ORIGINAL ARTICLE

MANAGEMENT OF ACUTE SIGMOID VOLVULUS, USING ONE STAGE RESECTION AND ANASTOMOSIS, WITHOUT COLONIC LAVAGE

Manzoor Ali, Zahid Hashmi, Adnan Zafar

Department of Surgery, Saidu Medical College Swat and Gomal Medical College, D.I. Khan, Pakistan

ABSTRACT

Background: One stage primary resection and anastomosis of left sided colonic obstruction with on-table antegrade colonic lavage is in vogue, to reduce the risk of postoperative infective complications and anastomotic dehiscence. The purpose of our study was to evaluate the safety of single-stage resection and anastomosis for acute left-sided colonic obstruction due to acute sigmoid volvulus, without intra operative colonic lavage.

Material & Methods: This study was conducted in a consecutive series of patients admitted to our department with acute sigmoid volvulus. Patients with perforation and peritonitis at presentation were excluded from the study. Emergency resection was performed by consultant grade surgeon, followed by primary anastomosis without on-table colonic lavage, after a manual decompression. The data obtained was analyzed.

Results: A total of 83 patients underwent resection and primary anastomosis of acute sigmoid volvulus. Four patients presented with gangrenous bowels, which were resected and primary anastomosis performed. One patient had caecal volvulus in addition to sigmoid. He had double resection and primary anastomosis. Post-operatively there were 7 superficial wound infections, 3 required surgical drainage. Death or clinical anastomotic failure was not recorded in the series. Mean hospital stay was 9.3 days.

Conclusion: Our results suggest that resection of acute sigmoid volvulus and primary anastomosis after decompression is a safe procedure.

Key words: Sigmoid volvulus, Colonic lavage, Colon.

INTRODUCTION

Sigmoid volvulus is defined as 360 anticlockwise twist of sigmoid colon on its mesentery; in contrast to clockwise twist in case of caecal volvulus.[1] This is a good example of closed loop obstruction.[2] The condition is uncommon in the west, where diseases of a low fiber diet, such as Diverticular disease predominate.[3] The incidence and demographic features of sigmoid volvulus varies around the world. In developing world, where sigmoid volvulus constitutes 50% of large bowel obstruction, mortality following emergency surgery for acute sigmoid volvulus is low.[4-5] Usually middle aged or elderly males are sufferers.[6] Aetiology includes, long sigmoid loop with a narrow mesentry leading to a predisposition to tortion, chronic constipation, a high fiber diet, systemic neurological disease and Chaga's disease in South America.[7]

There is intermittent cramp like pain, increasing in severity as obstruction becomes complete. A history of transient attacks with spontaneous reduction of volvulus may be present.[8] Diagnosis is made from history of abdominal pain, distension, constipation and large bowel obstruction, plain film abdomen and barium enema. On plain film abdomen "omega" or "coffee bean" sign can be seen,[9] while barium enema shows pathognomonic "bird's beak" or "ace of spades" deformity due to spiral narrowing of the upper end of the lower segment.[8] Mortality in sigmoid volvulus is due to perforation, peritonitis and septicemia.[1]

The first priority in the treatment is resuscitation of the patient, although these patients generally appear reasonably stable.[10] Flexible or rigid sigmoidoscope and insertion of flatus tube should be carried out, to allow deflation of the gut. This provides temporary respite allowing resuscitation and an elective procedure as long as ischemic bowel is excluded.[11]

Single stage method of treatment, avoiding colostomy, reduces the number of procedures,

shortens the duration of hospital stay, is desirable. Virtually all colorectal surgeons consider a mechanically cleansed and empty bowel as a prerequisite for a safe colonic resection and anastomosis in order to reduce the risk of septic complications and anastomotic dehiscence.[9] Much consideration is required prior to creating a stoma. The endemic poverty and lack of specialist nursing staff, makes successful stoma management unlikely.[3]

