

A study of volvulus of sigmoid colon: a 4-year experience in a tertiary-care hospital in Gujarat

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Abstract

Background: Sigmoid volvulus is one of the common causes of intestinal obstruction; it is frequently reported in volvulus belt including Middle and South Africa, Turkey, and Indian subcontinent. Controlling sigmoid volvulus is often difficult because of its occurrence in high-risk patients and the related perioperative illness and death rates.

Objective: To describe the clinical presentation, type of surgical procedures performed, and to determine the prognosis of sigmoid volvulus.

Materials and Methods: This was a descriptive prospective study of 70 patients admitted in the Department of Surgery at General Hospital, Ahmedabad, Gujarat, India, during the period of May 2006–January 2010. Record of age, sex, symptoms, duration, radiological findings, types of surgery performed, postoperative complications, mortality, duration of hospital stay, and follow-up data were obtained.

Result: A total of 70 patients were studied. The mean age of incidence of volvulus is around 52 years with male to female ratio around 2:1. Most of the patients presented with acute intestinal obstruction in which emergency laparotomy was performed. Resection and primary anastomosis were done in 60% of cases. Colostomy was performed in 40% of cases owing to gangrene and perforation. Surgical site infection was the most common complication with mortality of 20% owing to delayed presentation, septicemia, and associated medical illness.


Conclusion: Sigmoid volvulus is usually presented as intestinal obstruction affecting elderly male patients, which requires urgent resuscitation and surgical approach; if bowel is found viable, resection and primary anastomosis is performed, while in case of gangrenous bowel, temporary colostomy should be performed. Early diagnosis and definitive surgical treatment are needed to establish low morbidity and mortality.

KEY WORDS: Sigmoid volvulus, intestinal obstruction, clinical features, management, complications

Introduction

Sigmoid volvulus, defined as an abnormal twisting of the sigmoid colon around its mesentery, is an age old disease condition.^[1] The ancient Ebers papyrus have described the

natural history of sigmoid volvulus.^[2] Sigmoid volvulus contributes around two-thirds of all cases of colonic volvulus. There are certain factors that are associated with this condition such as chronic constipation and aging, with the average age of presentation being in the seventh to eighth decades of life. It is common in developing countries and affects elderly male subjects and institutionalized and neuro psychiatric patients. Although the exact causative factor is not known, high residual diet, narrow attachment of pelvic colon, long pelvic meso-colon, overloaded colon owing to chronic constipation, and bands are predisposing factors.^[3] Patients with sigmoid volvulus may present with the symptom triad of constipation, severe abdominal pain, and a distended abdomen.^[4] Diagnosis is determined by plain radiograph with computed tomography (CT) scan and barium studies.^[5] Treatment of the sigmoid

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volvulus starts with appropriate resuscitation, and, in most cases, involves nonoperative decompression. If volvulus is not relieved promptly, then, it will lead to compromised blood supply to bowel, which results in perforation, septic shock, and death. Various surgical procedures such as resection and primary anastomosis, derotation and sigmoidopexy, exteriorization (Hartmann's procedure), Paul–Mikulicz colostomy, and mesocoloplasty are advocated for surgical treatment.^[6] Endoscopic sigmoidopexy, laparoscopic-assisted sigmoid colostomy, and endoscopic derotations are also upcoming.^[7]

The aim of this study was to describe the clinical presentation, type of surgical procedures performed, and to determine the prognosis of sigmoid volvulus.

Materials and Methods

This prospective study was performed in the Department of General Surgery at General Hospital in Ahmedabad, Gujarat, India, during May 2006–January 2010. The study was approved by the Institutional Ethics Committee. All patients with definitive diagnosis of sigmoid volvulus were included in this study. Prior written and informed consent of patients were taken for inclusion in the study. The source of information were patients' records, and all information related to patients' demographic characteristics, radiological investigations, surgical procedures performed, para clinic tests, treatment response, and course of their recovery or death were recorded in a case record form. The patients were followed up for postoperative complications, recurrence, and mortality. After discharge, patients were reexamined for possible complications on the tenth day after surgery, then every 15 days for 3 months, and then every month for a total of 1 year. The data were analyzed using descriptive statistics as frequency and percentage for the qualitative variables and mean and standard deviation for the quantitative variables.

