

PRIMARY ANASTOMOSIS IN THE MANAGEMENT OF ACUTE SIGMOID VOLVULUS WITH OUT COLONIC LAVAGE

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ABSTRACT

Objective: The objective of this study was to evaluate the safety of single stage resection and anastomosis for acute left sided colonic obstruction due to sigmoid volvulus.

Material and Methods: This study was conducted in the department of surgery Hayatabad Medical Complex and Lady Reading Hospital Peshawar Pakistan from January 2002 to Jun 2007. It included cases who presented with sigmoid volvulus in emergency. All cases were operated by surgeons at senior registrar or above level. Resection of the sigmoid colon followed by primary anastomosis after simple manual decompression with out ontable colonic lavage or diverting stoma were carried out.

Results: Total number of patients who underwent bowel decompression, resection and primary anastomosis was 80. Superficial wound infections occurred in 20% (n=16). No death or clinical anastomotic failure was recorded. Hospital stay was 11.4 ± 4.3 (SD) days.

Conclusion: Resection of acute sigmoid volvulus and primary anastomosis after decompression alone can be carried out safely in reasonably fit patients.

Key Words: left sided colonic obstruction, sigmoid volvulus, resection, primary anastomosis.

INTRODUCTION

Sigmoid volvulus is the twisting of sigmoid colon on its mesentery. An unusually narrow attachment of the root of the sigmoid mesentery to the posterior abdominal wall permits close approximation of the 2 limbs of the sigmoid colon. This in turn may predispose twist of sigmoid colon around its mesenteric axis. This anatomic defect may be complicated by predisposing factors, including a high-fiber diet and chronic constipation. In acute sigmoid volvulus, the degree of torsion varies from 180° to 540°. The torsion is usually counterclockwise. The common form of volvulus around the mesenteric axis usually is sited 15-25 cm from the anus and is therefore accessible with sigmoidoscopic examination.^{1,2,3} The worldwide frequency is not known the condition is common in South America, Africa, and parts of Asia where the consumption of high-fiber diet results in a long, redundant sigmoid colon and in the developing world it makes about 50% of large bowel obstruction.^{4,6}

Mortality following emergency surgery for acute volvulus is low. This is mainly due to the fact that the patients are relatively young and healthy and, therefore, able to recover from the disorder and its surgical treatment. A single stage method of treatment that would ensure a permanent cure, avoid a colostomy, reduce number of procedures and shorten the duration of hospital stay, is desirable. Virtually all colorectal surgeons consider a mechanically cleansed and empty bowel a prerequisite for a safe colonic resection and anastomosis. The purpose of mechanical bowel preparation is to reduce the risk of septic complication and anastomotic dehiscence.^{5,9}

On table antegrade colonic lavage is usually performed to decompress and clean the proximal obstructed colon. While decompression may be desirable, to decrease distension, facilitate abdominal closure and improve colonic blood supply, there is some evidence that complete cleaning of the colon of the faecal matter is not necessary to ensure anastomotic integrity. There have been several published series of primary

POSTOPERATIVE COMPLICATIONS

Complications	No. of Patients	Percentage
Superficial Wound Infection	n=16	20%
Anastomotic leak	n= 0	0%
Deaths	n=0	0%

Table 1

resection and anastomosis with out antegrade colonic lavage^{2,4,6,8} The aim of this study is to evaluate the definitive one stage resection of the redundant colon and primary anastomosis with out antegrade colonic lavage in patients with acute sigmoid volvulus.

MATERIAL AND METHODS

This was a prospective, observational and analytic study of forty consecutive patients who were diagnosed as sigmoid vulvulus and treated from 1st January 2002 to 30th Jun 2007 in the surgical unit Hayatabad Medical Complex/Lady Reading Hospital Peshawar Pakistan. All these patients presented in emergency and were operated by surgeon at senior registrar or above level.

Both male and female and of any age group diagnosed as sigmoid vulvulus were included in this study. Patients who were diagnosed and treated somewhere else and then referred were excluded from this study.

