



SIGMOID VOLVULUS; SIGMOID VOLVULUS FREQUENCY OF POST-OPERATIVE COMPLICATIONS OF PRIMARY REPAIR.

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ABSTRACT... Introduction: Sigmoid volvulus is the surgical emergency and significant cause of large bowel obstruction in with high morbidity and mortality. Disease is more prevalent in developing countries than developed countries. It contributes 15% of total bowel obstruction. Resection and primary anastomosis is the procedure of choice. It obviates the need of colostomy and subsequent reversal. **Objectives:** To determine the frequency of postoperative complications of primary repair in patients with either viable or gangrenous sigmoid volvulus. **Study Design:** Retrospective study. **Setting:** Surgical Unit 1 of Peoples Medical College Hospital now Medical University. **Period:** 2007 to Dec. 2013. **Methodology:** Patients with large bowel obstruction suspected to have sigmoid volvulus on clinical and radiological grounds were studied. Laparotomy and resection of sigmoid colon followed by restoration of the continuity of the colon by single layer primary anastomosis were performed without colostomy. **Results:** In a total 50 patients, sigmoid volvulus male female ratio was 9:1. Mean age was 49 years majority of the patients were in 6th to 7th decade of age. In 96% cases abdominal pain was the 1st symptom followed by constipation and distention, vomiting was the rare symptom. Different postoperative complication results were surgical site infection was the commonest complication in 40 (80%) while in 1 (2%) leak was there with mortality of only 1(2%) case. **Conclusion:** Primary resection and single stage anastomosis is the best choice for the management of sigmoid volvulus disease in both possibilities of viable or non viable gut provided patients condition is stable. It obviates the burden of colostomy

Key words: Complication Rate, Primary Resection, Sigmoid Volvulus, Stoma.

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INTRODUCTION

Sigmoid volvulus is the common cause of large bowel obstruction in many parts of the world including Pakistan. It is more prevalent in underdeveloped countries like Iran, India, Africa than developed world.^{1,2}

The causes may be multiple starting from over loading of the colon by bulky diet to adhesions, irregular dietary habits, mega colonic condition. Sigmoid Volvulus is most common form of GI tract volvulus, redundant Sigmoid colon that has narrow meso colon attachment twist around its own axis resulting into partial or complete obstruction of luminal contents as well as it's blood supply leading to ischaemia of colon. It accounts for up to 8% of all intestinal obstruction. Disease affects mostly male and elderly population of the society, always has a history of constipation.

Redundant sigmoid colon with narrow mesenteric attachment to Posterior abdominal wall allows close approximation of two limbs of sigmoid colon to twist around its own axis. This torsion is usually in counter clock wise direction ranging from 180 to 540 degrees. Luminal obstruction generally occurs at 180 degree, venous occlusion at 360 degree resulting into gangrene and perforation.^{3,4}

A better understanding of physiology of fluid and electrolytes, improved anaesthetic technique, careful pre-operative management, better operational technique and good post operative management has reduced the mortality and morbidity of one stage resection and anastomosis in case of sigmoid volvulus in both cases of viable as well as gangrenous cases. Apart from this, caecum is the next site of volvulus, next may be small bowel, transverse colon and even stomach.

Rationale of the study was to determine the results of primary one stage treatment of resection and anastomosis in viable or non-viable gut without stoma formation and establish the benefits of decreased morbidity and cost effectiveness of primary closure.^{5,6}

OBJECTIVES OF SUTY

It is to determine the frequency of post operative complications of primary repair without stoma formation in sigmoid volvulus cases of the patients with viable and non-viable gut.

MATERIAL AND METHODS

This is a retrospective study conducted over 50 patients, admitted at Surgical Unit 1 of Peoples Medical college Hospital now medical University conducted from 2007 to Dec. 2013.

All the patients suffering from large bowel obstruction with clinical presentation and their imaging were analysed with typical findings of bird beak appearance deformity on plain X-Ray abdomen with clinical features of abdominal pain, constipation and distention of abdomen were noted.

