International Surgery Journal
Pattanayak S et al. Int Surg J. 2016 Nov;3(4):2079-2082
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20163577

Original Research Article

Comparison of primary resection and anastomosis with hartmann's procedure in management of acute sigmoid volvulus

Sibaprashad Pattanayak, Debabrata Saha*, Bipin Kishore Bara, Sanjit Kumar Nayak

Department of Surgery, M. K. C. G. Medical College Hospital, Berhampur, Ganjam, Odisha, India

Received: 02 July 2016
Accepted: 05 August 2016

***Correspondence:**
Dr. Debabrata Saha,
E-mail: debabratabsmc@gmail.com

ABSTRACT

Background: Sigmoid volvulus is a common surgical emergency in many regions of the world, with significant morbidity and mortality. Volvulus occurs when an air-filled 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. Emergency operation is needed in acute sigmoid volvulus. Various methods are used in the management. The purpose of our study was to evaluate the comparative study of single-stage resection and anastomosis with Hartmann's procedure for management of acute left-sided colonic obstruction due to acute sigmoid volvulus.
Methods: This retrospective study was conducted in a consecutive series of 122 patients, admitted to M. K. C. G. Medical College in the department of general surgery, with acute sigmoid volvulus. Then laparotomy were carried out in all 122 patients, primary resection of the affected sigmoid colon with anastomosis were done in 87 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 35 patients were done in different groups. Outcome of the two procedures analyzed in terms of mortality, post-operative complications, and hospital stay.
Results: This study clearly showed that there is no such statistically significant result compared to both groups. Except little bit longer hospital stay in resection and anastomosis group than Hartmann's group.
Conclusions: This study demonstrated that outcome of two procedures are same. 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, Resection anastomosis, Sigmoid volvulus

INTRODUCTION

Acute sigmoid volvulus is defined as torsion of sigmoid colon around its mesenteric axis, if it is untreated it will leads to complication such as gangrene and bowel perforation.[1] Sigmoid volvulus, first described by von Rokitansky.[2] It is a very important cause of closed loop colonic obstruction in the world.[2,3] In some countries like Eastern Europe, India and Africa, it is almost 50% of large bowel obstruction.[4,5] Aetiology of the disease is multifactorial, high fiber and long sigmoid loop with a narrow mesentery leading to a predisposition to torsion, chronic constipation are the some of the causes.[6,7] Acute sigmoid volvulus mainly presented with abdominal distension, pain abdomen, no bowel movement, and vomiting.[8]

On X-ray of abdomen showing typical omega sign.[9] Emergency operation is the only treatment of choice in complicated volvulus.[8] Various type of operation has been described in the management of acute sigmoid volvulus, the Hartmann's procedure is the treatment of

choice in gangrenous, or toxic megacolon and unstable vitals.[10,11] But single stage primary resection and anastomosis has been operation of choice.[12]

METHODS

This retrospective study was conducted in a consecutive series of 122 patients, admitted to M. K. C. G. medical college in the department of general surgery, with acute sigmoid volvulus diagnosed by clinically and X- ray of abdomen and ultra sounds of abdomen and pelvis routine blood investigations, in the period from September 2010 to February 2016. All patients at first received adequate fluid resuscitation, broad spectrum antibiotics, and Ryle's tube aspiration decompression. Then laparotomy were carried out in all 122 patients, primary resection of the affected sigmoid colon with anastomosis were done in 87 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 35 patients were done in different groups. Outcome of the two procedures analyzed in terms of mortality, post-operative complications, and hospital stay. Statistical data compared with P value by Fisher's exact test with significant p value < 0.05.