An informed consent was taken from all patients for inclusion in this study. The diagnosis of sigmoid vulvulus was made from the history of constipation, abdominal pain (which was often recurrent), abdominal distension, vomiting and plain abdominal

X-ray. In these X-rays, the cardinal sign was the coffee bean or omega sign of the distended, twisted, sigmoid colon. All the patients were resuscitated preoperatively. They were given preoperative broad spectrum antibiotics(Inj.Cefotaxime 1G BD &Inj.Flagyle 500mg TID) and were continued for five days.

Laparotomy was performed through a lower midline incision in all cases. Viability of the bowel was assessed. The sigmoid was untwisted manually to relieve obstruction. Gaseous distension of the large bowel was relieved with suction through colotomy in the sigmoid colon. The colotomy was then closed and the sigmoid colon was divided between two non-crushing occluding clamps isolating the colon from the operating field. Carefully manual decompression of the proximal and distal colon was carried out. After satisfactory decompression the redundant sigmoid colon was resected proximally and distally to the level of good free marginal

bleeding. Descending colon and rectum were mobilized to make the anastomosis tension free. The bowel ends were cleansed with swabs soaked in pyodin solution diluted with normal saline. Two layered inverting end to end anastomosis was carried out with an inner continuous layer of 3/0 vicryl and an outer interrupted seromuscular layer of 2/0 silk. No covering stoma was done in any patient. The pelvic and peritoneal cavities were washed thoroughly with normal saline. Pelvic drain was routinely used in all patients. Midline incisions were closed by mass closure using vicryl 0. Skin was closed with interrupted mattress Nylone stitches.

RESULTS

Total number of patients including in this study was 80. There were 90%(n=72) male and 10%(n=8) female as shown in Fig. No.1. Age range was 20-70 with an average age of 47.3±17.4(SD) years.

Analysis of the postoperative outcome in 80 patients treated with primary anastomosis with out antegrade colonic lavage is shown in Table.No.1. Superficial wound infection occurred in 20 % (n=16) patients.All these wound infection were managed with 3rd generation Cephalosporin (Inj.Ceftriaxone 1 gm IV BD for 7 days). There was no clinical anastomotic leak with fecal peritonitis. Mortality was zero. Duration of hospital stay ranged from 8-20 days with mean 11.4±4.2(SD).

DISCUSSION

Sigmoid vulvulus is a leading cause of bowel obstruction in many parts of Africa. Several aspects of its management remain controversial, particularly the operative strategy to be adopted in patients in whom sigmoidoscopy had failed to deflate bowel.^{2,3,4,51} Surgical management has evolved over time. Staged procedures, such as the three stage approach(decompressing colostomy ,resection and anastomosis, colostomy closure)or a two stage procedure(primary resection with covering colostomy, colostomy closure) are less frequently practiced.^{6,7,8,9,10} Since Dudley et al^{16,18}