This study included total of 50 patients of whom 45(90%) were male and 5(10%) were female admitted at above hospital. A tertiary care set up at Nawabshah city mostly draining the four districts patients of mid part of Sindh Province. All the patients were admitted through the outdoor patient department OPD or casualty (emergency) department. Diagnosis was made on history, clinical examination and ultrasound with radiological supported investigations with all the routine investigations including cardio respiratory tests were performed. After taking consent from the patient and their relatives, they were informed about surgical procedure. All the clinical and radiological tests, cardiac fitness, chest and physician opinion and fitness were taken. Patient is fully examined including per rectal digital examination were taken with anesthetist opinion, preoperative use of antibiotics, nasogastric aspiration tube (in case of vomiting), catheterization were done. Diagnosis was based on history, clinical examination, x

ray abdomen (erect) as well as decubition film were taken. Patients with co morbid problems like septicaemia, hemodynamic instability, uncontrolled diabetes mellitus, hypertension, COPD (chronic obstructive pulmonary disease) were excluded from the study they would have act as confounders and produce bias in the study.

All the patients were resuscitated before surgical intervention. After pre operative management emergency leprotomy were performed. Procedure was performed by senior surgeon available mostly by Head of unit (professor) or associate professor.

Exploratory laparotomy through midline incision was performed. Gut was found massively dilated, which was derotated in counter clock wise direction and was managed by resection and anastomosis primarily Keeping in view not to spillage any contents externally. In 47(94%) cases accurate diagnosis was made of sigmoid volvulus. In 10(20%) cases gut was found gangrenous where primary resection and anastomosis was performed, and only in 2(4%) cases Hartman's procedure was done. In both cases contamination was there and Patients' condition was not stable. In no single case sigmoidoscopy was attempted or any per rectal hydrotherapy was done. In rest of 3(6%) cases there was annular type of growth found at rectosigmoid part of gut.

All the patients were put on I.V fluids, antibiotics, metronidazole, fluids restricted for 5 to 7th postoperative day.

RESULTS

A Total of 50 patients were included in this study, whom 45(90%) were male and only 5(10%) were female with male and female ratio is 9:1.

The age of the patients ranged between 45 to 80 years. Majority of the patients were in 5th and 6th decade of life.

All 50 patients presented with abdominal pain, followed by constipation. In 48(96%) cases, abdominal distension was also there. Vomiting was a rare 8(16%) symptom. Bleeding per

rectum was present only in 4(8%) cases. Clinical examination revealed abdominal distension more on left side with visible bowel loops in 45(90%) cases. Abdominal tenderness was not a common finding present only in 10(20%) cases so was of abdominal guarding. In no case palpable mass was there. Bowel function was exaggerated in 30(60%) cases and absent in 15(30%) cases while equivocal is 5(10%) cases. P/R and proctoscopic examination revealed no specific findings ultrasound examination were done in 45(90%) cases showing massive dilatation of the gut. Plain x ray abdomen in erect and decubitus position were taken. Erect film showing bird beak appearance, omega sign in 45(90%) cases with largely dilated part of bowel. Depending on availability in no case, sigmoidoscopic examination either rigid or flexible were performed.

Patients were resuscitated with I/V fluids, antibiotics with metronidazole support were given before surgical procedure.

In postoperative complications major complication was main wound sepsis. In 40(80%) cases minor wound sepsis like stitch abscess, gaping of wound, seroma were there. While 15(30%) had dehiscence of whole wound which was resutured later on. 4(8%) Cases developed pelvic abscess which was drained Per rectally. In single case (2%) patient developed faecal fistula on 10th post operative day which was managed by taking out stoma formation only 1(2%) patient died on 5th post operative day due to high sepsis.

