

# Experience of Surgical Procedure in the Management of Sigmoid Volvulus

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## Abstract

**Introduction:** Sigmoid Volvulus is the most common type of volvulus, accounting for 75 to 90% of all volvulus. Most common presenting symptom is abdominal pain, distension and constipation. Numerous surgical and non-surgical treatments have been described to relieve this condition. The primary objective of the study is to demonstrate the most suitable surgical procedure for management of patients with sigmoid volvulus presented in emergency. **Method:** Retrospective study was carried out in the Department of surgery from January 2010 to December 2014. 58 patients with sigmoid volvulus admitted in emergency ward, 55 patients were included in the study and 3 patients excluded. Comparison was done with respect to mortality and early morbidity associated with definitive surgical procedures. (Hartmann's procedure versus resection and anastomosis with lord's dilatation). **Result:** In all patients after investigations and resuscitation surgical treatment was done. Hartmann's procedure was done in 16 patients (29.09%), primary resection and anastomosis with lord's dilatation was done in 39 patient (70.90%). 3 patient died before any intervention were not included in study. Over all mortality was 21.81% in the study. **Conclusion:** Resection and anastomosis with lord's dilatation is procedure of choice in viable bowel while Hartmann's procedure is procedure of choice in gangrenous bowel or when the condition of patient is poor.

**Keywords:** Volvulus, Hartmann's Procedure, Resection and Anastomosis, Anastomotic Leak.

## Introduction

Sigmoid volvulus has been known since ancient times. Incidence of disease varies in different geographical areas. It is very common in the developing countries and accounts for up to 50% cases of large bowel obstruction [1-4]. Highest incidence has been reported from Ethiopia where it is responsible for 50-79% cases of obstruction [5]. It is relatively rare in the west and accounts for 1-7% cases only [2,6].

It is an abdominal emergency in which redundant sigmoid loop twists around its mesentery resulting in distension, pain and ischemia. It is the most common site for volvulus followed by caecum [7]. Occasionally volvulus of transverse colon may occur [8]. Although the exact etiology is not known but high fiber diet, chronic constipation with loaded pelvic colon, laxative abuse, long sigmoid mesocolon, band of adhesions to

sigmoid colon from previous surgery are considered main predisposing factors [1,2,5].

Sigmoid volvulus usually presents with colicky pain, absolute constipation, distension and vomiting. Diagnosis usually confirmed on plain x-ray abdomen in 80% cases [8]. Barium enema and abdominal CT scan are helpful in doubtful cases [8,9].

Different options are available for management of Sigmoid Volvulus, depending upon the condition of the patient and other associated factors. Each procedure has its own merits and demerits. Non surgical decompression with a long rectal tube or sigmoidoscopy can be done in patients with viable colon. It has got success rate of 70-80%, but recurrence rate is very high.

Various surgical procedures are available like Endoscopic or open sigmoidopexy, mesosigmoidoplasty, Hartmann's or Paul mikulicz's

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procedure, primary resection and anastomosis. Sigmoidopexy has chances of recurrence and not successful. Staged procedures like Hartmann's or Paul mikulicz's can be done in gangrenous sigmoid colon. These procedures are safe, but associated with complication of colostomy, increased cost and multiple operations. Primary resection and anastomosis is single stage operation, safe and cost effective but risk of anastomotic leakage is there. This can be reduced by doing Lord's dilatation and careful case selection.

The purpose of this study was to demonstrate the most suitable surgical procedure for management of patient with sigmoid volvulus admitted in emergency. Comparison was done with respect to early morbidity and mortality associated with surgical procedures.

## Materials and Methods

Retrospective study was carried out in the Department of surgery, Chhattisgarh institute of medical sciences from January 2010 to December 2014. Case selection was done on following criteria:-

### A. Inclusion criteria-

- (1) All patients admitted in emergency as a case of Sigmoid Volvulus.
- (2) All patients who underwent operation for Sigmoid Volvulus.

### B. Exclusion Criteria-

Patients who died before operation or non operated

All patients presented with sigmoid volvulus in the emergency ward were included irrespective of gender and age group. Total 58 patients were admitted, 55 patients were included in the study and 3 patients excluded as they died before surgery due to multi organ failure. and late presentation.

**Table 1: Type of operation and mortality**

Type of operation	No. of cases	Mortality	Percentage
(1)Hartmann's procedure	16	4	25%
(2) R.A. with lord's dilatation.	39	8	20.51%
<b>Total</b>	<b>55</b>	<b>12</b>	<b>21.81%</b>

Out of 38 patients of gangrenous sigmoid colon 16 underwent Hartmann's procedure while in rest 22 cases primary resection and anastomosis with lord's dilatation had done. In cases of non gangrenous viable colon (17cases) primary resection and anastomosis with lord's dilatation had done.

All the cases were assessed and diagnosis was made on clinical examination and relevant investigations. After preoperative preparation and resuscitation all are subjected to emergency surgery with in 24 hour of admission.

Out of 55 patients, 38 patients had gangrenous sigmoid colon on Laprotomy, rest 17 had viable bowel. Type of surgical procedure selected, depending upon presence of gangrenous gut, associated co-morbid condition like HT, DM, COPD, old age and septicemia.

