

## Closure of Hartmann's Colostomy: A simple method for identifying the rectal stump

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### Abstract

**Background:** Restoration of intestinal continuity after Hartmann's colostomy can be very difficult especially in patients with short rectal stumps that are retracted and buried deep in the pelvis.

**Objective:** To demonstrate a simple method of overcoming the difficulty in the reversal of Hartmann's colostomy.

**Method:** A retrospective descriptive study of cases of Hartmann's colostomy reversal was done.

**Results:** The technique was used in the reversal of 9 Hartmann's colostomies carried out over a period of 16 years between 1995 and 2010. The patients comprised five males and four females. The diagnoses in the males were four cases of sigmoid volvulus, and one gunshot injury. The diagnoses in the four females included sigmoid volvulus, carcinoma of the colon, stricture from endometriosis and gangrenous sigmoid colon from criminal abortion. The mean time for restoration of intestinal continuity after the primary procedure was 7.8 months. Two patients had postoperative wound infection. There was no mortality.

**Conclusion:** The simple technique was found to be helpful especially in situations where other instruments that facilitate the restorative process are not available

**Key words:** Colostomy, Hartmann's procedure, Hartmann's reversal, Rectal stump

### Introduction

The Hartmann's procedure, first described in 1923<sup>[1]</sup> has gained wide acceptance for the treatment of other conditions such as diverticulitis,<sup>[2]</sup> traumatic lesions of the colon, volvulus and rectosigmoid endometriosis,<sup>[3]</sup> apart from its original indication for colonic cancer. The procedure consists of a transabdominal resection of the sigmoid colon with closure of the rectal pouch and establishment of an end colostomy.

Colonic resection and primary anastomosis in emergency situations carries a high risk of morbidity especially when the patient's condition is not optimal and the bowel has not been prepared. Delayed closure is usually planned after the

resolution of sepsis and inflammation and when the patient is medically fit for the procedure.

Restoration of intestinal continuity can sometimes be very difficult<sup>[4-6]</sup> and can be a difficult undertaking with no guarantee of successful anastomosis.<sup>[7]</sup> This is mostly because of the problems associated with the identification of the rectal stump, especially if it is short and buried deep in the pelvis. The problem is further compounded if the rectal stump has 'wrinkled' down on itself.<sup>[7]</sup>

Various techniques and manoeuvres have been introduced since the time of the original procedure to help in the identification of the rectal stump. These techniques include tagging with silk or prolene sutures,<sup>[4]</sup> application of metal clips and suspension of the rectal stump with prolene sutures to the presacral fascia. The disadvantage of using these tags to mark the rectal stump is that some are no longer seen at the time of reversal, either because they have been extruded or are covered by adhesions.

The use of the end-to-end anastomosis (EEA) stapling device and other stapling devices have

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made the restorative procedure easier.<sup>[5-8]</sup> These devices help with the identification of the rectal stump when passed per rectum. A no. 28 Hegar dilator, when pushed through the anus against the rectal pouch also makes it easy to identify the rectal stump.<sup>[6]</sup> With the advent of laparoscopes, laparoscopic assisted reversal of Hartmann's procedure has been reported by various authors.<sup>[4, 8-11]</sup>

This study was aimed at documenting the experience of the authors with the use of Lister's boogie to assist in identifying the rectal stump during the reversal of Hartmann's colostomy. The Lister's boogie is easier to handle and manoeuvre in the identification process with possible benefit of reduction in operation time.

## Methods

The study was a retrospective review of all patients that had reversal of Hartmann's colostomy at the Olabisi Onabanjo University Teaching Hospital, Sagamu, between January 1995 and December 2010. The only exclusion criterion was poor clinical state of patients requiring the procedure. The following variables were analysed: age, gender, primary diagnosis, time interval between primary procedure and reversal and complications. Descriptive statistical analysis was carried out using the SPSS software version 21.

### Surgical procedure

All the patients had mechanical bowel preparation for three days and had perioperative prophylactic antibiotic therapy with intravenous gentamicin and metronidazole. Under general anaesthesia and in the lithotomy position the abdomen was opened through a midline incision. The splenic flexure and descending colon were mobilised to ensure adequate blood supply and minimal tension at the anastomosis. After packing the bowel away to expose the pelvis adequately, the rectal stump was easily identified by pushing against it with a size 12/15 Lister boogie introduced through the anus. The tip of the boogie was seen or palpated and the rectal stump was incised with the tip of the boogie acting as a guide and marker (Figure 1). The rectal stump was then freed from adhesions and mobilised to provide an adequate length for anastomosis. The proximal colon was anastomosed to the rectal stump in two layers using 2-0 chromic catgut and 2-0 silk sutures for first and second layers respectively. The integrity of the anastomosis was

tested intraoperatively by inspection and palpation before closure of the abdomen. The procedures were all done by general surgeons who were senior consultants.

## Results

A total of 44 colostomies were closed during the study period out of which nine patients had reversal of Hartmann's colostomy using the technique described above.

Table I shows the age and sex distribution of the patients including the time interval between primary procedure and reversal of Hartmann's colostomy. There were five males and four females. The age range was 18-70 years with a mean of 45.9 years. The mean time interval between the initial Hartmann's procedure and reversal of colostomy was 7.8 months (range: 3-13 months).

