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Original Article

Post-operative Outcome of Acute Sigmoid Volvulus

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Abstract

Background: Sigmoid volvulus is a common surgical emergency in many regions of the world, with significant morbidity and mortality. Volvulus occurs when a segment of the colon twists about its mesentery. In developing countries it is a major cause of colonic obstruction. The sigmoid colon is involved in up to 90% of cases. It can be present as acute, sub-acute or chronic obstruction. Emergency operation is needed in acute sigmoid volvulus. Various operative methods are used in the management.

Objective: The purpose of this study was to compare the 'primary resection and anastomosis' with 'Hartmann's procedure' for management of acute sigmoid volvulus.

Methods: This comparative cross-sectional study was conducted in a consecutive series of 63 patients, admitted to three different Medical Colleges from February 2012 to December 2018 with acute sigmoid volvulus. Then laparotomy were carried out in all 63 patients. Primary resection of the affected sigmoid colon with anastomosis were done in 37 patients and the Hartmann's procedure performed in 26 patients in two different groups. Outcome of the two procedures analyzed in terms of mortality and post-operative complications.

Conclusion: This study demonstrated that outcome of two procedures are same. Primary resection and anastomosis should be done in uncomplicated acute sigmoid volvulus safely, but in case of complicated patients Hartmann's procedure is the choice of operation.

Keywords: Hartmann's procedure, Primary resection and anastomosis, Sigmoid volvulus, Laparotomy.

Introduction

A volvulus is a twisting or axial rotation of a portion of bowel about its mesentery. The rotation causes obstruction to the lumen (>180° torsion) and if tight enough also causes vascular occlusion in the mesentery, if it is untreated it will leads to complication such as gangrene and bowel perforation.[1,2] Rotation nearly always occurs in the anticlockwise direction. Sigmoid volvulus, first described by von Rokitansky.[3] It may involve the small intestine, caecum or sigmoid colon; neonatal midgut volvulus secondary to midgut malrotation is life-threatening.[1] The most co mmon spontaneous type in adults is sigmoid volvulus. It is a very important cause of closed loop colonic obstruction in the world.[3,4] In some countries like Eastern Europe, India and Africa, it is almost 50% of large bowel obstruction.[5,6] The predisposing causes- band of adhesions (peridiverticulitis), overloaded pelvic colon (high fiber diet), long pelvic mesocolon, and narrow attachment of pelvic mesocolon.[7,8] Acute sigmoid volvulus mainly presented with abdominal distension, pain abdomen, constipation, and vomiting.[9]

On X-ray of abdomen showing Pneumonic tier like shadow or omega sign.[10] Emergency operation is the only treatment of choice in complicated volvulus.[9] Various type of operation has been described in the management of acute sigmoid volvulus, the Hartmann's procedure (HP) is the treatment of choice in gangrenous, or toxic megacolon and unstable vitals.[11,12] But single stage primary resection and anastomosis (PRA) has been operation of choice in non complicated volvulus.[13]

Materials and Methods

This comparative cross-sectional study was conducted to assess the outcome between two treatment modalities in a consecutive series of 63 acute sigmoid volvulus patients, admitted in the North-east Medical College, Sylhet, Prime Medical College, Rangpur and Diabetic Association Medical College, Faridpur in the department of general surgery during the period from February 2012 to December 2018. Patients were primarily diagnosed almost clinically then confirmed by routine blood investigations, X- ray of

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abdomen, ultra sounds of abdomen and pelvis. All patients were received adequate fluid resuscitation, broad spectrum antibiotics, and Ryle's tube aspiration decompression before undergone surgery. Laparotomy was carried out in all 63 patients. Among them, primary resections of the affected sigmoid colon with anastomosis were done in 37 patients and the surgical resection of the recto sigmoid colon with closure of the rectal stump and formation of an end colostomy (Hartmann's procedure) in 26 patients were done. Outcome of the two procedures were analyzed in terms of mortality, post-operative complications and hospital stay. Data were presented and different statistical test were done accordingly to compare them. P value was considered as significant at <0.05 level.

