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Management of Acute Sigmoid Volvulus in a Tertiary Centre. A time to welcome Resection Anastomosis Primarily

[1]Dr. Mrigendra Kumar Rai,Registrar, Dept. of Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand India
[2]Dr. Binay Kumar, Associate Professor, Dept. of Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India.
[3]Dr. Gaurav Mishra, Junior Resident, Dept. of Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India
[4]Dr. Jiwesh Kumar, Junior Resident, Dept. of Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand India
Correspondence Author: Dr. Mrigendra Kumar Rai, Registrar, Dept. of Surgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand India

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Introduction

Objective: To describe the management of sigmoid volvulus in a tertiary centre and to determine the prognosis of sigmoid volvulus after undertaking different surgical procedures.

Study Design: A prospective case series. Place and Duration of Study: Rajendra Institute of Medical Sciences, Ranchi, Jharkhand for 18 months.

Methodology: A total of 60 cases of colonic obstruction were reviewed. Demographic, laboratory and treatment results, mortality and complications were recorded. The data was analysed using descriptive statistics as frequency and percentage for the qualitative variables and mean and standard deviation values for the quantitative variables MedCalc software used for data analysis.

Results: The mean age of presentation was 51.8 years with around 80% male. After initial resuscitation the patients were planned for exploratory laparotomy and the most common cause found intraoperatively was a neoplastic growth. The most common procedure performed was resection with anastomosis (38.3%). The overall mortality of the study was around 13% while the post operative mortality was 10%. The most common post operative trouble was surgical site infection (12.72%)

Conclusion: In contrary to the belief of a time consuming procedure with a doubtful outcome surgeons still prefer a diversion ileostomy. However a single procedure is sufficient to tackle the patient's pathology and prevent him undergoing another surgical procedure. We found the primary anastomosis as the optimum procedure in a viable gut during emergency.

Key words: sigmoid volvulus, resection anastomosis, loop ileostomy, adhesions, growth.

Introduction:

The ancient Ebers papyrus describes the natural history of sigmoid volvulus as either reducing spontaneously, or the sigmoid colon being 'rotted' [1]. Volvulus was a common cause of obstruction amongst the Greeks and Romans, the words ileus (Greek) for intestinal obstruction, or acutum tormentum (Latin) meaning twisted appear in the ancient texts, and are now well-recognised medical terms. The Greek physician Soranus defined ileus as 'a severe and dangerous twisting of the intestines.'[1,2] Intestinal obstruction is still a surgical concern in emergency department, in our country. Whereas the western world has emerged with emergency colonoscopy in stable volvulus patients, we still are on struggling ramp of

managing acute intestinal obstruction with various operative modalities.

Aims And Objectives

The aim of the study was to study the operative management of sigmoid volvulus presenting as acute intestinal obstruction in emergency setting and to observe the various operative modalities and their outcome.

Materials And Methods

The duration of the study was 1.5 years from July 2016 to December 2017. It was an observational prospective study which included 60 patients admitted in surgery emergency unit of RAJENDRA INSTITUTE of MEDICAL SCIENCES, RANCHI, JHARKHAND, INDIA and were planned to undergo exploratory laparotomy. Three patients however, after planning could not survive for surgery. The patients were operated and followed after surgery for complications and outcome.

Those patients who did not undergo any operative procedure or were decompressed with a flatus tube and underwent elective surgery were excluded from study. The various causes of the pathology were identified intra operatively and patients underwent either of four procedures which will be described subsequently.

Results

1. Age and Sex wise distribution of patients:

Table 1

Age (in years)	No. of Male(s)	No. of Female(s)	Total
<30	10	2	12
30-60	17	7	24
>60	21	3	24
	48	12	60

The study had included patients of spectrum of age with the youngest patient of 24 years and oldest being 77 years. We divided them in three above mentioned groups. In our study male patients contributed 80% of cases. The mean age of presentation was 51.8 years.

2. Cause of Sigmoid volvulus Since patients presented with acute intestinal obstruction we found two major causes and put the rest in no specific cause. However of 60 patients presented almost 82% (52 patients) had chronic constipation.

Table 2

Cause	No. of patients	%
Adhesions	22	36.67
Neoplastic Growth	23	38.3
No specific cause	15	25
	60	

3. Management Summary

After initial resuscitation and correction of dehydration and electrolytes patients were posted for exploratory laparotomy and underwent either of the following procedures;

a. Resection of the dilated/volvulus part with colo-colic anastomosis (RA)

b. Resection of the dilated/volvulus part with colo-colic anastomosis with a diversion ileostomy (RALI)

c. Resection of the dilated/volvulus part with closure of the distal stump and temporary end colostomy(Hartman's procedure)

d. Sigmoid Mesocoloplasty

e. No surgery undertaken.