*Table I: Age, Sex Distribution and Time Interval between primary procedure and reversal of Hartmann's colostomy*

Patient Number	Age (Years)	Gender	Time Interval (Months)
1.	29	Female	3
2.	18	Female	3
3.	60	Male	13
4.	51	Male	12
5.	70	Male	8
6.	55	Female	4
7.	42	Female	6
8.	38	Male	10
9.	50	Male	11

Table II shows the indications for Hartmann's colostomy in these patients. Five gangrenous sigmoid volvulus and others are depicted in the table. Two patients had postoperative wound infection but there was no anastomotic leakage and no mortality was recorded in the cohort.

## Discussion

The search of literature yielded few reports on the technique of closure of Hartmann's colostomy while published reports are mainly on small series.<sup>[9, 12-14]</sup>

Figure 1:

Abdomen opened showing the pelvis. Arrow points to the tip of the Lister's boogie passed transanally identifying the rectal stump.

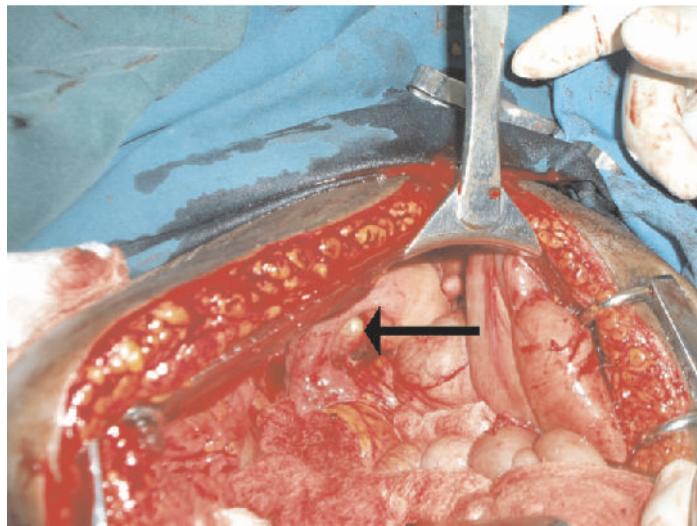


Table II: Indications for Hartmann's colostomy

Indicators	Frequency	Percentages
Sigmoid volvulus	5	56
Carcinoma of the colon	1	11
Endometriosis (Stricture of sigmoid colon)	1	11
Criminal abortion (Gangrenous sigmoid colon)	1	11
Gunshot injury	1	11

There were records of 44 colostomies between 1995 and 2010 at the study centre, of which nine (20.5%) were of the Hartmann's type. The paucity of Hartmann's colostomy performed at this tertiary hospital may be indicative of the small numbers of colonic lesions requiring such colostomies.

The Lister boogie was found to be very useful in the identification of the rectal stump. The Lister boogie is long, easy to handle and manoeuvre in the identification process. Early identification of the rectal stump reduces operating time and by extrapolation, morbidity associated with the colostomy closure. Other instruments like the Hegar's dilator may be used to assist in the restorative procedure even when using a stapling

device like the End-to-end anastomosis (EEA) stapler.<sup>[6]</sup>

The nine cases of Hartmann's procedures in the present study were performed as emergencies, which is the standard practice globally. The most common indication for Hartmann's procedures in our study was gangrenous sigmoid volvulus (56%) unlike diverticular disease of the colon and carcinoma of the colon frequently reported in other series.<sup>[2]</sup> Diverticular disease is one of the most common diseases related to the gastrointestinal tract in the western world.<sup>[15, 16]</sup> The disease is relatively uncommon in this environment, though the frequency is increasing in developing countries because of the adoption of western life style and diet.<sup>[17, 18]</sup>

The mean time interval between the primary procedure and reversal ranged between 3 and 13 months with the mean of 7.8 months. The delay in closure in two patients at 12 and 13 months respectively, was due to disruption in hospital services precipitated by health workers unrest. However, we did not encounter any difficulty with the patients irrespective of the time of reversal. Tade *et al* in an earlier report observed that the outcome of early and delayed closure of colostomies were comparable.<sup>[19]</sup> It has also been shown that delayed closure after four months confers no advantage. In addition, earlier reversal when the rectal stump is most accessible is recommended.<sup>[12]</sup>

Two of the patients in this series had postoperative wound infections which were managed conservatively. There was no anastomotic leakage. Our complication rate might have been low partly because reversal was done for mainly benign surgical conditions in this series. The indication for reversal in eight (88.9%) of the nine cases were benign. The failure of reversal and other complications are known to be significantly associated with carcinoma of the colon and prior radiotherapy to the pelvis.<sup>[14]</sup>

## Conclusion

The reversal of Hartmann's colostomy can be difficult with associated significant morbidities. An important step in the procedure of reversal is the identification of the rectal stump. We have found the Lister boogie to be very useful in identifying the rectal stump and hereby

recommend its use. Hartmann's colostomy, especially for benign conditions, can be reversed using this technique with acceptable minimal morbidity.

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### Authors' Contribution

SBA initiated the study and drafted the manuscript, ABA, NCC and FMO participated in the management of the cases and drafted the manuscript. TAO made substantial intellectual contribution to the final version of the manuscript. All the authors approved the final version of the manuscript.

**Conflict of Interest:** None declared.

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