Results

After analysis results were presented as follows:

Table 1: Distribution of the patients under study according to sex (n=63)

Sex	Number of patients	Percentage
Male	47	74.60
Female	16	25.39

Table 1 shows that most (74.60%) respondents were male and rest (25.39%) were female

Table 2: Distribution of the patients under study according to age (n=63)

Age group (in Years)	Number of patients	Percentage
31-40	2	3.17
41-50	4	6.34
51-60	34	53.96
61-70	21	33.33
71-80	2	3.17

Table 2 shows that most(53.96%) of the patients were within 51 to 60 years age group.

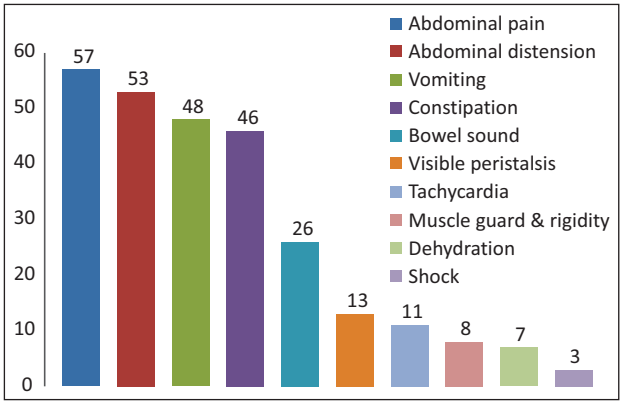

Figure 1: Different presenting signs and symptoms of acute sigmoid volvulus (n=63, Multiple answer)

Figure 1 shows that most common presented symptom was pain abdomen in 57 patients, followed by abdominal distension in 53 patients and least common was shock was found in 3 patients.

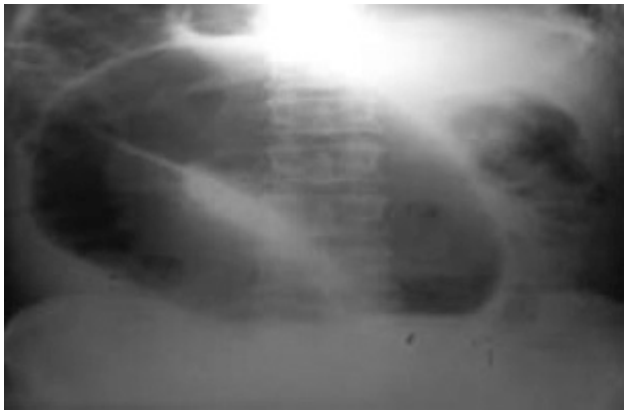

Figure 2 (A)

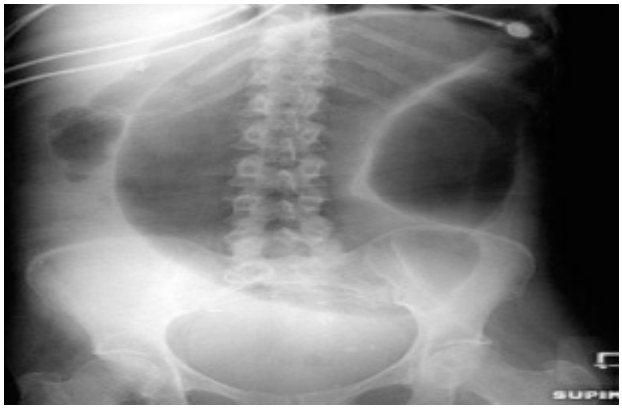

Figure-2 (B)

According to imaging 2(A and B), plain X-ray abdomen detected 55(87.3%) cases by typical distended pneumonic tier like shadow or 'omega' like dilated sigmoid loop

Table 3: Distribution of the patients according to intra-operative findings of PRA* (n=37) and HP** (n=26) group

Sigmoid loop condition	PRA group (n=37)		HP group (n=26)	
	Frequency	Percentage	Frequency	Percentage
Viable bowel loop	30	81.08	6	23.07
Gangrenous	5	13.51	17	65.38
Perforation	2	5.4	3	11.58
*PRA= Primary resection and anastomosis, **HP= Hartmann's Procedure				

Table 3 shows that Intra-operative findings were in PRA (Primary resection and anastomosis) group viable bowel

30 cases, gangrene in 5 cases, and 2 in perforated bowel loop, in HP (Hartmann's procedure) group viable loop in 6 cases, gangrenous loop in 17 cases, perforation in 3 cases.