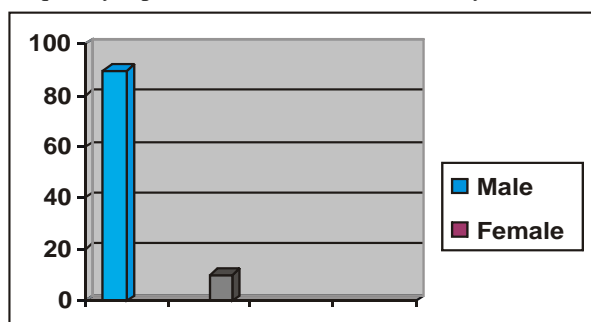


Fig. 1

published their technique on colonic irrigation in 1980, single stage resection and anastomosis became popular among colorectal surgeons dealing with an obstructed left colon. A one stage procedure employing antegrade colonic irrigation cuts down on cumulative anaesthetic risk, improves the quality of life because no stoma is required and shortens hospitalization. Colonic irrigation can be a tedious procedure and may increase operating time.^{11,12,13,14,15} Colonic irrigation with large amounts of saline can lead to electrolyte abnormalities and may be associated with more risk of spillage and contamination.^{17,19,20,21,22} Till to date a number of authors have reported series of patients who underwent emergency left-sided colon resection without intraoperative colonic lavage, and the results are encouraging.^{2,4,6,8,10,12,14,20,22} Manual decompression was found to be less complicated, as reported previously. A dilated proximal colon could be easily decompressed manually.^{23,24,25} Faecal soilage at the anastomosis can be reduced by exteriorizing the trasected colon from the operating field and cleaning the ends of the colon before anastomosis.^{26,27,28}

Analysis of our study showed that primary resection and anastomosis at initial presentation proved a safe operative treatment and avoided another hospital admission. There was no mortality in our study. Clinical anastomotic leakage was also not observed in any of our patients. Hospital stay was 11.4+4.2(SD) days. So it is obvious from our study and other studies that a bowel that is badly prepared, or not prepared at all, should not be a contraindication for a primary anastomosis in the left colon.^{29,30,31} It needs to be emphasized, therefore, that judgement, tissue handling, anastomosis of well vascularised bowel ends with well placed sutures may will be the critical factors, and likely to be employed by senior and experienced surgeons^{32,33,34,35}. Superficial wound infection occurred in 20%(n=8) patients. These patients did not need any surgical intervention. Simple stitch removal and dressing worked in these patients. Superficial wound infections recorded in available studies ranged 10-20%.^{2,4,6,8,22,24} This emphasized that adequate control of solid rather than liquid faecal stream and exteriorizing the cut ends of the bowel ensures good control and causes less spillage and contamination.^{4,6,8,10,14,20} Any patient who is fit enough to undergo operation should have a definitive procedure during the same admission to avoid readmission, and 2nd surgical procedure.^{12,14,16,22} One-stage restorative resection without on-table lavage appears to be a promising alternative in the emergency management of acute sigmoid volvulus. Avoidance of colostomy and the attendant socioeconomic benefits warrants further

studies of this one stage procedure.^{24,26,28,30,31,32}

CONCLUSION

Resection and primary anastomosis can be performed safely without mechanical bowel preparation in sigmoid volvulus. It has the merit of being a shorter and simpler procedure to perform without increasing morbidity or mortality.

REFERENCES

1. Bhuiyan MM, Machowski ZA, Linyama BS, Modiba MC. Management of sigmoid volvulus in Polokwane-Mankweng Hospital. *S Afr J Surg* 2005; 43:17-9
- 2- Liang JT, Lai HS, Lee PH. Elective laparoscopically assisted sigmoidectomy for the sigmoid volvulus. *Surg Endosc* 2006; 20:1772-3.
3. Safioleas M, Chatziconstantinou C, Felekouras E. Clinical considerations and therapeutic strategy for sigmoid volvulus in the elderly: a study of 33 cases. *World J Gastroenterol* 2007; 13:921-4
4. Naaeder SB, Archampong ED. One stage resection of acute sigmoid volvulus. *Br J Surg* 1995;82:1635-6
5. 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.
6. Santos JCM Jr., Batista J, Sirimarco Mt, Guimares AS, Levy CE. Prospective randomized trial of mechanical bowel preparation in patients undergoing elective colorectal surgery. *Br J Surg* 1994; 81:1673-6.
7. 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; 104:292, 294-7.
8. Irving AD, Scrimgeour D. Mechanical Bowel preparation for Colonic anastomosis for colonic resection and anastomosis *Br J Surg* 1987;74:580-1.
9. Bhatnagar BN, Sharma CL, Gautam Kakar A, Reddy DC. Gangrenous sigmoid volvulus: a clinical study of 76 patients. *Int J Colorectal Dis* 2004; 19:134-42.
10. Dirk VG, Patrick FO, Uslie AN, Peter JR, Johannes LP, Robert PAB. Complication after colorectal surgery without mechanical bowel preparation. *JAMA Coll Surg* 2002;194: 40-7.
11. Lal SK, Morgenstern R, Vinjirayer EP, Matin A. Sigmoid volvulus an update. *Gastrointest*

