

New surgical modification in sigmoid volvulus surgery in tribal areas of central India population

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Citation this Article: Dr. Atul Kumar khare, Dr. Kuldeep Patel, Dr. Dhananjay Majhi, “New surgical modification in sigmoid volvulus surgery in tribal areas of central India population”, IJMSIR- December - 2022, Vol – 7, Issue - 6, P. No. 91 – 98.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract.

Sigmoid volvulus is not an uncommon cause of intestinal obstruction. Sigmoid volvulus is defined as torsion of the sigmoid colon around its mesenteric axis, which leads to acute large intestine obstruction, which, if left untreated, often results in life-threatening complications, such as bowel ischemia, gangrene and perforation. The purpose of this study is mainly to evaluate the clinical features and new surgical treatment technique, complication and outcome of this method, in patients with sigmoid volvulus

Methods: This was a prospective study of 24 patients presented with the features of SV to govt. medical college Shah dol [tribal area of central India] from February 2022 to November 2022. All the data formulated in frequency charts. The clinical features, preoperative radiological and operative findings, surgical procedure performed, postoperative complications, mortality and duration of hospital stay (DHS) after surgery were reviewed.

Results – we studied the new surgical technique in SV patients with better surgical outcomes. There were 21 patients (87.5%) were males and 3 patients (12.5%) were

females. The age of the patients ranged from 30-80 years most of them ranged between 50-70 years.

The most common presenting symptoms were absolute constipation and generalized abdominal distension followed by abdominal pain. Most common signs were tenderness followed by tachycardia and fever. All the patients were investigated by clinical symptoms, plain abdominal X-ray and Hema to logical investigations. Among the patients, 6 had distended gangrenous SV, 15 patients were discovered to have distended non-gangrenous and the 3 patients had a perforated gangrenous sigmoid colon volvulus.

Mostly treated by followed by sigmoidectomy with primary anastomosis bypassing flatus tube [n=14, 58.33%] followed by sigmoidectomy with stoma [n=10, 41.66%].

This technique mean operative time is 140 min. Majority of patients discharged [mean hospital stay- 14 days], only 1 [4.3%] patient died in this technique. Hospital stay is more in RA with passing flatus tube patients but postoperative outcomes are better. Vomiting most common postoperative complication followed paralytic ileus. Sigmoidectomy should be the basic principle in

management of sigmoid volvulus and primary anastomosis can be performed safely in selected patients without increasing morbidity and DHS.

Conclusions: SV is more predominant in old aged males. This new surgical technique for sigmoid volvulus management is simple, less operative time taking, less complication and have good postoperative outcomes. Most important good postoperative outcomes, and bypassing the stoma related complication and second operation of stoma closure.

Keywords: Sigmoid colon, Strangulation, Volvulus

Introduction

Sigmoid volvulus is a serious condition in which a redundant sigmoid loop rotates around its narrow, elongated mesentery, producing ischaemia and necrosis of the sigmoid colon, followed by rapid distention of the closed loop.

It is a common cause of colonic obstruction in India, Eastern Europe, and Scandinavia (1). SV is defined as torsion of the sigmoid colon around its mesenteric axis which leads to acute large intestine obstruction, which, if left untreated, often results in life-threatening complications, like bowel ischemia, gangrene and perforation. [1,2].

The cause of SV is not known. Primary predisposing factors include a long congenital sigmoid with a short mesenteric base, chronic constipation, high fibre diet, acquisitive mega colon, anticholinergic drugs, sedatives and anti-Parkinson agents. [11]

Rotation nearly always occurs in an anticlockwise direction and the degree of rotation varies from 180 degree to complete rotation. The loop may rotate half a turn, in which event spontaneous rectification sometimes occurs. After the loop has rotated one and a half turn, the veins will be compressed and the loop become greatly congested.

If it rotates more than one and a half turn, the blood supply is cut off entirely and the loop becomes gangrenous. [12] SV is a good example of closed loop obstruction, allowing entry of some intestinal from more proximal bowel but preventing their egress and if the ileo-caecal valve is competent, a double closed loop obstruction result with huge distention. [13,14]

Early and correct diagnosis of this disease is essential for appropriate treatment aimed at correcting abnormal pathophysiological changes and restoring intestinal transit caused by the volvulus. Emergency surgery is the appropriate treatment for those who present with diffuse peritonitis, intestinal perforation or ischemic necrosis. [5,6]

Clinical presentations include abdominal pain, constipation and abdominal distention. In older patients receiving psychotropic medications, pain is not usually common, although it would be associated with significant abdominal distention. [3] The diagnosis is usually confirmed with abdominal X-ray examination, sigmoidoscopy, Computerized Tomographic (CT) and blood test. [15-19]

Various surgical procedures have been advocated for sigmoid volvulus such as sigmoidectomy with primary anastomosis, sigmoidectomy with Hartmann's or Paul-Mikulicz colostomies, meso-sigmoidoplasty, percutaneous endoscopic or open sigmoidopexy, tube sigmoid colostomy, laparoscopy-assisted sigmoid colectomy, and extra-peritonealisation of sigmoid colon (6-12).

