



Original Article

Acute Sigmoid Volvulus: Outcome of Primary Resection & Anastomosis in a Tertiary Hospital

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Abstract

Background: Sigmoid volvulus occurs when the sigmoid colon twists on its mesentery and is a cause of intestinal obstruction.

Method: This was a descriptive study conducted at the Surgery department of Rajshahi Medical College Hospital during the period from May 2009 to June 2011. Ethical consideration was taken from all the patients. The sample size was 50 with acute sigmoid volvulus. Data were processed and analyzed through SPSS (Statistical package for social sciences). A value of $p \leq 0.05$ was considered significant statistically.

Result: Most patients (56%) were diagnosed with acute sigmoid volvulus from the age range of 51-60, among whom male patients had a prevalence (92%). Most of them (92%) were economically impoverished. 36% of patients came to the hospital for treatment from 37-48 hours of illness. The post-operative complication was mild due to wound infection in 10% of patients. Hospital stay was 8-10 days for 76% of patients without complications postoperatively and 11-13 days for 14% of patients. Severe complication resulting in hospital stay was seen in 4% of patients.

Conclusion: Emergency resection of the sigmoid colon and anastomosis in unprepared bowel was an attractive and preferred option in a setting where patients are poor, hospital care often unaffordable and hospital beds are few.

Keywords: Sigmoid Volvulus, Mesentery, Resection, Anastomosis, Intestinal.

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Introduction

The anticlockwise twisting of the sigmoid colon around its mesentery is known as sigmoid volvulus.¹ The root of the long sigmoid mesentery attaches to the posterior abdominal wall at an exceptionally acute angle. This may predispose the sigmoid colon to twist around the mesenteric axis. Among the risk factors in America,

including chronic constipation, a high-fiber diet, SND, and Chagas disease.² It accounts for 8% of intestinal blockage in all cases.³ Distension, constipation, plain film abdomen, large bowel obstruction, and barium enema are used to diagnose this situation. Perforation, peritonitis, and septicemia all contribute to sigmoid volvulus deaths.⁴ Literature has shown that to treat

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sigmoid volvulus by resection and immediate anastomosis, out of 83 patients, seven were wound infected, 3 needed operative drainage and culture, and the mortality was 0% as resection of sigmoid volvulus after decompression is a safe method.⁵ A study revealed primary anastomosis was performed on over 80 patients to treat acute sigmoid volvulus without colonic lavage, in which 16 patients (20%) had wound infection, and the mortality rate was 0% in this case.⁶ According to Sule AZ et al. 2007, 27 patients had primary resection of the redundant sigmoid colon after intraoperative antegrade colonic irrigation.

Four patients (13.3%) had wound infections, and 25 to 50 minutes ranged intraoperative colonic irrigation with a volume of saline needed to get a clean colon range of 1.5 to 5.0 liters.⁷ An article on Med Channel has shown that the overall rate of abdominal infectious complications was 10% in group 1 (without mechanical bowel preparation) and 21% in group 2 (preoperative bowel preparation with normal saline). One patient (1%) in group 1 and 6 (5.5%) in group 2 had an anastomotic leak. 9% in group 1 and 18% in group 2 had extra-abdominal complications. It revealed that colorectal surgery without mechanical bowel preparation is safe.⁸ As single-stage treatment without colostomy lowers surgeries, and related morbidity and mortality reduce hospital stay, another study published that single-stage primary anastomosis without colonic lavage for acute sigmoid volvulus was performed in 197 patients who experienced bowel decompression, resection, and primary colonic anastomosis. Two patients had anastomosis leak, and the mortality rate was 1.01% postoperatively.⁹ In a study by Keane PF et al., it was revealed six patients with left-sided colonic obstruction were treated by immediate resection and anastomosis using the intraluminal bypass procedure, and the mortality rate was 0.¹⁰ In this study, acute sigmoid volvulus was treated by primary resection and anastomosis, through which patients recovered in an early stage, and the mortality rate was considerably low.

Results

This study investigated 50 cases of sigmoid volvulus resection and primary anastomosis using manual decompression only. The following data were reviewed in order to determine the outcome of primary resection and anastomosis in individuals with acute sigmoid volvulus.

