

Indications and Timing of Stoma Reversal

Mini review

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Abstract

Objectives

- a) Describe the frequent indications of stomas.
- b) Determinate the timing of reversal stoma at an advanced gastrointestinal surgery department in Colombia.

Materials and Methods: Prospective review of a retrospective database. Descriptive analysis of patients in whom stomas were performed at an advanced gastrointestinal surgery department in Colombia, between June 2018 and august 2021.

Results: One hundred and thirty-six stomas were performed. Colostomies represented the most frequent procedure followed by ileostomies, only one jejunostomy was performed (66%, 33% and 1% respectively). The loop transverse colostomy was the most frequent stoma type, due to colorectal cancer. The rate of stoma reversal was 35,1% and the timing was 12,4 months.

Conclusions: The results of this study suggest that

- a. The most frequent stoma indication was protective stoma for resectable colorectal cancer.
- b. The timing of closure in stoma reversal exceeded one year.

Keyword: Stoma, Colostomy, Ileostomy, Anastomosis.

Introduction

The term “stoma” or “ostomy” refers to a surgically created opening from a hollow organ to the body surface in order to excrete waste products; these are performed when it is necessary to divert fecal content, in a temporary or permanent way, due that its physiological and original design through the normal orifices of the body is not possible or unsafe [1]. Stomas can be classified in different ways:

- A. According to the exteriorized intestinal portion (ileostomy, colostomy)
- B. According to the surgical intestinal exteriorization technique (final or in loop)
- C. According to the therapeutic indication (temporary or permanent) [2].

This surgical procedure is not without risk, it has known compli-



cations as bleeding, hematomas, edema, skin irritations, ulceration and necrosis, prolapse, retractions and parastomal herniation among others, and could be present in between 10 to 70% of patients [3]. Although stomas are created in benefit of the patients and considered a life-saving procedure in many cases, it can be result in a significant alteration in quality of life, self-esteem and body image [4]. The purpose of this study was to

- i. Describe the most frequent indication of stomas.
- ii. Determinate the timing of reversal stoma at an advanced gastrointestinal surgery department in Colombia.

Materials and Methods

This is a retrospective review of a prospectively established institutional review board-approved database involving patients. The study included a total of 136 patients aged 18 years and older who required the formation of an intestinal stoma. These patients were treated at the Gastrointestinal Surgery department located in the central western region of Colombia, between June 2018 and August 2021. Patients who were under 18 years old or had incomplete medical records were excluded from the study. Data were collected from the hospital's statistics department, digital medical records, and surgical reports. Statistical analysis was conducted using SPSS version 19 (Copyright SPSS Inc., 2000), and the collected data were organized in an Excel spreadsheet.

Results

One hundred and thirty-six intestinal stomas were performed in a Gastrointestinal Surgery department of the central western area in Colombia. Colostomies represented the most frequent procedure performed and colorectal cancer was the most common indication of stoma. Table 1 summarizes the preoperative data of patients, diagnosis and stoma type performed. The loop transverse colostomy was the most frequent stoma type according to the surgical intestinal exteriorization technique followed by loop ileostomy, loop Sigmoid colostomy and Hartmann procedure. The most common indication was protective stoma after intestinal resection and anastomosis for resectable colorectal cancer and complex intestinal resection for benign diseases. Table 2 summarizes the type of the stoma performed according to the surgical technique and indication of the procedure. No patients had intraoperative complications. Six of the 136 patients had postoperative complications (4,4%), 3 patients had prolapsed stoma, one patient had deep necrosis and one patient had a parastomal hernia with intestinal obstruction. Surgery was required in those 5 patients. Finally, one patient had a superficial mucosa necrosis without the necessity of surgical management. Of 94 stomas that were susceptible for reversion (protective stoma, stenotic colorectal cancer, anastomotic leak, and rectovaginal fistula), in 33 patients reversal stomas were performed (35%). Median time to stoma closure was 12,4 months with a range of 4 to 22 months.

Table 1: Preoperative data, diagnosis and type of stoma performed according to the exteriorized intestinal portion.

Preoperative data	
Age (years)	62.4 (20 - 91)
Gender (female %)	76 (56)
Diagnosis	
Rectal cancer, N (%)	75 (55,2)
Colon cancer, N (%)	29 (21,3)
Cervical cancer, N (%)	6 (4,4)
Familial adenomatous polyposis, N (%)	5 (3,7)
Complicated diverticular disease, N (%)	5 (3,7)
Anal canal cancer, N (%)	4 (2,9)
Ovarian cancer, N (%)	3 (2,2)
Gastrointestinal cancer with multiorganic affection, N (%)	3 (2,2)
Non oncological rectovaginal fistula, N (%)	2 (1,5)
Enterocutaneous fistulas, N (%)	2 (1,5)
Kidney cancer, N (%)	1 (0,7)
Bladder cancer, N (%)	1 (0,7)
Stoma type	
Colostomy, N (%)	90 (66,2)
Ileostomy, N (%)	45 (33,1)
Jejunostomy, N (%)	1 (0,7)

No patients had intraoperative complications. Eight of the 33 patients had postoperative complications (24,2%). The most frequent complication was the superficial incisional surgical site infection in 4 patients requiring drainage and medical management. One of the patients had bleeding from the anastomosis treated with endoscopy

and hemostasis. One patient had a prolonged ileus requiring medical management. One patient requires a new colostomy after leakage of the reversal stoma and one had a Failure of Stoma reversal due to fibrosis of the rectal stump.



Table 2: Type of the stoma performed according to the surgical intestinal exteriorization technique and indication of the procedure.

