investigations facility, and individual preference of the surgeon. The fact that many operative procedures have been described in the treatment of sigmoid volvulus and would probably mean that no single operation is suitable

in all patients, or there is the difference in the outlook of a pattern of the disease.

The basic problem in management of the patients is a high incidence of recurrence of sigmoid volvulus 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. High incidence of post-operative recurrence has been noted by Shepherd,¹⁸ Anderson and Lee.⁸

Resection of the sigmoid colon almost prevents recurrence noted by Hines *et al.*,¹⁹ Chakrabarty *et al.*,²⁰ Anderson and Lee,⁸ Khanna *et al.*¹⁷ Resection and end to end anastomosis as an emergency procedure, in an un prepared bowel, in conditions like that make the situation far from ideal and in our under nourished patients has its own price in the increased morbidity and mortality.

Díaz-Plasencia *et al.* subjected 15.4% of patient for this treatment and found 100% cure rate. In our present study, 31.2% patients underwent derotation and fixation to abdominal wall procedure with 100% cure rate (Table 8).

Díaz-Plasencia *et al.*²¹ subjected 56.9% of patients for this treatment and found 87% cure rate and 13% mortality. Peoples *et al.*¹⁰ study 47.6% of patients were subjected to primary resection and end to end anastomosis, however, 73.7% of patients were cured and 26.3% mortality. In our present study, 31.2% of patients underwent primary resection and end to end anastomosis with cure rate 60% and mortality 30%. One patient left against medical advice (Table 9).

Table 2: Occupation of the patients

Occupation	Number of patients	Percent
Cooli	19	60
House wife	9	27.5
Agriculture	4	12.5

Table 3: Modes of presentation

Symptoms	Number of patients	Percent
Pain in abdomen	24	75
Distension of abdomen	32	100
Constipation	30	93.75
Vomiting	15	47.5
Retention of urine	02	6.25
Fever	01	3.12

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

Procedure	Number of patients	%	Cured (%)	Expired (%)	Left against medical advice (%)
Derotation only	6	18.75	5 (83.3)	1 (16.7)	-
Derotation and fixation to abdominal wall	10	31.25	10 (100)	-	-
Primary sigmoid resection and end to end anastomosis	10	31.25	6 (60)	3 (30)	1 (10)
Hartmann's procedures	6	18.75	3 (50)	2 (33.3)	1 (16.7)

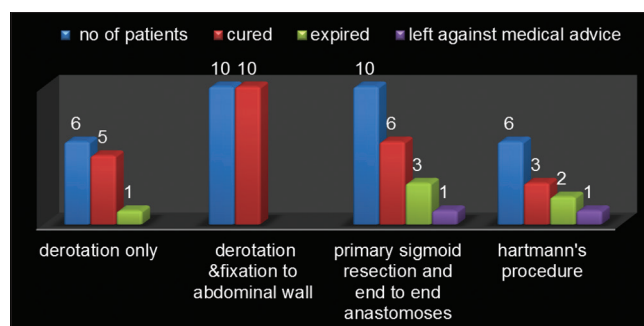


Figure 2: Various types of surgeries and its outcome

Table 5: Incidence of sigmoid volvulus in large bowel obstruction

Study group	Sigmoid volvulus as a percentage of large bowel obstruction
Ballantyne <i>et al.</i> ¹¹	43
Echenique Elizondo and Amondaraín Arratibel ¹²	52
Present study	40

Table 6: Age incidence by various authors

Study group	Mean age (years)
De <i>et al.</i> ¹³	45.06
Ballantyne <i>et al.</i> ¹¹	68.5
Connolley <i>et al.</i> ¹⁴	78
Atamanalp ¹⁵	58.6
Present study	55.5

Table 7: Sex incidence by various authors

Study group	M:F ratio
Atamanalp ¹⁵	4.7:1
Sankaran ¹⁶	5:1
De <i>et al.</i> ¹³	2.07:1
Ballantyne <i>et al.</i> ¹¹	1.4:1
Connolley <i>et al.</i> ¹⁴	5:3
Khanna <i>et al.</i> ¹⁷	2.5:1
Present study	3.5:1