Objectives

The primary purpose is to assess the efficacy of definitive one-stage resection of the redundant colon and primary anastomosis in patients with acute sigmoid volvulus.

Materials and Methods

This was a descriptive study conducted at the department of surgery in Rajshahi Medical College Hospital, Rajshahi. The study period was from May 2009 to June 2011. Ethical consideration was approved by the patients and legal guardians of the patients verbally, and written consent was taken from each individual. All cases of acute sigmoid volvulus without perforation were taken as a sample with 50 cases. All the patients with acute sigmoid volvulus who underwent primary resection and anastomosis during the study period met the inclusion criteria. Data were collected through a structured questionnaire and informed consent was obtained from all patients. Data processing and analyzing were done using SPSS (Statistical package for social sciences) and elicited as mean \pm SD or in frequency percentage. The statistically significant p-value was ≤ 0.05 for the study.

Inclusion Criteria:

- ✓ Both males and females of any age group diagnosed as sigmoid volvulus were included in this study.
- ✓ Informed written consent was taken from all patients.
- ✓ The diagnosis of sigmoid volvulus was made from the history of constipation, abdominal pain (which was often recurrent), abdominal distension, vomiting, and plain abdominal X-ray.
- ✓ In these X-rays, the cardinal sign was the coffee bean or omega sign of the distended, twisted, sigmoid colon.

Exclusion Criteria:

Patients with features of perforation, peritonitis & septicemia.

Table 01: Age and sex incidence of the patients (n=50)

Age in years	Number of patients		Percentage (%)	
31-40	2		4	
41-50	4		8	
51-60	28		56	
61-70	12		24	
71-80	4		8	
Sex of patients (Total Cases)	Male	Percentage (%)	Female	Percentage (%)
50	46	92	4	8

This table has shown that the majority (56%) of the patients were within the age range of fifty-one to sixty, and prevalence in the early age is trivial. Furthermore, among them, male predominance (92%) was observed.

Table 02: Socio-economic status based on yearly income of the patients (n=50)

Status	Total	Percentage (%)
Poor (Up to 60,000 Tk. Per year)	46	92
Average (Up to 1,20,000 Tk. Per year)	4	8
Rich (Above 1,20,000 Tk. Per year)	0	0

Table 2 shows that most of the patients whose number were forty-six (92%) were poor, and their yearly income was up to 60,000 Taka per year. No patients (0%) had been found that come from the higher socio-economic group.

Table 03: Duration of acute illness (n=50)

Duration in hours	No. of patients	Percentage (%)
<12 hours	0	0
12-24 hours	4	8
25-36 hours	14	28
37-48 hours	18	36
49-60 hours	10	20
61-72 hours	4	8

This table has shown that most patients, i.e., 18 (36%), came to the hospital within thirty-seven to forty-eight hours of acute illness. Fourteen patients (28%) had come within twenty-five to thirty-six hours of illness. Ten patients (20%) had come within forty-nine to sixty hours of illness. The duration of illness was twelve to twenty-four hours and sixty-one to seventy-two hours for four patients (8%) each. No patients had come within twelve hours or less in acute illness.

Table 04: Incidence of post-operative complication

Post-operative complication	No. of patients	Percentage (%)
Mild	5	10
Moderate	3	6
Wound infection	1	2
Wound Dehiscence		
Burst Abdomen	1	2
Respiratory complication	2	4
Anastomotic leakage	0	0
Death	0	0
Total	12	24

Table 04 indicates that, a total of twelve patients had developed post-operative complications. Among them, five patients (10%) had mild, three patients (6%) had moderate wound infection, and one patient (2%) had wound dehiscence and burst abdomen, respectively. The respiratory complication was in two (4%) patients, and there were no anastomotic leakage and death among any patients, and thirty-eight patients (76%) were discharged without any complication.

Table 05: Time of hospital stay (n=50)

Duration (POD)	No. of patients	Percentage (%)	Remarks
8-10	38	76	No post-operative complication
11-13	7	14	Mild complication
14-16	3	6	Moderate complication (Wound infection)
17-20	2	4	Severe complication (Wound dehiscence & burst abdomen)

The above table has shown that thirty-eight patients (76%) could be discharged within eight to ten days without any post-operative complications after primary resection and anastomosis. Seven patients (14%) had to stay in the hospital for around eleven to thirteen days and had a mild post-operative complication. Three patients (6%) stayed in the hospital for fourteen to sixteen days for moderate wound infection after the operation. Only two patients (4%) had to stay seventeen to twenty days for severe post-operative complications like wound dehiscence and burst abdomen.