Table 4: Distribution of the patients according to post-operative complications among both groups.

Post-operative complications	PRA group (n=37)	HP group (n=26)	P value
Wound infection	3 (8.1)	1 (3.84)	0.812
Chest complication	3 (8.1)	1 (3.84)	0.812
Wound dehiscence	2 (5.4)	1 (3.84)	0.745
Anastomotic leakage	1 (2.7)	NA	NA
Colostomy complications	NA	1 (3.84)	NA
Incisional hernia	1 (2.7)	0	NA
Mortality	2 (5.4)	0	NA

NA= not available

Table 4 shows that post-operative complications wound infection is more common in both group 3 (8.1%) in PRA group and in HP group 1 (3.84%) with p value 0.812 statistically not significant, chest complication 3(8.04%) in PRA group, HP group 1 (5.71%) p value 0.812 not significant, anastomotic leak in PRA group was 1 cases (2.7%), stoma related in HP group1 (3.84%), wound gapping in PRA was 2 (5.4%) and in HP 1 (3.84%) p value is 0.745 not significant. Mortality in PRA group was 2 (5.4%) and HP group 0, p value is NA.

Discussion

Acute sigmoid volvulus is the 3rd most common cause in the colonic obstruction.[14] In this study age of presentation were 51-60 years age groups with mean age of presentation was 58 years. A study also support this data.[10,15] Male and Female ratio was 2.9:1 in this study, male is commonly affected.[16] Patients present with most commonly pain abdomen, abdominal distension, vomiting, obstipation.[15] X-ray abdomen can detect 57-90% cases.[17] In this study it was also found plain X- ray abdomen detected 87.3% cases. In spite of recent technique used to manage this disease final conclusion couldn't be reached.[10] In case of management of acute sigmoid volvulus many procedures have been used. The mainstay of operation is reliving the obstruction and prevention. To achieve this goal, resection of the sigmoid colon, with or without anastomosis.[13] In case of emergency left side colonic resection and anastomosis without bowel preparation is remained controversial. But some study found that no benefit of mechanical bowel preparation over on table bowel irrigation.[18-20] Guer M et al showed the feasibility of on table bowel irrigation in the management of sigmoid volvulus[21]. The advantages of the primary resection and anastomosis are one stage operation, no need of any stoma care, easily acceptable by patients.[10,21,22] But disadvantages are prolonged operation time, loaded with faeces difficult to handle, chance of contamination is there.[23] Non resection surgery such as sigmoidopexy and mesosigmoidoplasty has high recurrence rate.[24] It is wise to do Hartmann's procedure in case of gangrenous, or perforated bowel loops.[13] Maximum number of cases performed by primary resection and anastomosis in viable bowel loops (81.08%) and Hartmann's procedure in case of gangrenous (65.38%) or perforated bowel loops (11.58%). Many studies support the result of present study that primary resection and anastomosis is preferable treatment when there are no complications.[10,25] Study by Okello et al clearly showed that for gangrenous, perforated bowel loop treatment of choice is colostomy and later on reversal anastomosis two stage operation, and uncomplicated sigmoid volvulus primary resection and anastomosis.[26] In case of failure of decompression, gangrene, perforation Hartmann's procedure may reduce the mortality.[27]

This study also revealed that most common complication was wound infection like other study, mortality rate was low compared to other study.[15,28] Anastomotic leak is the most important and dreadful complication in case of primary resection and anastomosis found 2.7% in this study. Study by De et al found 1.01% and by Raveenthiran it was 10% when they had done single stage resection anastomosis in case of acute sigmoid volvulus.[4,29] Study found there is no statistically difference of outcome treated by two different groups. Study by Okello et al and Akcan et al also support the findings of this study.[25,26] Mean hospital stay in PRA group and HP group was accordingly 12 days and 7 days it is similar to studies by Oren D et al and Akcan et al.[25,28]

Conclusion

Result of present study shows there is no significant difference between two groups. So primary resection and anastomosis can be done in uncomplicated acute volvulus. But in complicated volvulus such as gangrene, perforation, peritonitis and with poor general conditions or unstable vitals it is wise decision to do Hartmann's procedure to reduce mortality.

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