

Assessment of one-stage resection and anastomosis of emergency left colon surgery in Upper Egypt

Mohamed abdel fattah, Abdellatef Ahmed, Abdelmonem Abdel Fatteh,
Emad adham, kaled eldabh,

General surgery Department, Faculty of Medicine Al Azhar University, Assuit branch Egypt.

Corresponding author: Dr. abdelmonem abdel fatteh

Abstract:

Introduction: The indications for resection and anastomosis of the unprepared colon are colon injuries, diverticulitis, sigmoid volvulus and obstructing colon malignancies. The new paradigm extends to questioning the value of mechanical bowel preparation for elective colon resection.

Patients and methods: Primary resection and anastomosis were carried out in 46 cases and in the remaining 4 cases colostomy was performed because primary repair was judged to be neither technically acceptable nor safe.

Results: Out of 50 patients, 30 (60%) were males and 20 (40%) females. The maximum number of patients was found to be in the age group 40–60 years among total range of age 31–70 years with median age 45 years.

Conclusion: Resection with primary anastomosis is the gold standard and the experience of the surgeon is crucial to its success in the patient undergoing emergency surgery.

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I. Introduction

There are different strategies to avoid colostomy and its associated problems. With improved facilities in patient care and proper use of antibiotics the surgeons today are more inclined to primary repair of colon (1)

The indications for resection and anastomosis of the unprepared colon are colon injuries, diverticulitis, sigmoid volvulus and obstructing colon malignancies. The new paradigm extends to questioning the value of mechanical bowel preparation for elective colon resection.

Colonic injury is still widely recognized as one of the most serious intra-abdominal injuries in civilian practice because of lethal consequences of peritoneal contamination. This injury has been associated with a high risk of septic complications and mortality (2).

Penetrating colon injury carries a high rate of infectious morbidity. The development of infectious complications is related to the injury severity and haemodynamic status of the patient, not the type of operation performed (3).

There is strong evidence that the vast majority of colonic injuries can be safely managed by primary repair. It seems, however, that there is a limited role for colostomy, particularly in high-risk patients with destructive injuries of the left colon (4)

The reported incidence of large bowel perforation ranges from 0.1% to 0.9% and 0.01% to 0.04% following colonoscopy and barium enemas, respectively. Because they occur so infrequently, the management of such injuries has been based primarily on the much more extensive experience with noniatrogenic trauma (6).

Diverticulitis: Sigmoid diverticulitis is a common condition often presents with acute perforation and peritonitis. Primary resection and anastomosis (PRA) for these lesions was debated but not resolved. The standard treatment is Hartmann's procedure (HP). PRA had similar mortality rates as Hartmann's procedure. (7)

Sigmoid Volvulus: Sigmoid volvulus is extremely common) Non-operative reduction using sigmoidoscopy +/- tube placement was possible in 70% of patients. Failure of this mandates emergency surgery for symptomatic volvulus. PRA is certainly safe in cases without gangrene. In cases of shock it is to be avoided. (8)

The anatomical characteristics facilitate twisting of the sigmoid colon around its narrow base on long mesentery. The degree of twisting can vary from 90 degree to 360 degree and can occur in an anticlockwise direction or clockwise direction. Complete rotation will result in a closed loop obstruction leading to trapping of intestinal contents within the loop and compromise in vascular inflow and outflow. If the obstruction persists it results in massive loss of fluid both into the lumen and subsequently the peritoneum as well. In later stages the massively distended bowel together with extravasated fluid can cause abdominal compartment syndrome or the

bowel may undergo necrosis with leakage of contents into the abdominal cavity resulting in florid peritonitis. The distension can also lead to severe compromise in respiratory function. (9)

Obstructing left colon cancers: the application of the new paradigm to obstructing left colon cancers PRA for colonic obstructions performed where the mortality and anastomotic leak were basically equivalent comparing right and left-sided lesions. (8)

The idea of intraoperative lavage is to clean the bowel of any solid fecal matter, in emergency cases precluding preoperative bowel preparation, thereby decreasing chances of contamination and also allowing a better environment for healing of anastomosis. On table lavage definitely increases operating time. There is a risk of spillage and contamination. It has hence been considered as a cumbersome procedure by many. Volumes of up to 5 L may be necessary for a satisfactory lavage and this may cause considerable fluid shift with electrolyte abnormalities. (12)

Early postoperative results after primary repair, and resection anastomosis were good. The primary repair or resection and anastomosis can be performed with acceptable morbidity for perforations of the colon and rectum (5).