Preoperative mechanical bowel preparation (including oral laxatives, retrograde enemas and/or diet restriction before surgery) is standard practice in colorectal surgery in the belief that mechanical bowel preparation reduces anastomotic leakage and infectious complications after elective surgery.[12,13] The potential disadvantages of mechanical bowel preparation includes the requirement for a longer preoperative admission, its time consuming nature and cost, discomfort for the patient, and exposure of the elderly population to the particular risk of fluid and electrolytes imbalance.[14]

Antegrade on-table colonic lavage is usually performed to decompress and clean the proximal obstructed colon. Decompression may be desirable, to decrease distention, facilitate abdominal closure and improve colonic blood supply. But there is evidence that complete cleaning of the colon of faecal matter is not necessary to ensure anastomotic integrity.[5, 15-19]

There have been several published series of primary resection and anastomosis without antegrade colonic lavage in western literature [17-18, 20]. However there is still a gap in the subcontinent literature. Therefore we embarked upon an evaluation of a definitive one-stage resection of the redundant colon and primary anastomosis without antegrade colonic lavage in patients with acute sigmoid volvulus.

In this study we evaluated the experience of a general surgery unit employing manual decompression alone, before primary anastomosis for acute sigmoid volvulus.

PATIENTS AND METHODS

All patients with acute sigmoid volvulus presented to surgical department of Saidu Teaching Hospital, with two independent surgical units and nine consultant grade and above surgeons, from January 2005 until December 2008 were included. Those with perforation and peritonitis were excluded from the study. We made the diagnosis of sigmoid volvulus from the history of large bowel obstruction, constipation, abdominal distension and recurrent abdominal pain. Forty eight patients were diagnosed by plain X-ray abdomen, showing "coffee bean" or "omega" sign as the cardinal feature. Twenty one patients underwent barium enema which showed pathognomonic "bird's beak" or "ace of spades" appearance.

All patients were resuscitated preoperatively before subjecting them to surgery in the form of exploratory laparotomy. Triple regimen antibiotics in the form of 750 mg of cefuroxime, 500 mg of metronidazole and 80 mg gentamicin were given intravenously with induction of anesthesia and continued for two days postoperatively to patients with viable bowels and for 5 days in the case of infracted bowel.

The viability of the bowel was assessed at laparotomy through a lower midline incision. Gaseous distention of the colon was relieved by aspiration with Foley's catheter through a colotomy in the centre of a purse-string suture, which was later closed. Sigmoid colon was divided by non-crushing occluding clamps, exteriorizing the colon from the operative field. A manual decompression technique as mentioned earlier was used.[14] The bowel ends were cleansed with swabs soaked in chlorohexidine solution. Any stool close to resection line was gently removed with moist swabs. The abdominal or pelvic cavity was washed out with saline in the event of faecal spill. The descending colon and upper rectum were mobilized as standard. Colon ends were trimmed until there was free bleeding.

All patients underwent immediate two layer end to end anastomosis with inner layer of 3/0 vicryl suture and an outer layer of 3/0 silk. Any discrepancy in the lumens was dealt with by either taking bigger bites on the wider side or by spatulating the end of the narrow distal stump. None of the anastomoses were protected by a proximal stoma. Drains were occasionally used. The vertical lower midline incision was closed by mass closure using No. 1 Nylon (monofilament). The clinical course and postoperative complications were carefully documented. The end points of the study were wound infection, anastomotic failure and death.

Wound infection was defined as the presence of pus, either discharging spontaneously or requiring drainage. Samples of wound discharge were obtained for bacteriological culture. Anastomotic leak was defined as the presence of faecal fistula or anastomotic breakdown seen either at sigmoidoscopy, laparotomy following peritonitis or at postmortem. No effort was made for asymptomatic leakage. Hospital stay was defined as the total time spent in hospital for the present complaint and, if necessary for subsequent procedure. Mortality was considered as death occurring in hospital.

Table 1: Age and sex distribution of patients.

Age (years)	Sex				Total Number
	Male		Female		
	Number	Percentage	Number	Percentage	
31-40 years	6	7.22	0	0	6
41-50 years	10	12.04	1	1.20	11
51-60 years	31	37.34	3	3.61	34
61-70 years	29	34.93	3	3,61	32
Total	**76**	**91.56**	**7**	**8.43**	**83**

Table 2: Operative procedures, mortality and morbidity.