Age	Total Number of Patient
1-10	-
11-20	-
21-30	-
31-40	-
41-50	5
51-60	20
61-70	15
71-80	10

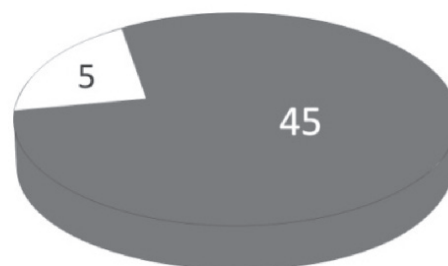
Table-I. Age group percentage

Symptoms	Number of Patients	Percentage
Pain abdomen	50	100%
Constipation	50	100%
Distention of abdomen	48	96%
Vomiting	8	16%
Bleeding per rectum With Fever	4	8%

Table-II. Common mode of presentation.

Procedure	Number of patients
Sigmoidopexy	3
Primary sigmoid resection and end to end anastomosis	45
Hartmann's Procedures	2

Table-III. Types of surgeries performed and out come



45 Male 5 Female

Figure; Sex ratio

DISCUSSION

Sigmoid volvulus is one of the common cause of large gut obstruction in developing countries and Pakistan is an endemic region for this disease. It may be related to high fiber content diet. It is common in male aged above 60yrs. Highest incidence was seen in between 6th and 7th decade of life.

Sex ratio is interestingly varies in different studies from 2:1 to 10:1.^{7,8}

In our study it is 9:1. Important predisposing factor is redundant sigmoid colon with high elongated mesentery and narrow base. The predisposing factors Like irregular dietary Factors mega colon, mal rotation, intussusception may contribute to volvulus. There is a great racial and geographical

variations in incidence of sigmoid volvulus. In Pakistan it is said to be commonest in pathans but in our study no such factor has been found neither any seasonal effect has been noted. In United States, it is more common in blacks than in whites.^{9,10,11}

In patients with typical triad of abdominal pain, distension and constipation in a male above 60yrs, disease can be suspected of sigmoid volvulus. As in our study, 47(94%), cases were correctly diagnosed on history, clinical examination and imaging help. Late admissions is always a problem for patients as well as for doctors as it carries bad prognosis. Past episodes of same attacks history might be there with derotation attempts. Physical findings are abdominal distension usually asymmetrical and located in upper and mid abdomen on left side with visible peristalsis and empty rectum are favourable sign for diagnosis in our cases. Presence of dark stained melanic bleeding, rebound tenderness and muscular guarding may alert for gangrene and perforation of the gut. Plain x ray abdomen usually demonstrate a dilated sigmoid colon with multiple small or large intestinal air fluid levels. Several radiological signs are described in literature starting from bird beak, omega sign, horse shoe sign, Y sign, coffee bean sign to empty left iliac fossa sign. Plain X-Ray has been found diagnostic from 60-90% cases. In our series it is positive in 90% cases. Commonest in our series to our look was bird beak sign and omega sign with multiple air fluid levels which is typical for diagnosis but still it requires experience and attention to the disease.^{12,13}

Regarding contrast studies and endoscopic examination used as diagnostic tool of sigmoid volvulus both only show luminal narrowing may be helpful in derotation or reducing it. Or to exclude other causes like malignancy, strictures, diverticulitis but these two special investigations were not performed in our set up nor any CT scanning was done.

A variety of approaches has been recommended for treating sigmoid volvulus in literature like endoscopic decompression, colonic hydrostatic enema followed by elective laparotomy.^{14,15}

We have not tried these in our set up. After making provisional diagnosis and pre operative resuscitation, exploratory laparotomy was performed in all 50 cases. Among all in 37(74%) cases gut was viable hence one stage primarily resection and anastomosis was performed. While 10(20%) cases were with gangrenous bowel of whom in 8(16%) cases one stage primary resection and anastomosis was done in a same way as in viable gut taking care not to spillage any contents externally especially in these cases where there was no any contamination of peritoneal cavity.

Two (4%) cases, where circumstances were not favourable we proceed for Hartman's procedure. Mean duration of symptoms varies between 2-6 days. Abdominal pain and distention are the main symptom in acute sigmoid volvulus followed by constipation, nausea, vomiting, bleeding per rectum, dehydration signs and fever are the last features.