II. Patients and methods

During the period from January 2012 to July 2014, a total of 50 emergency left colonic operations were performed at Al-Azhar university hospital faculty of medicine Assuit branch and Sohag military hospital. A Baseline investigations were done which includes blood test, renal function tests, blood gases, electrolytes, X-ray chest (P/A), ECG, abdominal ultrasonography. Plain X ray of the abdomen often reveal multiple air fluid levels. In doubtful cases a CT scan or MRI may be performed.

Primary resection and anastomosis were carried out in 46 cases and in the remaining 4 cases colostomy was performed because primary repair was judged to be neither technically acceptable nor safe. The distribution of the cases is presented in Table 1. In those patients undergoing primary resection and anastomosis, on-table colonic lavage was carried out in 23 cases of them. We initially adopted the conventionally described methods. A Foley catheter was introduced via an enterotomy in the terminal ileum and was secured by a purse-string suture.

Before irrigation; this procedure evacuated most of the liquid feces and gas. Lavage with normal saline was carried out, on completion of lavage, the enterotomy was closed. On average, 2 liters of saline were required for adequate lavage. Following resection, anastomosis was carried out using a two-layer inverting technique with continuous 3/0 polyglycolic suture. Tube Drains were used and all patients were covered with broad-spectrum antibiotics during operation and early postoperative. The other 23 cases were primary repaired without colonic lavage.

Table 1: Diagnosis in 50 cases of left colon obstruction

Diagnosis	n
Carcinoma	20
Sigmoid volvulus	10
colon injuries	12
diverticulitis	4



Figure 1: sigmoid volvulus

Sigmoid volvulus



Sigmoid volvulus with narrow base

III. Results

Out of 50 patients, 30 (60%) were males and 20 (40%) females. The maximum number of patients was found to be in the age group 40–60 years among total range of age 31–70 years with median age 45 years.

There were three deaths, one anastomotic leakage, one low output fistula which treated conservatively and five superficial wound infections without deep disruption. The mean period of hospital stay was 7 days. Deaths occurred in two patient with fecal peritonitis with gut perforation in whom a colostomy was performed and one of the primary repair group without colonic irrigation, and in a 70-year-old man with sigmoid volvulus and gangrenous gut 3 days after operation, following resection of the volvulus and primary anastomosis, he died suddenly due to myocardial infarction.

Table 2: Complications in 50 cases of left colon repair

complications	
deaths	3
anastomotic leakages	1
wound infections	5
fistula	1

Comparison of the Complications in two groups of one stage left colon repair

complications	left colon repair without lavage	left colon repair with lavage
deaths	1	1
anastomotic leakages	1	none
wound infections	2	3
fistula	1	none

IV. Discussion

In emergency surgery on the left colon, the practice of colostomy construction followed by a staged procedure had been mandatory until the early 1980s. Although sporadic reports of primary resection and anastomosis can be traced back to the 1950s (10).

The technique never gained widespread acceptance because of the belief that colonic faecal loading significantly contributed to anastomotic leakage (11). However, intraoperative colonic lavage permitted cleansing of the loaded colon at surgery and primary anastomosis. Our study is consistent with this, since there were only one anastomotic leakages and the mortality rate was 6%. One-stage procedures, though considered a selective form of management, were possible in 46 of 50 patients in our study (92%). This is a high proportion.

Colorectal operations are, at best, clean-contaminated procedures, and at times there is contamination of both the peritoneal cavity and the surfaces of the surgical wound. In addition, the diseases of the large bowel that require surgery tend to afflict elderly patients. Collectively, the combination of an unclean environment, major surgery and debilitated patients creates a situation that is associated with a high incidence of wound infection.

One-stage surgery on the obstructed left colon therefore achieves the objective of definitive therapy without the inconvenience of a colostomy, with far less morbidity and mortality, and the concurrent

conservation of our limited resources. In a developing country such as ours, we now regard one-stage surgery as the procedure of choice in the management of the obstructed left colon.

V. Conclusion

Primary repair was safe and effective treatment modality in the management of left colonic anastomosis compared to colostomy, provided that there is early presentation, younger age of the patient, minimal faecal contamination with stable hemodynamics.

Primary repair had significantly shorter hospital stay and lesser morbidities as compared to colostomy. Patients in whom gangrene or perforation is suspected should initially undergo rapid fluid resuscitation with appropriate monitoring. Broad spectrum antibiotics should be instituted as early as possible.

Resection with primary anastomosis is the gold standard and the experience of the surgeon is crucial to its success in the patient undergoing emergency surgery.

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