



**ORIGINAL RESEARCH PAPER**

**Surgery**

**COMPARISON BETWEEN PRIMARY RESECTION AND ANASTOMOSIS WITH COLOSTOMY IN CASE OF SIGMOID VOLVULUS**

**KEY WORDS:** Volvulus, Colostomy, Resection and anastomosis

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<b>ABSTRACT</b>	<b>Introduction:</b> Sigmoid volvulus is the most common type of volvulus. It is the condition in which the bowel becomes twisted on its mesenteric axis, a situation that results in partial or complete obstruction of the bowel lumen and a variable degree of impairment of its blood supply. Most common presenting symptom is abdominal pain and constipation. The primary objective of the study is to evaluate the most suitable procedure for management of patients with sigmoid volvulus.
	<b>Methodology:</b> Patients operated between July 2016 to November 2017 were studied retrospectively. Total 46 patients were included in the study of which 32 presented with gangrenous sigmoid colon on laparotomy and viable sigmoid colon was present in the remaining 14 patients. Comparison done between the two procedures in these patients with respect to mortality and morbidity.
	<b>Results:</b> This study showed highest mortality among patients who underwent primary resection and anastomosis without colostomy.
	<b>Conclusion:</b> Colostomy is the procedure of choice in case of complicated sigmoid volvulus with primary resection and anastomosis in case of uncomplicated sigmoid volvulus.

**INTRODUCTION**

Volvulus is the twist or rotation of the bowel on its mesenteric axis, either clockwise or anticlockwise. The most common sites of volvulus are the sigmoid colon and cecum. Sigmoid volvulus, first described by Von Rokitsansky.<sup>1</sup> The worldwide incidence of sigmoid volvulus is not known.<sup>2</sup> Volvulus of other portions of elementary tract, such as stomach, gallbladder, small bowel, splenic flexure, and transverse colon, are rare.<sup>3</sup> In our country it affects middle and old age group, more common in rural India, due to consumption of high fiber diet.<sup>4</sup> Some causes include high fiber and long standing loop with a narrow mesentery leading to predisposition to torsion, chronic constipation etc.<sup>5,6</sup> Sigmoid volvulus presented with pain abdomen, abdominal distension, vomiting and no bowel movement.<sup>7</sup>

Digital rectal examination reveals an empty rectum. X-ray abdomen shows a very distended sigmoid colon without haustral markings, projecting into the right upper quadrant and named as "Omega loop" or "Coffee Bean" sign.<sup>2,8,9</sup>

Resection with primary anastomosis in emergency situations carries an unacceptably high complication rate, when the general condition of the patient is suboptimal and bowel not prepared.<sup>10,11,12,13</sup> In such situations, a colostomy may play a protective role in avoiding anastomotic leakage. Gangrenous colon requires immediate resection.<sup>14,15,16</sup> In the presence of gangrene, resection is followed by colostomy.

**METHODS**

From July 2016 to November 2017, in Department of general surgery, MKCG medical college, Berhmpur, Ganjam, Odisha (India), 46 patients of sigmoid volvulus have been operated. The diagnosis of sigmoid volvulus was made on the basis of clinical features and plain abdominal radiographs. Laparotomy was performed in all patients after active fluid resuscitation and correction of electrolyte imbalance was obtained. Although the bowel was unprepared, on-table lavage was not performed in any patient. Primary resection and anastomosis were done in 26 patients. Sigmoid resection with colostomy done in rest of 20 patients, in whom later colostomy closure, a second operation, was done. The decision regarding choice of surgical procedure

depended upon the presence of sigmoid colon condition, time of presentation, extent of proximal colonic dilatation, co morbid conditions and the choice of surgeon.

**RESULTS**

Total 46 patients were included in the study of which 32 (69.56%) presented with gangrenous sigmoid colon on laparotomy and viable sigmoid colon was present in the remaining 14 (30.43%) cases (Table 1).

**Table 1: Intraoperative finding of sigmoid volvulus**

Sigmoid colon condition	No of patients	Percentage
Gangrenous colon	32	69.56%
Non gangrenous colon	14	30.43%

Out of these patients, 33 (71.74%) were males and 13 (28.26%) were females, ratio 2.54 : 1 (Table 2); most common affected age group were 51 – 60 years 26 cases (56.52%) and least in 30-40 years 1 case (2.17%) (Table 3).