RESULTS

In this study male and female were 84 and 38, ratio 2.2: 1 (Table 1), most common affected age group were 51- 60 years 65 cases (53.27%) and least in 20-30 age group and 71-80 age group 2 (1.63%)cases each group, mean age was 58 years (Table 2). Most common presented symptom was pain abdomen 108 (88.52) %, followed by abdominal distension 102 (83.06%), least common was shock 7 (5.73%) (Figure 1). According to imaging plain X-ray abdomen detected 104(85.24%) cases by typical distended 'omega' like dilated sigmoid loop (Figure 2), ultra sound of abdomen revealed dilated loops and decreased peristalsis in 75 (69.67%) cases. Blood investigation showed total leucocyte counts > 11000/cu.mm. In 48 (39.34%) cases, hyponatremia in 54 (44.26%) cases, and hypokalaemia in 33 (27.04%) cases. Intra operative findings were in RA (resection and anastomosis) group viable bowel 70 cases, gangrene in 15 cases, and 2 in perforated bowel loop, in HP (Hartmann's) group viable loop in 9 cases, gangrenous loop in 22 cases, perforation in 4 cases (Table 3). Regarding post-operative complications wound infection is more common in both group 8 (9.19%) in RA group and in HP group 2 (5.71%) with p value 0.722 statistically not significant, chest complication 7(8.04%) in RA group, HP group 2 (5.71%) p value 1 not significant, anastomotic leak in RA gr was 6 cases (6.89%), stoma related in HP group. 1 (2.85%), wound gapping in RA was 4 (4.59) and in HP 1 (2.85%) p value is 1 not significant, anastomotic leak in RA gr 3 (3.44%), colostomy related complication is 1 (2.85%), prolonged paralytic ileus in RA group 7(8.04%) and in HP group. Is 1 (2.85%) p value is 0.43 not significant. Mortality in RA group was 5 (5.74%) and HP group 1(2.85%) p value is 0.6723 not significant (Table 4). Mean hospital stay in RA group was 12 days and in HP group 7 day.

Table 1: Sex wise distribution and ratio is male:female - 2.2:1.

Sex	Number of patients	Percentage
Male	84	68.85%
Female	38	31.14%

Table 2: Age wise distribution of acute sigmoid volvulus.

Age groups	No. patients	Percentage
20-30	2	1.63%
31-40	5	4.09%
41-50	7	5.73%
51-60	65	53.27%
61-70	41	33.60%
71-80	2	1.63%

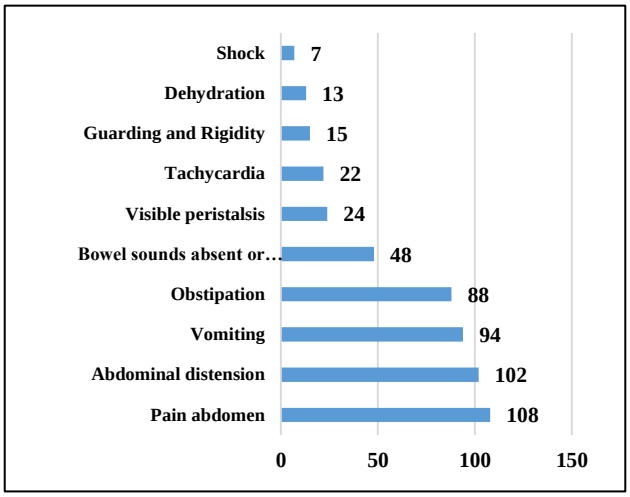

Figure 1: Different presenting signs and symptoms of acute sigmoid volvulus.

Figure 2: Abdomen plain X-ray of acute sigmoid volvulus typical omega sign.

Table 3: Intraoperative findings of acute sigmoid volvulus.

Sigmoid loop condition	RA group no. (n = 87)		HP group (n = 35)	
	No of Pt	Percentage	No of Pt	Percentage
Viable loop	70	57.37%	9	25.71%
Gangrenous	15	12.29%	22	64.70%
Perforation	2	1.63%	4	11.4%

Table 4: Different post-operative complications compared both group.

