

# ONE STAGE RESECTION OF SIGMOID VOLVULUS: AN EXPERIENCE OF 50 CASES

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## ABSTRACT

**Objective:** to assess the out come of one stage resection and primary anastomosis without intraoperative colonic lavage in patients with acute sigmoid volvulus.

**Material and Methods:** A prospective, descriptive study was carried out in the Surgical department of Lady Reading Hospital, Peshawar from Jan 2002 to Dec 2003. Fifty patients with sigmoid volvulus were included in the study. Patients with serious co morbidity, hemodynamic instability, gangrenous or compound volvulus on laparotomy were excluded from the study. All the patients were assessed and operated upon by a senior surgeon. Resection of the sigmoid colon and primary anastomosis was done after only manual decompression in all cases. The demographic data, clinical features, radiologic and operative findings, out come of the procedure in terms of postoperative complications and duration of hospital stay were recorded on a proforma. The data was entered and processed on the SPSS 10 version.

**Results:** The patients included 44 males and 6 females. Male to female ratio was 7.3:1. Mean age was 57 years. Most frequent clinical features were abdominal pain, distension and constipation. Postoperatively, superficial wound infection was seen in 14% patients (n=7), transient paralytic ileus in 22% cases (n=11). Pulmonary complications occurred in 6% patients (n=3). No deaths or clinical anastomotic leak occurred. Duration of hospital stay ranged from 6-17 days (mean 11 days).

**Conclusion:** Resection of sigmoid colon primary anastomosis can safely be carried out without on-table colonic lavage in selected patients with viable colon.

**Key Words:** Sigmoid Volvulus, Resection, Primary Anastomosis.

## INTRODUCTION

Sigmoid volvulus is an abdominal emergency in which a redundant sigmoid loop twists around its narrow mesentery resulting in distension and ischemia. Sigmoid colon is the most common site for volvulus followed by caecum.<sup>1</sup> Occasionally volvulus of transverse colon may occur.<sup>2</sup> 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.<sup>3-5</sup> Some authors relate sigmoid volvulus to Hirschprung's disease.<sup>6</sup> They believe that loss of ganglion cells predisposes to recurrent volvulus after sigmoidectomy.<sup>7</sup>

Sigmoid volvulus has variable geographical distribution.<sup>4</sup> It is very common in the developing

countries and accounts for up to 50% cases of large bowel obstruction.<sup>3,4,8-10</sup> Highest incidence has been reported from Ethiopia where it is responsible for 50-79% cases of intestinal obstruction.<sup>5</sup> It is relatively rare in the west and accounts for only 1-7% cases.<sup>4,11</sup>

A typical case of sigmoid volvulus presents with colicky abdominal pain, constipation, vomiting, abdominal distension and an empty, distended rectum on digital rectal examination. In gangrene of the sigmoid colon, blood may also be seen on the glove.<sup>2,12</sup> Plain abdominal radiograph confirms the diagnosis in 80% cases.<sup>2</sup> Barium enema and abdominal CT scan are helpful in doubtful cases.<sup>2,12</sup>

Considerable controversy exists regarding the best method of treatment of sigmoid volvulus. Variety of surgical procedures is available. Such as: percutaneous or endoscopic or open sigmoidopexy, mesosigmoidoplasty, extraperitonealization of sigmoid colon, Hartmann's or Paul Mikulicz procedure,

sigmoidectomy with primary anastomosis.<sup>3,5</sup> Each procedure has its own merits and demerits. Although many authors have recommended endoscopic detorsion as an initial procedure in patients with viable colon;<sup>1,3</sup> it has failure rate of 30%<sup>4</sup> and a recurrence rate of 40-90% if used alone.<sup>1,3-5</sup> Non resectional procedures, while of value in high risk patients, also carry high recurrence rate.<sup>1</sup> Staged procedures are associated with complications of colostomy, increased cost and multiple operations.<sup>10</sup> It is felt that a single stage, safe and cost effective procedure is required for the treatment of sigmoid volvulus. The purpose of this study was to assess the outcome of one stage resection and primary anastomosis without intraoperative colonic lavage in patients with acute sigmoid volvulus.

## MATERIAL AND METHODS

This prospective, descriptive study was conducted in Surgical department of Lady Reading Hospital, Peshawar from Jan 2002 to Dec 2003.

The study included 50 patients of either gender and any age group with a diagnosis of sigmoid volvulus. Informed consent was taken from all the patients before including them in the study. Patients with serious medical co morbidity, hemodynamic instability, signs of peritonitis, gangrenous gut and compound volvulus on operation were excluded from the study.

All the cases were assessed by the senior surgeon on call. Diagnosis was based on clinical presentation, assessment and radiologic findings. Preoperative care included intravenous fluid resuscitation, urinary catheterization, nasogastric aspiration (in patients with vomiting) and broad spectrum antibiotics.

