

# Management of Extensive Diverticular Disease in a Hostile Abdomen: The Deloyers Procedure in a Resource Poor Setting

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## 1. Abstract

**1.1. Background:** The procedure of Deloyer will enhance continuity of the intestine from short stump of transverse colon to the rectum after a bowel resection which removed the sigmoid descending colon and significant parts of the transverse colon.

A proper mobilization of the ascending colon while securing the ileocaecal valve on a vascular pedicle will afford this opportunity. The aim of this article is to report our experience with open Deloyers procedure in a patient with adhesions from previous surgery dealing for diverticulitis.

**1.2. Methods:** This particular patient had diverticular disease necessitating massive gut resection and creation of end colostomy with a short colonic remnant. The bowel status and pre-operation condition of the patient necessitated damage control surgery of end colostomy as the patient cannot withstand longer operative time that in associated with restoration of bowel continuity. One month later patients undertook Deloyers surgery with excellent outcome.

**1.3. Result:** We recorded a satisfactory Deloyers operation and there was excellent functional outcome. Anastomotic leakage did not occur. Six months after surgery the patient reported a three bowel movement per day with solid stool consistence. Neither anastomotic stricture nor bowel ischaemia was found at one year endoscopic follow up.

**1.4. Conclusion:** Open Deloyers is feasible in a resource poor setting such as ours. It allows for restoration of bowel continuity with preservation of intestinal integrity and an excellent functional outcome even in an abdomen with adhesions.

## 2. Introduction

The deloyers procedure involves an anastomosis between the right or transverse colon and the rectum or anus after complete right

colonic mobilization and rotation while preserving the ileocolic pedicle. The technique can be used to avoid ileorectal or ileoanal anastomosis after extended left sided colorectal resection. It is a tension free colorectal anastomosis and in the procedure there is inversion of the right colon around the axis of the ileocolic vessels on a well vascularized pedicle.

Historical perspective: The procedure of deloyer was presented by Lucien deloyers in November 1963 in a meeting of surgical society of Lyon (France) describing the transverse colon transposition to rectum over group of the patients, range age 17 to 44 years old and treated between 1956 to 1962.

The diseases involved are ulcerative colitis 3 cases, megacolon – 3 cases dolicolcolon with chronic constipation and polyposis over left colonic segment -3 cases.

Deloyers operation maybe indicated during the primary operation of an extended left hemicolectomy or as a restoring procedure following an urgent colostomy with a short segment of the remaining colon.

This is the first case of Deloyer performed in our institution in a patient with hostile abdomen resulting from previous operation of end colostomy plus Hartmans in a patient with severe diverticular disease.

Indications for the Deloyers procedure could include Hartman reversal, previous colorectal anastomosis related complications, a diverticular disease, left colon cancer, ischaemic colitis ,rectal cancer,local recurrence and synchronous or metachromous colon cancer.

The deloyers procedure is safe, associated with minimal morbidity and good long term functional results. It represents a safe alternative to total colectomy and ileorectal anastomosis.

### 3. Material and Methods

Materials are based on a case of recurrent diverticular disease which had extended colonic resection and end colostomy plus Hartman's which later had Deloyers procedure done on him in the university of medical science teaching hospital Ondo. This patient was followed up for 1 year and there was no significant complication associated with the operation of Deloyers.

#### 3.1. Case Presentation

S.O is a 66 year old tailor who presented at the surgical out patient with flatulence, dyspepsia, and recurring pains in the left iliac fossa and with fever. The pain was worse on movement and reduced on passing flatus. There was a history of constipation with passage of small frequent stools. Examination revealed local tenderness at the left iliac fossa with palpably thickened mass. A barium enema showed a saw tooth appearance and narrowing of colonic lumen as shown in figure 1. C T Scan was done and the result was in keeping with diverticular disease. The patient was managed conservatively with symptom remission after three weeks. However a colons copy done at remission of symptom showed inflamed and puckered mucosa secreting a lot of mucus and the mouth of several diverticular containing faces as shown as shown in figure 2. Colonoscopy enabled us to rule out carcinoma, other inflammatory lesions including lymphogranuloma, schistosoma and inflammatory bowel disease.



**Figure 1:** showing barium enema findings of diverticular disease



**Figure 2:** showing colonoscopic findings of left sided colon diverticular disease

Nevertheless, patient later presented with signs and symptoms of peritonitis which necessitated the consideration for operative treatment.

Patient had open surgery and intraoperative finding included a free perforation of the large intestine and because of the condition of the patient an extended colectomy and end colostomy plus Hartman's procedure was done.

The patient was doing well until a month later when he complained of abdominal pain and difficulty in passing stool through the colostomy and a CT scan revealed dense adhesions intra abdominally. The patient also was not psychologically at tone with the experience of passing stool through the anterior abdominal wall. For these reasons the patient was worked up for another surgery in which adhesiolysis was done and Deloyer procedure was performed. This was successful and follow up of the patient showed satisfactory outcome. The configuration of Deloyers operation done by us and radiological disposition is as shown in figure 4 and 5 respectively.



**Figure 3:** showing the configuration of Deloyer technique



**Figure 4:** gastrografen enema of our patient a year after Deloyer procedure the arrow indicates the point of colorectal anastomosis

### 4. Discussion

Our case revealed that a damage control surgery of end colostomy can initially be done quickly to save the life of an elderly patient with peritonitis. Deloyers procedure can later be done and is safe and feasible procedure despite a hostile abdomen with adhesion following complications of previous surgeries. The procedure of deloyer aims at achieving better functional outcome after more ex-

tensive resections. The fact that the ileocaecal valve is kept intact and there is longer length of large gut will reduce anatomic leakage rate in comparison to ileorectal anastomosis. With the ileocaecal valve kept intact there will be a physiological value of eliminating small bowel bacterial proliferation, better water and sodium absorption with better stool consistency [1-3].

After deloyers experience manceau reported 48 patients who underwent open deloyers procedure mainly during Hartman's reversal and following complications of previous colorectal anastomosis [4, 5].

They reported early complications rate of 23% with no anastomotic leaks and good functional outcome on long term follow up with an average of 4 bowel movements per day.

This is comparable to our study where we recorded 3 bowel motions per day. The first laparoscopic Deloyers procedure when published in 2016. Scuito [6, 7] et al shared their laparoscopic cases performed in 10 patients, mostly during elective primary extended left hemicolectomy. They had 10% leak rate with no post-operative mortality and functional outcome was similar to those previously reported [8, 9].

Open deloyers in a resource poor setting is a salvage protocol. It allows the restoration of bowel continuity with low tension anastomosis while preserving the ileocaecal valve in cases otherwise calling for ileorectal anastomosis.

While performing this rare procedure it is necessary to keep the ileocolic root, ensuring the viability of the colonic stump and bowel rotation at the counter clockwise direction and avoiding excessive tension on the anastomosis and blood vessels. Incidental appendectomy may be done to prevent appendicitis in future.

## 5. Conclusion

We are humbled by this safe and feasible procedure which was successfully done for the first of its kind in our institution. Having been challenged by the extent of disease in this elderly patient and in a resource poor setting the procedure of open deloyers afforded us a good functional outcome in the management of such a complicated case.

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