**Table 2: sex wise distribution**

Sex	Number of patients	Percentage
Male	33	71.74%
Female	13	28.26%

**Table 3: Age wise distribution of sigmoid volvulus**

Age groups	No of patients	Percentage
30-40	1	2.17%
41-50	5	10.87%
51-60	26	56.52%
61-70	11	23.91%
71-80	3	6.52%

**Table 4 shows presence of co morbidities among the patients included in the study.**

**Table 4 : Co morbid conditions presents in the patients of sigmoid volvulus who had undergone emergency surgery**

Co morbid conditions	No of patients	Percentage
Hypertension	17	36.95%

Diabetes Mellitus	8	17.39%
COPD	5	10.87%
Tuberculosis	3	6.52%
Neuropsychiatric disorder	2	4.35%
None	8	17.39%

**Table 5: Outcomes of surgery**

Outcomes	Gangrenous gut (n =32)		Viable gut (n =14)	
	Colostomy	Resection anastomosis	Resection anastomosis	Colostomy
	n=18	n=14	n=12	n=2
Mortality	3	5	2	1
Wound infection	4	3	1	1
Burst abdomen	-	1	1	1
Colostomy retraction	1	-	-	-
Anastomotic leak	-	4	1	-

Mortality rate is high in patients of gangrenous gut undergoing resection and anastomosis i.e.45.45%.Wound infection was more common in case of gangrenous gut undergoing colostomy(44.44%).Anastomotic leak was seen in patients of gangrenous gut with resection anastomosis i.e. 57.14%.All patients who underwent primary resection and anastomosis and had anastomotic leak were later converted into colostomy but none of them survived.

**DISCUSSION**

Total 56 patients admitted with sigmoid volvulus,of these 32 were diagnose complicated i.e. gangrenous on laparotomy during emergency and 14 case were non-complicated i.e. with viable gut.These patients were admitted from July 2016 to November 2017.Male to female ratio in this study is 2.54:1, male is commonly affected.The male preponderance awaits a satisfactory explanation ,but a wider more relaxed female pelvis allows for spontaneous reduction of sigmoid volvulus<sup>17</sup> .Other studies have found that males have longer and narrower sigmoid mesenteries than females,which leads to axial rotation of sigmoid<sup>18</sup> .

Plain abdominal X-rays are often diagnostic of volvulus.In our study the typical radiological " omega sign"or " coffee bean sign"was seen in most of patients.Presently multidetector CT performed with iv contrast is the preferred modality of evaluation in sigmoid volvulus<sup>19</sup> .

Emergent resection carries a high mortality rate partly because of the poor general condition of the patient and toxemia from necrosis<sup>20</sup> .Mortality following acute sigmoid volvulus is higher (36-80%)<sup>21</sup> in the developed rather than the developing world (16-33%)<sup>22,23</sup> .Most authors agree that the definitive treatment of sigmoid volvulus is sigmoidectomy with or without anastomosis<sup>11,12,20</sup> .However resection with primary anastomosis in emergency situation, when the general condition of the patient is suboptimal and bowel not prepared ,carries an unacceptably high complication rate<sup>10,11,12</sup> .

Gangrenous colon requires immediate excision<sup>14,15,16</sup> .In the presence of gangrene ,resection is followed by colostomy .Resection and primary anastomosis in case of gangrenous sigmoid colon carries an unacceptably high complication rate ,when the general condition of the patient is suboptimal and bowel not prepared.In such situation end colostomy may play a protective role in avoiding anastomotic leakage.We performed maximum number of cases by primary resection and anastomosis in viable bowel loops (85.71%)and colostomy in case of gangrenous colon(56.25%).

Wound infection was the most common post operative complication (19.56%)and the mortality rate was around 24%, which is comparable when compared to similar studies<sup>24,25,26</sup> .Anastomotic leak is the most important and dreadful complication in case of primary resection and anastomosis ,we found 19.23%.

**CONCLUSION**

Resection and primary anastomosis in the management of acute sigmoid volvulus with viable gut is a safe, effective and economical procedure.In complicated cases of sigmoid volvulus colostomy, has a definitive advantage over resection and anastomosis.