Post op complications	RA group	HP group	P value
Wound infection	8 (9.19%)	2 (5.71%)	0.722
Chest complication	7 (8.04%)	2 (5.71%)	1
Wound gapping	4 (4.59%)	1 (2.85%)	1
Anastomotic leakage	3 (3.44%)	NA	NA
Colostomy complications	NA	1 (2.85%)	NA
Prolonged paralytic ileus	7 (8.04%)	1 (2.85%)	0.43
Incisional hernia	2 (2.29%)	0	0.55
Mortality	5 (5.74%)	1 (2.85%)	0.673

DISCUSSION

Acute sigmoid volvulus is the 3rd most common cause in the colonic obstruction.[13] In this study age of presentation were 51-60 age groups with mean age of presentation was 58 years. A study also support this data.[9,14] Male and Female ratio was 2.2:1 in this study, male is commonly affected.[15] Patients present with most commonly pain abdomen, abdominal distension, vomiting, obstipation.[14] X-ray abdomen can detect 57-90% cases.[16] We also found plain X- ray abdomen detected 85.24% cases. In spite of recent technique used to manage this disease final conclusion couldn't be reached.[9] 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.[12] 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.[17-19] Guer M et al showed the feasibility of on table bowel irrigation in the management of sigmoid volvulus.[20] The advantages of the primary resection and anastomosis are one stage operation, no need of any stoma care, easily acceptable by patients.[9,20,21] But disadvantages are prolonged operation time, loaded with faeces difficult to handle, chance of contamination is there.[22] Non resection surgery such as sigmoidopexy and mesosigmoidoplasty has high recurrence rate.[23] It is wise to do Hartmann's procedure in case of gangrenous, or perforated bowel loops.[12] We performed maximum number of cases by primary resection and anastomosis in viable bowel loops (57.37%) and Hartmann's procedure in case of gangrenous (64.70%) or perforated bowel loops (11.4%). Many studies support our result that primary resection and anastomosis is preferable treatment when there are no complications.[9,24] 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.[25]

In case of failure of decompression, gangrene, perforation Hartmann's procedure may reduce the mortality.[26] We found most common complication was wound infection like other study, mortality rate was low compared to other study.[14,27] Anastomotic leak is the most important and dreadful complication in case of primary resection and anastomosis we found 3.44% in our 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.[3,28]

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 our findings.[24,25] Mean hospital stay in RA gr and HP gr was accordingly 12 days and 7 days it is similar to studies by Oren D et al and Akcan et al.[24,27]