In this prospective study, we evaluated the clinical features, new surgical treatment methods and the main postoperative complications of patients with sigmoid volvulus.

Material and methods

This was a prospective study of 24 patients presented with the features of SV to govt. medical college Shahdol [tribal area of central India] from February 2022 to December 2022. Main aim of the study to studied the causes of high incidence of SV, clinical features, management, complication and outcomes and modification of SV surgery in resection and anastomosis by passing flatus tube, its benefits and outcomes.

All suspected cases presented to surgical emergency department or outpatient and presence of perforation were excluded.

Data including demographic features, risk factors, clinical presentation, diagnosis, modification of surgical technique, post-operative complications, duration of hospital stay, and outcomes were recorded. All data were described with frequency and percentage and presented in frequency tables.

Follow-up data were obtained from medical records to assess late complications and recurrence rate.

Statistical analysis: Student's t-test was used to compare DHS expressed as mean \pm standard deviation. Comparisons of complication rates, concurrent diseases, and recurrences were analysed with Fisher's exact test. P value < 0.05 was considered significant.

Surgical method

Patient explored and sigmoidectomy done, then passing flatus tube within the lumen around 5cm proximally, primary anastomosis [end to end] done with vicryl- 2'0 round body suture.

Flatus tube fixed at perianal margins. Bilateral abdominal drain was inserted after proper peritoneal washing. Postoperatively patient keep NBM for till the bowel sound not comes and patient passing flatus and motion. Patient follow up for long postoperative periods for any complications.

Limitations

- 1] when long segment of colon gangrenous.
- 2] when patient vitally unstable or very old age, hypo-proteinemia, immunocompromise and where anastomotic leak risk is very high.

Advantages

- 1] less operative time required.
- 2] not required ileostomy formation hence not required second operation.

Disadvantages

- 1] more risk of anastomotic leak.
- 2] long duration of hospital stays.

Results

In this study, author had 24 patients presented with the clinical features of SV. The results are-

There were 21 (87.5%) male and 3 (12.5%) female patients, with the male to female ratio was 7:1.

- The study showed that the age distribution of this patients ranged from 30-70 years. The highest incidence was in the 50-70 years age group, in which author had 16 patients (66.6%).
- Most patients are coming from rural area 22 [91.6%] with low socioeconomic status.
- Most patients have pure vegetarian 18 [75%] consume high fibre rich diet.
- Most commonly abused material ganja 20 [80%], alcohol 18 [75%], and tobacco 18 [75%] peoples.
- Most common comorbidity is hypertension 14 [58.3%], hypertension with diabetes 10 [41.6%], diabetes 8 [33.3%], anaemia 7 [29.1%], hepatitis 4 [16.6%] and tuberculosis 2 [8.33%].
- 19 patients (79.1%) gave history of chronic constipation, 12 patients [50%] consumes high fibre diet, 3 patients (12.5%) were institutionalized with neuropsychiatric disorder, 2 patients [8.3%] have bed ridden due to previous surgery.

Table 1:

Parameter	Sigmoid volvulus cases	Percentage
Age		
≤30y	0	0
30-50y	4	16.66
50-70Y	16	66.66
≥70y	4	16.66
Sex		
Male	21	87.5
Female	3	12.5
Residency		
Rural	22	91.6
Urban	2	8.3
Diet		
Pure vegetarian	18	75
Mixed	6	25
Abuse		
Alcohol	18	75
Ganja	20	80
Tobacco	18	75
Socioeconomic status	22	91.6
Low	1	4.2
Lower-middle		4.2
Middle		
Comorbidity		
Hypertension	14	58.3
Diabetic	8	33.3
Hepatitis-b	4	16.66
Tuberculosis	2	8.33
Htn+dm	10	41.6
Anemia	7	29.1

In this sample of patients, the main presenting symptoms were constipation and abdominal distension 23 patients (95.8%) followed by abdominal pain 21 [87.5%] and

vomiting 22 (41.6%) patients. Main signs are tenderness 87.5%, tachycardia 83.3%, icterus 41.6%, respiratory distress and oliguria 12.5% cases.

Table 2:

Parameter	Frequency	Percentage
Symptoms -		
Abdominal distension	23	95.8
Constipation	23	95.8
Abdominal pain	21	87.5
Vomiting	10	41.6
Fever	12	50
Sign		
Tenderness	21	87.5
Tachycardia	20	83.33
Icterus	10	41.6
Respiratory distress	3	12.5
Oliguria	3	12.5

All the patients were investigated by plain abdominal X-ray and hematological investigations. The X-ray showed characteristic features in 18 patients (75%) having the appearance of omega sign of the dilated colon with the apex of the loop under the left hemidiaphragm and the convexity of the loop points towards the right upper quadrant. Of the remaining 6 patients, 3 (12.5%) showed distended ileal loops in a distended sigmoid colon 3 patient (12.5%) showed free air under diaphragm.