Out of 38 patients with gangrenous sigmoid colon, 16 were underwent Hartmann's procedure and 22 were underwent Primary resection and anastomosis with lord's dilatation. All 17 patients with viable sigmoid colon were underwent primary resection and anastomosis with lord's dilatation. Comparison was analysed with respect to mortality and early morbidity in these two operative procedures.

Descriptive statistics was used for data analysis. Mean summation, percentage and frequency distribution were used where applicable

## Results

Total 55 patients included in the study. Out of these 32 patients (58.18%) were male and 23 (41.81%) were female. 3 patients (2 male, 1 female) died before surgery excluded from study. Age ranges from 28 year to 80 year with Mean age of 54 years. Maximum no. of patients belong to age group 51-60 years (32.72%)

**Table 2: Demographic characteristic of cases**

Demographic Variables	No. of Cases	Percentage
<b>(A) Gender</b>		
Male	32	58.18%
Female	23	41.81%
<b>Total</b>	<b>55</b>	
<b>(B) Age group</b>		
21-30 year	02	3.6%
31-40 year	07	12.72%
41-50 year	15	27.27%
51-60 year	18	32.72%
61-70 year	8	14.54%
71-80 year	5	9.09%
<b>Total</b>	<b>55</b>	

Out come was analyzed in all age group by assessing intraoperative finding, post operative complications and mortality in both type of surgeries.

**Table 3: Distribution of cases according to condition of Gut**

Condition of Gut	No. of cases	Percentage
(1) Gangrenous gut	38	69.09%
(2) Non gangrenous gut	17	30.90%
<b>Total</b>	<b>55</b>	

All 55 patients underwent Exploratory laparotomy. Out of which 38 were found gangrenous sigmoid colon and rest 17 were nongangrenous viable colon.

**Table 4: Complications following Surgery**

Type	Hartmann's procedure (n-16)	R.A. with lord's dilatation (n-39)
(1)Wound infection	6	<b>6</b>
(2) Burst abdomen	2	<b>6</b>
(3) Anastomotic leak	-	<b>2</b>

Complications like Anastomotic leak, Burst abdomen and wound infection were more common in Gangrenous sigmoid colon. Highest mortality was observed in gangrenous sigmoid colon in which primary resection & anastomosis with lord's dilatation had done. It was about 27% (6 cases).

## Discussion

Sigmoid volvulus is the third major cause of colon obstruction in adults after cancer and diverticula. Disease is common in men and elderly. According to reports, there is a considerable geographical difference in the prevalence of sigmoid volvulus. Higher prevalence is seen in men than women [10]. According to reports this preference exists in many developing countries, while in developed countries having an equal

proportion. In this study 58.18% were male and 41.81% female.

Different treatment options are available for patients presenting with sigmoid volvulus in emergency depending upon the condition of patient, choice of surgeon and availability of facilities. Considerable controversy exists regarding the best method of treatment. Many authors have recommended

endoscopic detorsion as an initial procedure in patients with viable colon [1,7]. It has failure rate of 30% [2] and recurrence rate of 40-90% if used alone[1,5,7].

Variety of surgical operations like endoscopic or open sigmoidopexy, mesosigmoidoplasty, Hartmann's procedure or Paul Mikulicz procedure, primary resection and anastomosis with sigmoidectomy are available[1,5]. Staged procedures are associated with complications of colostomy, increased cost and multiple operations [4].

Though primary resection and anastomosis has been recommended in several studies, but due to risk of Anastomotic leak, it is still controversial. The incidence of leakage greatly varies in the literature [11,12]. In this study primary resection and anastomosis with Lord's dilatation was performed in 39 cases, all cases of viable, non gangrenous bowel ( 17 cases ) and 22 cases of gangrenous bowel. Anastomotic leakage was observed in 2 cases (9.09%) of gangrenous sigmoid volvulus. The most important cause of anastomotic leakage was extension of gangrene beyond the anastomotic site [13].

During laparotomy if gangrene of sigmoid colon is noticed the most appropriate method would be Hartmann's. Procedure [14,15]. Mortality is about 25% in this study. Main drawback of this procedure is patient will require second surgery in future.

In sigmoid detorsion with sigmoidoscopy or conservative treatment with passing rectal (flatus) tube or sigmoidopexy, chances of recurrence is about 50-60% as per the available literature[16]. Though non resectional procedure are of value in high risk patients but they carry high recurrence rate.

It has been documented by various studies that Hartmann's procedure is the best option if the gut is gangrenous because primary resection and anastomosis is associated with high mortality[17]. In this study mortality was 25% in Hartmann's procedure and 27.27% in primary resection and anastomosis with Lord's dilatation in gangrenous bowel. Over all mortality was 21.81%.

## Conclusion

Sigmoid volvulus is a surgical emergency. Prompt diagnosis and early management is important for successful outcome. Resection and primary anastomosis with Lord's dilatation can be safely done in

selected cases. It has acceptable morbidity and mortality. Hartmann's procedure should be the procedure of choice specially if the gut is gangrenous or condition of patients is poor. Non surgical procedure carry a high recurrence rate about 50-60%. They should be accomplished with an elective sigmoid resection.

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