The Results of different post operative complications in our series were, wound infection in 40(80%) cases of whom 8(16%) cases developed wound dehiscences and rest 32(64%) developed minor wound septic problems like stitch abscess, seroma, local abscess, local wound gaping. All however were treated conservatively or resuturing was done in case of wound gaping. 4(8%) cases developed pelvic abscess which were drained rectally. Only single patient developed fecal fistula on 10th postoperative day which was managed by stoma formation only 1 (2%) patient died on 5th postoperative day due to high sepsis.

The diagnosis of acute sigmoid volvulus is established by clinical and radiological findings which is quite adequate for achieving the correct diagnosis. Abdominal computed tomography (CT) usually reveals dilated colon with an air fluid level with "whirl sign" which represent twisted colon and mesentery. Classical bird beak sign on plain x ray was present in 90% cases which is matching with most of other series.^{16,17,18} Non operative management was not tried in any single case due to acuteness of symptom and due to high recurrence rate. Treatment of choice at this

stage is resection with primary anastomosis if conditions permit like stable condition of the patient adequate and acceptable preoperative management of patients with good anesthetists facility and operative hand. This is cost effective procedure as well as socially acceptable. As colostomy procedure is cumbersome process. As in our series majority of the patients underwent one stage procedure of resection and anastomosis in 96% cases of both viable and nonviable cases which is also matching with other series of studies, colostomy was performed only in 2(4%) cases.

Sigmoid volvulus remains a major cause of colonic intestinal obstruction. Globally it shows geographic variations being higher in developing countries than in developed world.. it accounts for 2 to 5% of colonic obstruction in western countries and 20 to 50% in eastern countries including Africa.^{19,20} There is marked preponderance of male patients with sigmoid volvulus as in our study this ratio is high to 9:1 suggestion behind this is that there is more spacious female pelvic area allow a greater possibility of spontaneous reduction of a beginning volvulus. Another predisposing factor is meso colon which is longer in men but wider in female. Heavy loading is more likely to cause sigmoid volvulus in presence of a longer mesentery.^{21,22}

Clinical presentation of sigmoid volvulus in our patients is not different from those in other studies with abdominal pain, constipation, and abdominal distention being common to all the patients. In this study, the classic triad of abdominal pain, abdominal distention and constipation was reported in 96% comparable to other series.²³

In keeping with other studies, surgical site infection was the most common postoperative complication in our study 40(80%) out of total cases developed surgical site infection from minor like stitch abscess to wound dehiscence which is quite high it is due to emergency surgeries as compared to elective operation and in patients with gangrenous bowel undergoing resection.

The mean hospital stay in our study is 10 days

which is matching with other series,²⁴ length of hospital stay is related to complications as wound complication which prolong the stay so in most of our cases it is due to this complication only single case developed leakage on 10th postoperative day which was evident from fever, tachycardia and fullness of abdomen with leakage from drain. Mortality rate in our study is only 1 (2%) which is very minimal and was due to sepsis results.

This study shows encouraging results of primary one stage resection and anastomosis in case of sigmoid volvulus in both viable as well as non viable gut provided patients condition is stable with limited contamination of peritoneal cavity and prompt pre operative and postoperative management one can avoid the load of colostomy and its complications.

CONCLUSION

In case of abdominal catastrophic, like sigmoid volvulus prompt surgical resuscitation, use of pre-operative antibiotic, with prompt diagnosis with surgical relief of obstruction help to reduce the morbidity and mortality in patients of sigmoid volvulus.

Application of modern pre-operative resuscitation, use of antibiotic, managing redundant colon viable or non-viable by one stage primary resection and anastomosis reduces the cost of endoscopic or various types of enemas and and then mainly for elective surgical treatment of volvulus in turning to stoma formation all increase the morbidity and cost of the patient as well as demoralisation in our society.

So it is concluded that primary one stage procedure of resection and anaestomosis without colostomy is worth applying technique with low morbidity and even low mortality, It can be applied to viable or non-viable gut at the same time.



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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Altaf Hussain Ghumro	Introduction, Data collection.	
3	Abdul Hakeem Jamali	Review of literature, References, Results.	