Table 8: Derotation and fixation to abdominal wall

Study group	Number of patients	%	Cured (%)	Expired (%)
Díaz-Plasencia <i>et al.</i> ²¹	19	15.4	19 (100)	0
Present study	10	31.2	10 (100)	0

Díaz-Plasencia *et al.*²¹ subjected 28.7% of patients for this treatment and found 68.6% cure rate and 37.4% mortality. In Peoples *et al.* study 26.6% of patients were subjected to Hartmann's procedure with 87% cure rate and 13% mortality. In present study, 18.75% of patients were subjected to Hartmann's procedure with cure rate of 50% and mortality 33.3%. One patient left against medical advice (Table 10).

De *et al.*¹³ conducted surgery on 196 cases of sigmoid volvulus. Derotation and fixation to abdominal for 1 case, primary sigmoid resection and end to end anastomosis in gangrenous bowel of 195 cases, and mortality was 1.01%.

In the present study, 32 cases of sigmoid volvulus various types of surgeries conducted, in cases of derotation and fixation to the abdominal wall, there is no mortality. However, in case of Hartmann's procedure the mortality rate is high i.e., 33.3%. So the overall mortality is less in viable bowel compared to the gangrenous bowel.

Table 9: Primary sigmoid resection and end to end anastomosis

Study group	Number of patients	%	Cured (%)	Expired (%)
Díaz-Plasencia <i>et al.</i> ²¹	69	56.9	60 (87)	9 (13)
Peoples <i>et al.</i> ¹⁰	19	47.5	14 (73.7)	5 (26.3)
Present study	10	31.2	6 (60)	3 (30)

Table 10: Hartmann's procedures

Study group	Number of patients	%	Cured (%)	Expired (%)
Díaz-Plasencia <i>et al.</i> ²¹	35	28.7	24 (68.6)	11 (37.4)
Peoples <i>et al.</i> ¹⁰	15	26.6	13 (87)	2 (13)
Present study	6	18.75	3 (50)	2 (33.3)

CONCLUSION

A study of 32 cases who presented with sigmoid volvulus was conducted at Mahatma Gandhi Memorial Hospital, Warangal, during the period November 2012 to October 2014.

Emergency laparotomy was conducted in all the cases. Sigmoid volvulus is more common in males than females, and highest incidence is seen in 5th and 6th decade of life. Sigmoid volvulus constituted 40% of the total large bowel obstructions.

The outcome of the surgical procedures, such as derotation and fixation to abdominal wall were good. These procedures were carried out in viable bowel.

Mortality was observed to be higher in procedures like resection and anastomosis and Hartmann's procedures which were carried out in gangrenous bowel.

- Sigmoid volvulus is a common disorder in this region accounting for 40% of large bowel obstruction cases
- The male:female ratio is 3.5:1
- Our patients were younger relatively healthy, physically active prior to the onset of the volvulus. An absence of associated diseases was a notable feature
- Almost all our patients were consuming high residual vegetable and cereal diet. Most of them belonged to poor socio-economic group
- The role of strong anterior abdominal wall is not allowing distension of the colon (which is so common in high cereal and vegetable diet), forcing the colon to shift sideways, is the causative factor for volvulus to occur is to be considered. This at best is speculative
- In most of our patients, the diseases progressed gallopingly
- Delay in seeking medical aid resulted in gangrene.

Understandably, the mortality was more in patients with gangrene than without gangrene

- When the sigmoid colon was gangrenous, resection and end to end anastomosis was carried out. This had a high mortality
- In old debilitated patients, with associated gangrenous bowel Hartmann's procedure were conducted. This has got high mortality
- There is no single universal etiological factor, progress of the diseases is varied, the physical and mental status of patients is different in different areas, and finally, there is no single operative procedure useful in all patients
- The overall mortality was 18.75% in this series. Those who survived the episode were able to return to their earlier vocation.

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