- Endosc Clin N Am 2006; 16:175-87.
12. Utpal De, Shibajyoti G, 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.
 13. A o lu N, Yücel Y, Türkyılmaz S. Surgical treatment of the sigmoid volvulus. Acta Chir Belg 2005; 105:365-8
 14. Tiah L, Goh SH. Sigmoid volvulus: diagnostic twists and turns. Eur J Emerg Med 2006; 13:84-7.
 15. Oren D, Atamanalp SS, Aydinli B. 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. Dudely HAF, Radcliffe AG, McGeeham D. Intraoperative irrigation of the colon to and permit primary anastomosis. Br J Surg 1980;67:80-1
 17. Tsai MS, Lin MT, Chang KJ, Wang SM, Lee PH. Optimal interval from decompression to semi-elective operation in sigmoid volvulus. Hepatogastroenterology 2006; 53:354-6.
 18. Radcliffe AG, Dudley HAF. Intraoperative antegrade irrigation of large intestine. Surg Gynaecol Obstet 1983;156:721-3.
 19. Dülger M, Cantürk NZ, Utkan NZ, Gonullu NN. Management of sigmoid colon volvulus. Hepatogastroenterology. 2000; 47:1280-3
 20. Atamanalp SS, Yildirgan MI, Ba o lu M, Kantarci M, Yilmaz I. Sigmoid colon volvulus in children: review of 19 cases. Pediatr Surg Int 2004; 20:492-5.
 21. Kuzu MA, A lar 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. Danne PD. Intraoperative colonic lavage: Safe single-stage, left colorectal resection. Aust NZ JSurg 1991;61:59-65.
 23. Lau KC, Miller BJ, Schache DJ, Cohen JR. A study of large-bowel volvulus in urban Australia. Can J Surg 2006; 49:203-7.
 24. 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
 25. 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.
 26. Lim JF, Tang CL, Seow-Choen F, Heah SM. Prospective, randomized trial comparing intraoperative colonic irrigation with manual irrigation with manual decompression only for obstructed left-sided colorectal cancer. Dis Colon Rectum 2005;48:205-9.
 27. Külah B, Gülgez B, Ozmen MM, Ozer MV, Coskun F. Emergency bowel surgery in the elderly. Turk J Gastroenterol 2003;14:189-93.
 28. Narayansingh V, Rampaul R, Maharaj D, Kuruvilla T, RamchavanK, Pouchet B. Propective study of primary anastomosis with out colonic lavage for patients with an obstructed obstructed left colon. Br J Surg 1999;86:1341-3.
 29. Raveenthiran V. Restorative resection of unprepared left-colon in gangrenous vs. viable sigmoid volvulus. Int J Colorectal Dis. 2004 ;19:258-63.
 30. Hsu TC. One-stage resection and anastomosis for acute obstruction of left colon. Dis Colon Rectum 1998;41:28-32.
 31. Sule A, Obekpa PO, Iya D, Ogbonna B, Momoh J. Intraoperative colonic irrigation in the management of left sided large bowel emergencies in Jos University Teaching Hospital, Nigeria. East Afr Med J 2000 ;77:613-7.
 32. Patriti A, Conine A, Carbone E, Gulla N, Donini. One-stage resection ithout colonic lavage in emergency surgery of the left colon. Colorectal Dis 2005;7:332-8.
 33. Arnaud JP, Casa C, Georgeac C. [Intraoperative colonic irrigation in the emergency treatment of occlusive lesions of the left colon]. J Chir (Paris) 1994 ;131:538-40.
 34. Pannell M, Byard RW. Sigmoid volvulus and unexpected death in the elderly. J Clin Forensic Med 2001; 8:228-30.
 35. Keller A, Aeberhard P. Emergency resection and primary anastomosis for sigmoid volvulus in an African population. Int J Colorectal Dis 1990;5:209-12.

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