CONCLUSION

Our result shows there is no significant difference between two groups. Except longer hospital stay in RA gr compared to the Hartmann's procedure group. 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.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Katsikogiannis N, Machairiotis N, Zarogoulidis P, Sarika E, Stylianaki A, Zisoglou M, et al. Management of sigmoid volvulus avoiding sigmoid resection. Case Rep Gastroenterol. 2012;6:293-9.
2. Avots-Avotins KV, Waugh DE. Colon volvulus and the geriatric patient. Surg Clin North Am. 1982;62:248-60.
3. Raveenthiran V. Observations on the pattern of vomiting and morbidity in patients with acute sigmoid volvulus. J Postgrad Med. 2004;50:27-9.
4. Naaeder SB, Archampong ED. One-stage resection of acute sigmoid volvulus. Br J Surg. 1995;82:1635-6.
5. Welch GH, Anderson JR. Acute volvulus of the sigmoid colon. World J Surg. 1987;11:258-62.
6. Lal SK, Morgenstern R, Vinjirayer EP, Matin A. Sigmoid volvulus an update. Gastrointest Endosc Clin N Am. 2006;16(1):175-87.
7. Cuschieri A, Steele PJC, Moosa AR. Disorders of the colon and rectum. In: Essential Surgical Practice. 4th edition; 2002:569-626.
8. Martin D, McWhirt E, Napoli P. Colonic volvulus. The army medical center experience, 1983-1987. Am Surg. 1991;57:295-300.
9. Sule A, Misauno M, Opaluwa AS, Ojo E, Obekpas PO. One stage procedure in the management of acute sigmoid volvulus without colonic lavage. The Surgeon. 2007;5:268-70.
10. Remzi FH, Oncel M, Hull TL, Strong SA, Lavery IC, Fazio VW. Current indications for blow-hole colostomy:ileostomy procedure. A single center experience. Int J Colorectal Dis. 2003;18:361-4.
11. Poon RT, Law WL, Chu KW, Wong J. Emergency resection and primary anastomosis for left-sided obstructing colorectal carcinoma in the elderly. Br J Surg. 1998;85:1539-42.
12. Madiba TE, Thomson SR. The management of sigmoid volvulus. J R Coll Surg Edinb. 2000;45:74-80.
13. Grossmann EM, Longo WE, Stratton MD, Virgo KS, Johnson FE. Sigmoid volvulus in department of veterans affairs medical centers. Dis Colon Rectum. 2000;43:414-8.
14. Atamanalp SS, Ozturk G. Sigmoid volvulus in the elderly: outcomes of a 43-year, 453-patient experience. Surg Today. 2011;41:514-9.
15. Khanna AK, Kumar P, Khanna R. Sigmoid volvulus: study from a north India hospital. Dis Colon Rectum. 1999;42:1081-4.
16. Burrell HC, Baker DM, Wardrop P, Evans AJ. Significant plain film findings in sigmoid volvulus. Clin Radiol. 1994;49:317-9.
17. Slim K, Vicaut E, Panis Y, Chipponi J. Meta-analysis of randomized clinical trials of colorectal surgery with or without mechanical bowel preparation. Br J Surg. 2004;91:1125-30.
18. Zmora O, Mahajna A, Bar-Zakai B, Rosin D, Hersko D, Shabtai M, et al. Colon and rectal surgery without mechanical bowel preparation. A randomized prospective trial. Ann Surg. 2003;237:363-7.
19. Fa-Si-Oen P, Roumen R, Buitenweg J, van de Velde C, van Geldere D, Putter H, et al. Mechanical bowel preparation or not? Outcome of a multicenter, randomized trial in elective open colon surgery. Dis Colon Rectum. 2005;48:1509-16.
20. Gurel M, Alic B, Bac B, Keles C, Akgun Y, Boylu S. Intraoperative colonic irrigation in the treatment of acute sigmoid volvulus. Br J Surg. 1989;76:957-8.
21. Gibney EJ. On-table lavage in the management of sigmoid volvulus: a review. West Afr J Med. 1992;11:223-5.
22. Smith SR, Connolly JC, Gilmore OJ. The effect of faecal loading on colonic anastomotic healing. Br J Surg. 1983;70:49-50.
23. Bruusgaard C. Volvulus of the sigmoid colon and its treatment. Surgery. 1947;22:466-78.
24. Akcan A, Akyildiz H, Artis T, Yilmaz N, Sozuer E. Feasibility of single-stage resection and primary anastomosis in patients with acute non-complicated sigmoid volvulus. Am J Surg. 2007;193:421-6.
25. Okello TR, Ogwang DM, Kisa P, Komagum P. Sigmoid volvulus and ileosigmoid knotting at St. Mary's Hospital Lacor in Gulu, Uganda. East Cent Afr J Surg. 2009;14:58-64.
26. Nuhu A, Jah A. Acute sigmoid volvulus in a West African population. Ann Afr Med. 2010;9:86-90.
27. Ören D, Atamanalp SS, Aydinli B, Yildirgan MI, Basoglu M, Polat KY, et al. An algorithm for the management of sigmoid colon volvulus and the safety of primary resection: experience with 827 cases. Dis Col Rect. 2007;50(4):489-97.
28. De U, Ghosh S. Single stage primary anastomosis without colonic lavage for left-sided colonic obstruction due to acute sigmoid volvulus: a prospective study of one hundred and ninety-seven cases. ANZ J Surg. 2003;73:390-2.

Cite this article as: Pattanayak S, Saha D, Bara BK, Nayak SK. Comparison of primary resection and anastomosis with hartmann's procedure in management of acute sigmoid volvulus. Int Surg J 2016;3:2079-82.