Discussion

The present study shows the outcome of primary resection and anastomosis performed in 50 patients of Rajshahi Medical College Hospital for acute sigmoid volvulus, which constitutes 30 to 35% of all cases of intestinal obstruction in the subcontinent.¹¹ The mortality rate in sigmoid volvulus surgery is 12-25% in unstable patients.¹² Sigmoid volvulus is the most common reason for significant gut obstruction in Bangladesh,¹³ which is 58.1%.¹⁴ Most patients are diagnosed with volvulus in the fifth to the sixth decade of their life.

Most of the patients in this study were from the age range 51-60 years (56%) and 61-70 years (24%), and among them, most of them were male (92%). The prevalence in the early age group is trivial. Several pieces of literature also show that in Bangladesh, the male prevalence of volvulus is high due to the workload of men which causes them to take a meal at night, which results in constipation more often. And due to capacious pelvis and lax abdominal wall, the prevalence is lower in women.¹⁵

The study has demonstrated that most of the patients (92%) came from poor socio-economic backgrounds, leading them to come to the hospital late. Most patients came after 24 to 60 hours of illness, whose percentage was 84. 28% came within 36 hours, 36% came within 48 hours, and 20% within 60 hours. Boulvin also showed in his study that most males were farmers and day laborers, for they could not come to the hospital in time.¹⁶

Common symptoms for sigmoid volvulus were abdominal pain and distension in all patients (100%), acute constipation in ninety-two (92%) percent of patients, and nausea and vomiting in seventy percent (70%) cases. Visible peristalsis and abnormal bowel sound were seen in thirty (30%) and twenty-four (24%) cases, respectively, in this study. According to Walter and Israel, abdominal pain, distension, constipation, diarrhea, nausea and vomiting, visible peristalsis, and

abdominal bowel sound were 100%, 100%, 75%, 25%, 10-14%, 45.4%, and 70%, respectively.¹⁷

The present study shows that emergency laparotomy was conducted in 50 cases due to diagnosis or derotation failure. Primary resection and anastomosis were performed without intraoperative colonic lavage in viable and non-viable bowels in 50 cases. Resection does not have any recurrence and has a comparatively high mortality rate compared to other modern surgery.¹⁸ But for sigmoid volvulus, generally resection is recommended.

In this study, 12 patients (24%) had a post-operative complication, whereas 38 patients (76%) had no complications. Mild to moderate wound infection was in 8 patients (16%) and only 2 patients had wound dehiscence and burst abdomen each. No death was recorded in all 50 cases.

A study conducted by Mulugeta and Awlachew in 2019 showed that, out of 469 patients who underwent resection and anastomosis, 43.8% of them were diagnosed with gangrenous bowel. Within 29 patients, 13 had wound infection, 6 had wound dehiscence and 4 had anastomosis leakage as post-operative complications.¹⁹

Table 05 shows that most of the patients (76%) had not stayed in the hospital for more than 10 days as they had no post-operative complications. Seven patients (14%) had to stay for mild complications within 11 to 13 days, and three (6%) patients for moderate complications within 14 to 16 days. Only two (4%) patients had to stay up to 20 days in the hospital. In Mulugeta and Awlachew's study, the hospital stay range was 3 to 38 days, and the average hospital stay was 13.5 days.²⁰

This study has found that the morbidity and mortality rate in sigmoid volvulus depend on the time elapsed between the onset of symptoms and coming to the hospital. Therefore, post-operative care, a management protocol, and an experienced and skilled surgeon also play an essential role in sigmoid volvulus treatment.

Conclusion

Surgeons face difficulties treating sigmoid volvulus even with today's advanced medical technology. So, it is recommended that primary resection and anastomosis of sigmoid volvulus should be done more frequently if the patient is fit and the time to clear the bowel is enough.

Conflict of interest: None declared

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