Laparotomy was done by an experienced senior surgeon. Lower midline incision was used in all the patients; viability of the gut was checked. The redundant sigmoid colon was resected. Manual decompression of the colon was done. The edges of the bowel were cleansed with normal saline soaked gauze and end to end, single layer anastomosis with interrupted 3/0 Vicryl suture was made. Copious irrigation of the peritoneal cavity was done and a drain was kept in the pelvis in all cases. Abdomen was closed in single layer using Polypropylene I suture. Skin was closed with interrupted vertical mattress sutures using Nylon.

Postoperatively patients were shifted to the ward, kept on intravenous fluids, antibiotics. Patients were kept NPO till the bowel sounds returned. Patients were discharged after they remained stable for few days. They were advised to come for follow up after 10 days, and skin stitches were removed.

All the data was entered on a pre designed proforma. The proforma included: demographic detail, clinical features, radiologic findings, operative findings, postoperative complications and duration of hospital stay.

The data was entered and processed on the

SPSS 10 version. The results of the tests were subjected to statistical analysis using the same program. Mean was calculated for quantitative variables and percentage was calculated for all the qualitative variables.

## RESULTS

During the study period, a total of 50 patients were admitted through the accident and emergency department of the hospital, with the clinical diagnosis of acute sigmoid volvulus. Forty four were males and 6 were females with ratio 7.3:1. Age range was from 40 years to 68 years, with a mean age of 57 yrs.

The duration of symptoms ranged from 12 hours to 7 days (mean 2 days). Common symptoms were abdominal pain especially on the left side of the abdomen and constipation. The most consistent finding on physical examination was abdominal distension. Some degree of dehydration was also found in all patients. Generalized tenderness with no muscle guarding or rigidity was found in 34 patients (68%). Detail of clinical features is given in table 1.

Plain abdominal X-rays revealed grossly distended, coffee bean shaped sigmoid colon in 48 patients (96%); small gut loops were also distended in 2 patients (4%).

Postoperatively, 11 (22%) patients developed paralytic ileus and 7 patients (14%) developed superficial wound infection (Table 2); however no patient needed any additional surgical procedure other than stitch removal and dressing. There was no clinically demonstrable anastomotic leak. Mortality was 0%. Duration of hospital stay ranged from 6-17 days with mean of 11 days.

## DISCUSSION

Sigmoid volvulus is the third leading cause of large bowel obstruction in adults.<sup>13</sup> It is the disease of the aged.<sup>1,5,10,14</sup> In our study, the mean age was 57 years similar to that reported from

### CLINICAL FEATURES

S. No.	Clinical Features	No. of cases (n=50)	Percentage (%)
Symptoms	Acute abdominal pain	50	100
	Constipation	48	96
	Abdominal distension	48	96
	Asymmetric distension	34	68
	Vomiting	13	26
	Nausea	10	20
Signs	Empty, distended rectum	41	82
	Generalized tenderness	30	60
	Visible peristalsis	8	16
	Hypotension	7	14

Table 1

other studies.<sup>2,9,10,14,15</sup> It is rare in children.<sup>14,16,17</sup> More common in males. Male to female ratio of 7.3:1 in this study is comparable to that reported in other studies.<sup>2,10,14,18</sup>

Prompt diagnosis and early management are important for successful outcome. Accurate preoperative diagnosis can be made in 70–80% cases.<sup>1,2</sup> Mortality rate is 30-50% in patient with gangrenous changes and elderly patients with co morbidity.<sup>1,3,4,19</sup> Other risk factors are: geographical location (western countries),<sup>5,20</sup> arterial pressure lower than 70 mm Hg,<sup>20</sup> purulent/ feculent peritoneal fluid,<sup>20</sup> and emergent surgery.<sup>5,20</sup>

Management of sigmoid volvulus involves relief of obstruction and prevention of recurrent attacks. Several treatment options are available. The management should however be individualized, based on the condition of the patient, co morbidity, viability of the gut and surgeon's experience.

## CONCLUSION

Resection of sigmoid colon and primary anastomosis can be safely carried out without on-table colonic lavage in selected patients of volvulus with viable colon. It has acceptable morbidity and mortality. It is especially beneficial in our setup where the hospitals are over burdened and most of the patients are poor and can't afford multiple operations.

## REFERENCES

1. Turan M, Sen M, Karadayi K, Koyuncu A, Topcu O, Yildirim C, et al. Our sigmoid colon volvulus experience and benefits of colonoscopy in detortion process. *Rev Esp Enferm Dig* 2004; 96:32-5.
2. Hadi A, Khan N, Shah SMA, Bangash A. Emergency management of sigmoid Volvulus: experience of Lady Reading Hospital Peshawar. *J Postgrad Med Inst* 2006; 20:82-5.
3. Madiba TE, Thomson SR. The management of sigmoid volvulus. *J R Coll Surg Edinb.* 2000; 45:74-80.
4. Safioleas M, Chatziconstantinou C, Felekouras E, Stamatakos M, Papaconstantinou I, Smirnis A, et al. Clinical considerations and therapeutic strategy for sigmoid volvulus in the elderly: a study of 33 cases. *World J Gastroenterol* 2007; 13:921-4.
5. Agaoglu N, Yucel Y, Turkyilmaz S. Surgical treatment of the sigmoid volvulus. *Acta Chir Belg* 2005; 105:365-8.
6. Tomita R, Ikeda T, Fujisaki S, Tanjoh K, Munakata K. Hirschsprung's disease and its allied disorders in adults' histological and clinical studies. *Hepatogastroenterology* 2003;