**REFERENCE**

1. Avots-Avotins KV, Waugh DE. Colon volvulus and the geriatric patient. *Surg Clin North Am.* 1982;62:248-60.
2. Williams M, Steffes CP. Sigmoid volvulus in a 46 year old man. Case report and literature review. *J Hosp Phys* 2006; 1: 33-36.
3. Sigmoid volvulus. Available at : <http://www.updodate.com/ contents/sigmoid-volvulus> Last accessed on 7/5/2012
4. Sigmoid volvulus. Available at : <http://www.abdopain.com/ sigmoid-volvulus.html> accessed on 7/5/2012
5. Lal SK, Morgenstern R, Vinjirayer EP, Matin A. Sigmoid volvulus an update. *Gastrointest Endosc Clin N Am.* 2006;16(1):175-87.
6. Cuschieri A, Steele PJ, Moosa AR. Disorders of the colon and rectum. In: *Essential Surgical Practice.* 4th edition; 2002:569-626.
7. Martin D, McWhirt E, Napoli P. Colonic volvulus. The army medical center experience, 1983-1987. *Am Surg.* 1991;57:295-300.
8. Ahsan I, Rehman H. Volvulus of sigmoid colon among pathans. *BMJ* 1967; 1: 29-31.
9. De Utpar. Sigmoid volvulus in rural Bengal. *Trop Doct* 2002; 32: 80-2.
10. Khanna AK, Misra MK, Kumar K. Extraperitonealization for sigmoid volvulus: a reappraisal. *Aust N Z J Surg.* 1995; 65(7):496-8.
11. Salas S, Angel CA, Salas N, Murillo C, Swischuk L. Sigmoid volvulus in children and adolescents. *J Am Coll Surg.* 2000; 190(6):717-23.
12. Kuzu MA, Aşlar AK, Soran A, Polat A, Topcu O, Hengirmen S. Emergent resection for acute sigmoid volvulus: results of 106 consecutive cases. *Dis Colon Rectum.* 2002;45(8):1085-90.
13. Dülger M, Cantürk NZ, Utkan NZ, Gonullu NN. Management of sigmoid colon volvulus. *Hepatogastroenterology.* 2000;47(35): 1280-3.
14. Avots-Avotins KV, Waugh DE. Colon volvulus in the geriatric patient. *Surg Clin North Am.* 1982;62(2):249-60.
15. Reilly PMJ, Jones B, Bulkley GB. Volvulus of the colon. In: Cameron JL, ed. *Current Surgical Therapy.* St Louis: Decker Inc; 1992. p. 170-4.
16. Udezue NO. Sigmoid volvulus in Kaduna, Nigeria. *Dis Colon Rectum.* 1990;33(8):647-9.
17. Nuhu A, Jah A; Acute sigmoid volvulus in West African population. *Ann African Med.* 2010; 9(2): 86-90.
18. Ballantyne GH, Brandner MD, Beart RW Jr., Ilstrup DM; Volvulus of the colon: Incidence and mortality. *Ann Surg.* 1985; 202(1): 83-92.
19. Saucier ML, Billiard JS, Lavallée JM, Lepanto L; Small and large bowel volvulus: Clues to early recognition and complications. *Eur J Rad.* 2010; 74(1): 60-66.
20. Madiba TE, Thomson SR. The management of sigmoid volvulus. *J R Coll Surg Edinb.* 2000;45(2):74-80.
21. Welch GH, Anderson JR. Acute volvulus of the sigmoid colon. *World J Surg.* 1987;11(2):258-62.
22. Sroujeh AS, Farah GR, Jabaiti SK, el-Muhtaseb HH, Qudah MS, Abu-Khalaf MM. Volvulus of the sigmoid colon in Jordan. *Dis Colon Rectum.* 1992;35(1):64-8.
23. Udezue NO: Sigmoid volvulus in Kaduna, Nigeria. *Dis Colon Rectum.* 1990;33(8):647-9.
24. Cirocchi R, Farinella E, Mura FL, Morelli U, Trastulli S, Milani D et al.; The sigmoid volvulus: surgical timing and mortality for different clinical types. *World J Emergency Surg.* 2010, 5: 1.
25. Atamanalp SS, Ozturk G; Sigmoid volvulus in the elderly: Outcomes of a 43-year, 453-patient experience. *Surg Today.* 2011; 41(4): 514-519.
26. Ören D, Atamanalp SS, Aydinli B, Yildiran 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. *Diseases of the Colon & Rectum.* 2007; 50(4): 489-497.