The decision to undertake anastomosis was on sole basis of the viability of gut after resection. The scene where vascularity was questionable or the general condition did not allow time extension we planned a loop ileostomy or Hartman's procedure, respectively. In case of a doubt of oncologic margin (R0) we considered Hartman's procedure. No other factors like age, gangrene of bowel segment, time of presentation were taken into consideration. The two tables below are

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showing the age wise and pathology wise distribution of surgical procedure undertaken.

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Table 3

Age (in years)	Procedure Undertaken				
	RA	RALI	HRM	MSP	NO SURGERY
<30	6	4	1	1	0
30-60	10	5	3	4	2
>60	7	7	6	1	3
TOTAL	**23 (38.3 %)**	**16(26.6 %)**	**10(16.6 %)**	**6(1%)**	**5(0.83 %)**

Table 4

Pathology	Procedure Undertaken				
	RA	RALI	HRM	MSP	NO SURGERY
Adhesions	09	06	03	02	02
Neoplastic Growth	10	05	06	00	02
No. specific cause	04	05	01	04	01
TOTAL	**23 (38.3 %)**	**16(26.6 %)**	**10(16.6 %)**	**6(1%)**	**5(0.83%)**

4. Mortality

Out of 60 patients 8 patients died, of which 5 died after undergoing surgery. The overall mortality of the study was 13.33%. However we did not underwent in evaluating the cause specific mortality.

5. Post-operative outcome(s)

The patients were thoroughly monitored after the surgery for one of the following events.

- Uneventful period
- Surgical site infection (SSI)
- Anastomotic leak
- Death

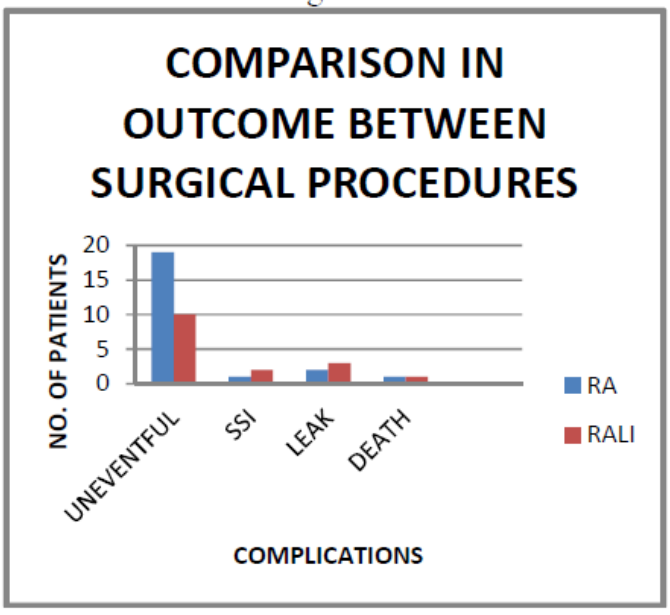
Table 5

Event	RA	RALI	HRM	MSP	
Uneventful	19 (82.60%)	10 (62.5%)	07 (70%)	02 (33.33%)	38 (69.09 %)
SSI	01 (04.34%)	02 (12.5%)	02 (20%)	02 (33.33%)	07 (12.72 %)
Anastomotic leak	02 (08.69%)	03 (18.75 %)	-	-	05 (09.09 %)
Death	01 (04.34%)	01 (06.25 %)	01 (10%)	02 (33.33%)	05 (09.09 %)
	23	16	10	6	

The mortality after the surgery was around 10%. Most common complication was surgical site infection (13%).

6. Comparison between Resection Anastomosis vs. the procedure with loop ileostomy As is evident from the other table the proportion of anastomotic leak and surgical site infection were lower in patients who underwent resection anastomosis as compared to those who underwent loop ileostomy. (Confidence Interval 95%) Also overall mortality and morbidity was least in the group in which primary resection and anastomosis was done.