## POST OPERATIVE COMPLICATIONS

Complications	No. of cases (n=50)	Percentage (%)
Paralytic ileus	11	22
Superficial wound infection	7	14
Pulmonary complications	3	6

Table 2

50: 1050-3.

7. Furuya Y, Yasuhara H, Yanagie H, Naka S, Takenoue T, Shinkawa H, et al. Role of ganglion cells in sigmoid volvulus. *World J Surg* 2005; 29: 88-91.
8. De U. Sigmoid volvulus in rural Bengal. *Trop Doct* 2002; 32: 80-2.
9. Heis HA, Bani-Hani KE, Rabadi DK, Elheis MA, Bani-Hani BK, Mazahreh TS, et al. Sigmoid Volvulus in the Middle East. *World J Surg* 2008; 32:459-64.
10. Khan M, Ullah S, Jan MAU, Naseer A, Ahmed S, Rehman A. Primary anastomosis in the management of acute sigmoid volvulus with out colonic lavage. *J Postgrad Med Inst* 2007; 21:305-8.
11. Lau KC, Miller BJ, Schache DJ, Cohen JR. A study of large-bowel volvulus in urban Australia. *Can J Surg* 2006; 49:203-7.
12. Dulger M, Canturk NZ, Utkan NZ, Gonullu NN. Management of sigmoid colon volvulus. *Hepatogastroenterology* 2000; 47: 1280-3.
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. Zarin M, Ahmed I, Wahid D, Aslam V. Management of Volvulus of sigmoid colon by resection and single layer primary Anastomosis. *J Surg Pakistan* 2003; 8:2-4.
15. Oren D, Atamanalp SS, Aydinli B, Yildirgan MI, Başoğlu 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 Colon Rectum* 2007; 50:489-97.
16. Samuel M, Boddy SA, Capps S. Volvulus of the transverse and sigmoid colon. *Pediatr Surg Int* 2000; 16:522-4.
17. Sonia S, Carlos AA, Nilson S, Carlos M, Leonard S. Sigmoid volvulus in children and adolescents. *J Am Coll Surg* 2000; 190:717-23.
18. Bhuiyan MM, Machowski ZA, Linyama BS, Modiba MC. Management of sigmoid volvulus

- in Polokwane-Mankweng Hospital. *S Afr J Surg* 2005; 43:17-9.
19. Külah B, Gülgez B, Ozmen MM, Ozer MV, Coşkun F. Emergency bowel surgery in the elderly. *Turk J Gastroenterol* 2003; 14:189-93.
  20. Raveenthiran V. Observations on the pattern of vomiting and morbidity in patients with acute sigmoid volvulus. *J Postgrad Med* 2004; 50:27-9.
  21. 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; 45:1085-90.
  22. Safioleas MC, Moulakakis KG, Stamatakos MK. A new therapeutic surgical method in patients with left-sided colonic emergencies. *Int J Colorectal Dis* 2006; 21: 186-7.
  23. Akcan A, Akyildiz H, Artis T, Yilmaz N, Sozuer E. Feasibility of single-stage resection and primary anastomosis in patients with acute noncomplicated sigmoid volvulus. *Am J Surg* 2007; 193:421-6.
  24. Miettinen RP, Laitinen ST, Makela JT. Bowel preparation with oral Polyethylene glycol electrolyte solution vs no preparation in elective open colorectal surgery: Prospective, randomized study. *Dis Colon Rectum* 2000; 43:669-77.
  25. Zmora O, Pikarsky AJ, Wexner SD. Bowel preparation for colorectal surgery. *Dis Colon Rectum* 2001; 44:1537-49.
  26. Bhatnagar BN, Sharma CL, Gautam A, Reddy DC. The changing survival scenario in gangrenous sigmoid volvulus: a four decade study. *J Indian Med Assoc* 2006; 104:294-7.
  27. Sule AZ, Misauno M, Opaluwa AS, Ojo E, Obekpa PO. One stage procedure in the management of acute sigmoid volvulus without colonic lavage. *Surgeon* 2007; 5:268-70.
  28. Liang JT, Lai HS, Lee PH. Elective laparoscopically assisted sigmoidectomy for the sigmoid volvulus. *Surg Endosc* 2006; 20:1772-3.
  29. Raveenthiran V. Restorative resection of unprepared left-colon in gangrenous vs. viable sigmoid volvulus. *Int J Colorectal Dis* 2004; 19:258-63.
  30. 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.

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