Procedure	Number of patients	Wound Infection	Anastomotic dehiscence	Death
Sigmoid Resection and Primary anastomosis	82	7	0	0
Double resection (Sigmoid and Caecal)	1	0	0	0

RESULTS

Eighty six consecutive patients were enrolled prospectively, three patients who had perforation and peritonitis on admission were excluded and hence 83 patients were included in the study. Out of the 83 cases of sigmoid volvulus, bowel was viable in 79 patients and four presented with gangrenous sigmoid colon. Bowel resection and primary anastomosis was performed in all these patients. One patient also had caecal volvulus with gangrene in addition to viable sigmoid volvulus. This patient had a double resection and primary anastomosis.

The age ranged 36 to 69 years with 76 males and 7 females. The age and sex distribution is shown in Table-1.

The postoperative outcome in the 83 patients treated by resection and immediate anastomosis without antegrade colonic lavage is shown in Table-2.

Superficial wound infection occurred in 7 patients and out of them, three patients required operative drainage and culture. There was no clinical anastomotic leak with faecal peritonitis. None of our patients died bringing the mortality to 0%. Duration of hospital stay was 7-12 days (Mean= 8.3 days).

Forty eight patients were followed up for 12 months at an interval of 1month, 3 months, 6 months and finally at one year.

DISCUSSION

Surgery for obstructed left sided colon has evolved over time. Staged procedures, such as three stage approach (decompressing colostomy, resection and anastomosis and colostomy closure) or two-stage procedure (primary resection with a covering colostomy and colostomy closure),[3] Hartman's procedure (resection with colostomy and closure of distal stump), Double barrel colostomy and Divine procedure (creation of mucus fistula) are less frequently practiced.

Since Dudley et al[21] published their technique on Intraoperative irrigation of colon, in 1980, for the first time, single-stage resection and primary anastomosis has become popular among colorectal surgeons dealing with an obstructed left-sided colon.[22-26] A one-stage procedure employing antegrade colonic irrigation decreases cumulative anesthetic risk, improves quality of life because no stoma is required and shortens hospital stay. However colonic irrigation being a tedious procedure may increase operating time. Colonic irrigation with large amount of saline can lead to electrolyte abnormalities and may have more risk of spillage and contamination.[27-30] To date many authors have reported series with patients who underwent emergency left-sided colon resection without intraoperative colonic lavage and the results are encouraging usually supporting our study in the treatment of patients with obstructed left sided colonic lesions.[5,15,17-19,27-30]

At least eight randomized clinical trials and two meta analyses have failed to show any superiority of mechanical bowel preparation in colorectal surgery and have questioned this practice.[31-40] On the other hand a poorly prepared colon is usually full of liquid faeces that can be difficult to control, resulting in spillage into the abdominal cavity, which can cause significant contamination; omission of bowel preparation overcomes this problem.[41]

Manual decompression was found to be less complicated, as reported previously.[17,27] One can easily decompress manually a dilated proximal colon. There were less chances of faecal spillage at the anastomosis, due to exteriorizing of the transected colon from the operating field and cleaning the ends of the colon before anastomosis as described in the surgical technique. Cure is only obtained in patients with acute sigmoid volvulus by resection and anastomosis of the redundant sigmoid colon. The manual decompression method described above in the surgical technique was applied in our patients, who were relatively on younger side (51 patients between 31-60yrs and 32 in the age range of 61-70 yrs) and were able to withstand the effects of anesthesia with good outcome.

There was no mortality in our series of 83 patients following sigmoid colectomy and anastomosis. Also we did not observe clinical anastomotic leakage in any of our patients.

CONCLUSION

Resection of acute sigmoid volvulus and primary anastomosis after decompression without mechanical bowel preparation is a safe procedure.

It has the advantage of being shorter and simpler procedure which can be performed without increase in morbidity and mortality.

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Address for Correspondence:

Dr. Manzoor Ali
Associate Professor Surgery
Saidu Medical College
Saidu Sharif, Swat
Cell: +92 333-9470812
E-mail: doctormanzoor@hotmail.com