Figure 1



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Discussion

Sigmoid volvulus is the third major cause of colon obstruction in adults after cancer and diverticula [3]. This disease is very common in specific regions such as Asia, Africa, Middle East, Eastern Europe, and South America. Another matter of importance is the difference in age of the patients with sigmoid volvulus [3, 4]. In western countries, it mostly occurs at the age of 70 and 80 years, while in developing countries the age of occurrence is between 40 and 60 years [5]. The mean age of presentation in our study was 51.8 years. Higher prevalence of sigmoid volvulus is seen in men than women. According to reports this preference exists in many developing countries, while in developed countries having an equal proportion of men and women or a little preference for men [6]. In this study, 80% patients were men and 20% were women. Based on clinical presentations, sigmoid volvulus has been classically divided into two types of acute type in which the disease occurs with a sudden onset and the patients are admitted with colon obstruction; and sub-acute type in which mild symptoms are seen and the duration of the disease is longer [7]. Symptoms such as ischemia and gangrene are common in the first type, but in the second type which has been mostly seen in the elderly, symptoms are milder [7, 8, 9]. In our study, since patients presented with acute intestinal obstruction we found two major causes and put the rest in no specific cause. However of 60 patients presented almost 82% (52 patients) had chronic constipation diagnosed by ROME 3 criteria [10, 11]. Sigmoid volvulus treatment can be done with different types of therapies including non-surgical decompression or surgical treatments [12]. However, the most acceptable method is sigmoid non-surgical decompression with a long rectal tube via sigmoidoscopy and elective sigmoid resection through open or laparoscopic approaches [13, 14]. In this study, after initial resuscitation and correction of dehydration and electrolytes patients were posted for exploratory laparotomy and underwent either of the following procedures; resection of the dilated/volvulus part with colocolic anastomosis (RA), resection of the dilated/volvulus part with colo-colic anastomosis with a diversion ileostomy (RALI), resection of the dilated/volvulus part with closure of the distal stump and temporary end colostomy (Hartman's procedure), sigmoid mesocoloplasty, no surgery undertaken. The decision to undertake anastomosis was on sole basis of the viability of gut after resection. The scene where vascularity was questionable or the general condition did not allow time extension we planned a loop ileostomy or Hartman's procedure, respectively. Choice of procedure depended on the clinical condition of the patient, preoperative findings, viability of bowel, and surgeon's experience. Where the bowel was viable, the procedure performed was either sigmoidopexy or resection and anastomosis. In case of a doubt of oncologic margin (R0) we considered Hartman's procedure.

Figure 2: Sigmoid Volvulus with planning for RA.

The most important risk factor for mortality as perthe literature is the delay in sigmoiddecompression which

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eventually leads tointestinal ischemia and gangrene [15]. Comparedto other studies, the cause of low mortality in thisstudy was probably due to lesser patients in above60 yrs. age group (60% had age <60 yrs.).As far as the outcome of post op patients wasconcerned, patients were thoroughly monitoredfor any post op complications and managed withbest available skills and resources. Majorcomplications which were observed for wereanastomotic leak, surgical site infections (SSI),death and uneventful outcome.Though primary resection and anastomosis hasbeen recommended in several studies, because ofrisk of anastomotic leakage, it remainscontroversial [16]. One of the most importantcauses of anastomotic leakage in patients whounderwent primary anastomosis is thequestionable viability of the bowel [17]. InResection and anastomosis as an emergencyprocedure, the situation is far from ideal and inour undernourished patients, has its own price inthe increased morbidity and mortality [18]. Thetechniques of bowel preparation and bowel washhave been already condemned in variouscontemporary literatures [19, 20]. In primaryresection and anastomosis there are differentstudies showing variable cure rates and mortalityrates. This is the gold standard when the colon isviable [20]. In our study we performed primaryresection anastomosis in 23 patients whilediversion after anastomosis was done in 16patients with comparable outcomes in bothgroups. In this study, out of 23 patients, 83% hadan uneventful hospital stay post-surgery. Situationwas less favourable in patients undergoing RALIor HRM (62.5% and 70% respectively haduneventful hospital stay).SSI was most frequentlyseen in patients who underwent RALI and HRM.The reasons that could be attributed to this may bethe poor wound care because of proximity ofstoma and its contents leading to soiling of stitchsite. Wound infection rates are high, especially inunprepared bowel, with this type of procedure.Overall, approx. 70% had uneventful postoperativehospital stay, 13% developed SSI whichwas conservatively managed and approx. 9.09%had anastomotic leak, who were managed as perguidelines of enterocutaneous fistula managementprotocols [21].As is evident from the other table the proportionof anastomotic leak and surgical site infectionwere lower in patients who underwent resectionanastomosis as compared to those who underwentloop ileostomy. (Confidence Interval 95%).Alsooverall mortality and morbidity was least in thegroup in which primary resection and anastomosiswas done.

Conclusion

Where the western world has moved tocolonoscopic guided derotation and managementin case of acute intestinal obstruction, we are stillevolving in open surgical approaches. Placing apatient twice on operation table not only adds tomorbidity but also increases the cost effectivenessof the treatment plan. A primary surgery iffeasible is the optimal option which a surgeonshould consider. However precise indications toplan this surgery is still not available and otherparameters are yet to be considered for which alarger multicentric study is required.

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