Result

A total of 70 patients were admitted in the Department of General Surgery over a period of 4 years during May 2006–January 2010 were studied. Higher incidence was found in 50–60 years age group. Among them, 46 patients were male subjects, and 24 patients were female subjects, with a male to female ratio of 2:1. Majority of patients (62) presented with acute intestinal obstruction, while eight patients showed sub-acute obstruction. One of the most common clinical features presented with patients was abdominal distention (88%) [Table 1].

Diagnosis was made on plane X-ray showing grossly distended sigmoid colon with multiple air fluid level, and "coffee bean sign" was found in 42 (62%) patients. Barium study was done in eight patients, and nine patients underwent CT scan of abdomen, in which "whirlpool sign" was found.

Table 1: Clinical features in sigmoid volvulus

Clinical features	Number of patients	Percentage
Abdominal distention	62	88
Colicky abdominal pain	58	82
Vomiting	51	72
Abdominal tenderness	27	38
Dehydration	49	70
Palpable mass	30	42
Constipation	56	80

Table 2: Types of surgical treatment and mortality

Type of surgical procedure	Number of patients	Mortality
Primary resection and anastomosis	42	10
Bowel exteriorization	28	6

Table 3: Postoperative complications

Complications	Number of patients
Wound infection	20
Skin excoriation	14
Pneumonia	12
Electrolyte imbalance	14
Septicemia	16
Uremia	6
Cardiac failure	2
Anastomotic leak	4

All 70 patients underwent exploratory laparotomy, in which 62 (90%) patients were operated on emergency basis, and six patients were operated on elective basis. Primary resection and anastomosis were performed in 42 patients, while colostomy was performed in 28 patients [Table 2].

A total of 20 patients developed postoperative complications, in which wound infection was the most common [Table 3]. Average length of hospital stay was around 14 days. Mortality in this study was found in 16 (28.5%) patients, of whom 10 patients were of primary resection and anastomosis and six patients of bowel exteriorization. In 54 patients who survived, 30 patients were in follow-up up to 1 year. Colostomy closure was performed in 20 cases successfully. Rest of the patients was loss to follow-up.

Discussion

Sigmoid volvulus is the third major cause of colon obstruction in adults after cancer and diverticula. This disease is very common in specific regions such as Asia, Africa, Middle East, Eastern Europe, and South America. Geographically, sigmoid volvulus is more common in developing country than developed country that accounts for 20%–40% of the cases.^[8]

In India, it is more common in Bihar, Madhya Pradesh, Uttar Pradesh, and Maharashtra.^[9]

The most common age group affected in our study was of 50–60 years. Elderly age group was found to be the most commonly affected in various studies.^[6,10,11] Male subjects were found to be more commonly affected (male:female— 2:1) in this study. This male predominance involvement in the disease was also supported by studies.^[6,10–12] Women have wider pelvis, which attribute lower incidence in them over men.

Majority of patients (90%) are present with classical features of intestinal obstruction such as distention of abdomen, vomiting, constipation, and abdominal pain with signs of abnormal bowel sound, tympany, palpable mass in abdomen, empty rectum, and dehydration. These signs and symptoms of our patients were similar to those described in literature.^[9] Diagnosis of this condition was made based on typical clinical findings and X-ray findings.

All 70 patients underwent exploratory laparotomy. Primary resection and anastomosis were performed in 42 patients, while colostomy was performed in 28 patients. Mortality was found in 16 (28.5%) patients in this study. A review of different studies showed that the mortality of those with viable bowel was 12.3%, but where the bowel is gangrenous, a mortality of 52.8% can be expected.^[13]

Conclusion

Sigmoid volvulus is one of the causes of intestinal obstruction in which mechanical twisting of bowel around 180 degrees. Abdominal pain, constipation, distention, and vomiting are common symptoms, while palpable mass, tympany, guarding and rigidity, dehydration, and septic shock are common signs. Early diagnosis is essential to its success of surgical outcome, because delay in diagnosis leads to closed-loop obstruction of affected bowel. Rapid fluid resuscitation with surgical exploration is essential where primary resection and anastomosis is most desirable, however, if gangrenous bowel is present, it is necessary to terminate the procedure by exteriorization (Hartmann's procedure). High mortality is attributed to failure in making early correct surgical diagnosis and surgical intervention.

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