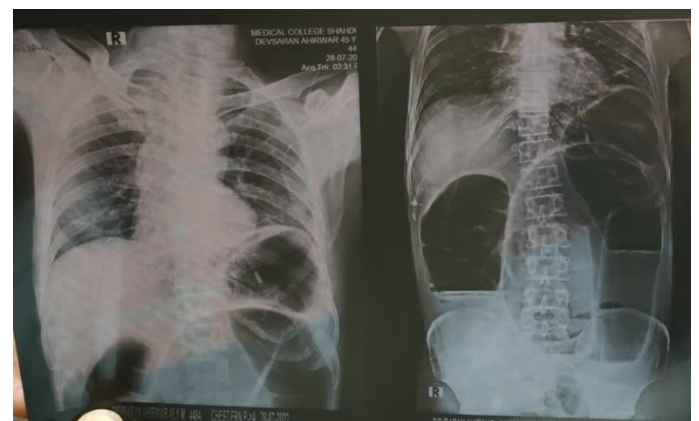


Figure 1:

Regarding the treatment of the patients, all of them were suspected clinically to have an underlying strangulation, and therefore underwent emergency surgery rather than non-operative treatment. 6 cases (25%) were proved intraoperatively to have gangrenous bowel.

- The majority were managed by sigmoidectomy combined with colostomy/ileostomy in patients who had established gangrenous sigmoid colon or a sigmoid colon with questionable viability after operative detorsion.



Figure 2:

Table 3:

Treatment		
Sigmoidectomy with RA with ileostomy	10	41.66
Sigmoidectomy with colorectal anastomosis by passing flatus tube	14	58.33
Complications		
Postoperative vomiting	8	33.33
Anastomotic leak	4	16.66
Paralytic ileus	6	25
Obstruction	4	16.66
Outcomes		
Discharge	21	87.5
Death	3	12.5

- The interval between onset of symptoms and admission ranged from 1 day to 10 days.
 - No patient underwent contrast enema examination of the colon.
 - No patient underwent non-surgical management. All patient were operated urgently.
- Sigmoidectomy with anastomosis with ileostomy done in 10 patients [41.66%].
- Sigmoidectomy and primary anastomosis bypassing flatus tube was done in 14 patients (58.33%) who had viable sigmoid colon at laparotomy. This procedure
- 1] mean surgical time around 140 minutes.
 - 2] mean postoperatively orally allow time 6 days.
 - 3] most common complication- vomiting followed by leak.
 - 4] there are two patient goes to re-exploration and one patient goes to death.
- Most common post-operative complications are vomiting [33.3%], paralytic ileus [25%], anastomotic leak and obstruction [16.66%].
- Majority of patients discharged [87.5%] and 12.5% patients died.

Discussion

Various surgical procedures have been adopted for the management of non-gangrenous sigmoid volvulus such as meso-sigmoidoplasty and extra peritonealisation on of the sigmoid colon in an attempt to prevent recurrence, without subjecting the patients to the risk of resection and anastomosis (8, 12-15).

Most authors agree that the definitive treatment of sigmoid volvulus is sigmoidectomy with or without anastomosis (6-7, 16). However, resection with primary anastomosis in emergency situations, when the general condition of the patient is suboptimal and bowel not prepared, carries an unacceptably high complication rate (15). As a result, elective resection of the sigmoid colon has frequently been advised (4, 17-19). Endoscopic deflation and rectal tube application in the absence of clinical, laboratory or radiological signs of bowel necrosis or perforation allows stabilization of the patient and converts an emergent colon surgery to an elective procedure.

In this study, resection of the sigmoid colon with primary anastomosis (n = 14, 58.33%) was the preferred surgical treatment of sigmoid volvulus in thick-walled megacolon without any general or local factors that might jeopardize the healing process in colonic anastomosis (e.g., hypo proteinemia, gangrenous colon, generalized peritonitis, and Faecal loading of the colon). Otherwise sigmoidectomy with anastomosis with ileostomy (n = 10, 41.66%) procedures was carried out for devitalized colon.

Sigmoid resection, whether urgent or elective, is associated with a relatively high mortality rate (10, 21, 22). In the present study there were three deaths (12.5%), one in resection anastomosis with flatus tube group and two in resection anastomosis with stoma group. This contrasts with findings from Africa in which the

mortality rate was higher after colectomy with primary anastomosis than after colectomy with temporary colostomy followed by secondary anastomosis in the emergency management of the colon volvulus (23).

Conclusion

This study suggests that sigmoidectomy with primary anastomosis by passing flatus tube is an easy and less time taking procedure with good postoperative outcomes, and bypassing the stoma related complication and second operation of stoma closure. The continuity of the bowel can be restored safely by primary colonic anastomosis without significantly increasing the rate of post-operative complications.

This surgical procedure should be attempted in selected patients, Otherwise, resection of the sigmoid colon with temporary colostomy procedures is the most convenient alternative surgical procedure in unsuitable conditions

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