Stoma type / Surgical technique	
Loop transverse colostomy, N (%)	40 (29,4)
Loop ileostomy, N (%)	33 (24,3)
Loop sigmoid colostomy, N (%)	23 (16,9)
Hartmann colostomy, N (%)	18 (13,3)
End left colostomy, N (%)	9 (6,6)
Double-barrel ileum-transverse	
ostomy, N (%)	7 (5,1)
End ileostomy, N (%)	5 (3,7)
Loop jejunostomy, N (%)	1 (0,7)
Indication	
Protective stoma, N (%)	55 (40,5)
Stenotic colorectal cancer, N (%)	28 (20,6)
Carcinomatosis	14 (10,3)
Unresectable colorectal cancer, N (%)	9 (6,6)
Abdominoperineal resection	9 (6,6)
Rectovaginal fistula	7 (5,1)
Anastomotic leak, N (%)	5 (3,7)
Gastrointestinal cancer with multiorgan affection	3 (2,2)
Anal stenosis	3 (2,2)
Rectal fibrosis after radiotherapy	2 (1,5)
Diverticulitis	1 (0,7)

Discussion

The results of this study indicate that the most common indication for stomas in a Gastrointestinal Surgery department in the central western region of Colombia was the creation of protective stomas for resectable colorectal cancer, and the timing of stoma closure often exceeded one year. Stomas, although considered a life-saving procedure used to temporarily or permanently divert fecal content in order to protect anastomosis, relieve obstruction, and prevent complications, frequently result in a significant alteration in the quality of life, self-esteem, and body image. In our study, the mean age of the population that underwent stoma procedures was 62.4 years old. This indicates that older age groups are the most affected by conditions such as different types of cancer and diverticular disease. However, we found a higher number of cases in women, which is in contrast to the results of Engida et al. In their studies from Ethiopia, India, and Pakistan, they showed a higher prevalence in men. This difference can be attributed to the high number of patients included with gynecologic conditions (cervical and ovarian cancer, and rectovaginal fistula) [5].

The prior indication of stoma creation for our study was a protective stoma during intestinal resection and anastomosis (40,5%), because of major abdominal surgery (resectable colorectal cancer and after multi-visceral resection), followed by stenotic colorectal cancer (20,6%) and carcinomatosis among others (10,3%). The most frequent stoma per-

formed according to the exteriorized intestinal portion in this study was the colostomy (66,2%) at the level of the transverse colon (29,4%) due to preferences of the surgeon.

Our results indicate a higher volume of elective surgeries compared to a lower volume of emergency surgeries, typically managed by the general surgery department in our country. Our results clearly differ from those of Engida et al where we can see a higher number of patients operated for abdominal surgical emergencies such as gangrenous sigmoid volvulus, colorectal cancer and abdominal injuries with Hartmann procedure as a most common type of colostomy [5].

Unfortunately, stomas are often affected by complications with a rate of 20 to 70% [6,7]. We were surprised to observe a lower complication rate (4.4%) in our study. This lower rate is likely attributed to the limited number of patients included in our study and the loss of medical records during follow-up. The most frequent complications of stomas reported in the literature are parastomal hernias (0 to 48%), stoma (1 to 3%) and peristomal skin irritation (3 to 42%) [6]. Similar findings were reported in our study, showing 3 patients with prolapsed stoma and requiring surgery and one patient with parastomal hernia and secondary intestinal obstruction requiring surgical management. In addition, we found one patient with a deep necrosis and one patient with superficial mucosa necrosis. The incidence of necrosis reported is 1 to 14% and the decision to proceed with stoma revision or not depends on the level of stoma necrosis [8,9], if the necrosis is just superficial, there is no need for revisional surgery but, if the necrosis extends patients may need surgery. In our case the patients in whom the deep necrosis was present we did a revisional surgery with resection and a new double loop stoma was performed, on the other side, for the patient with the superficial necrosis after conservative management and no symptoms were reported with uneventful postoperative course. Of 136 stomas performed, 42 (30,8%) remained permanent. Of the other 94 ostomies remaining, only 33 (35%) receive a reversal stoma procedure. The median time for these procedures exceeded one year, ranging from 4 to 22 months. Our results clearly differ with the results reported by Daluvoy et al and many others in which average time was 5.6 months (range 12-432 days) [10,11]. Although there are no set protocols for stoma closure in our department, our longer median time of reversal stoma may be due to prolonged recovery following initial surgery, adjuvant treatment, waiting lists for cancer surgery, lost patients during follow up and administrative delays.

Although literature suggests that most of the temporary stomas can be reversed in due time, our interval construction and reversal was often very long, and a large number of patients at this time remain permanent, raising a question about the factors affecting timing of closure and non-reversal of temporary stomas. As a result, our patients surely had an impact on their psychological and physical well-being, as well as on our healthcare budget [12]. In relation to the procedure, the reversal of colostomy has been associated with both minor and major complications. According to Boland et al, they reported a 40% rate of minor complications, including urinary tract infections, mild surgical site infections, and ileus. They also noted a 38% rate of major complications, which encompassed myocardial infarctions, leaks, hernias, and respiratory failure [4]. Our results show some similar minor complications as superficial incisional surgical site infection in 4 patients (66%), requiring drainage and medical management and in one a prolonged ileus resolved with medical treatment. As major complications one of the patients had bleeding from the anastomosis with anemia requiring blood transfusion, endoscopy and local hemostasis. In addition, one of our patients needs a new end colostomy owing to leakage of the reversal stoma. and one patient had a failure of stoma reversal due to fibrosis of the rectal stump remaining a permanent ostomy.

Conclusions

We acknowledge that this study has some limitations. First, the num-



ber of patients included in the analysis was small with a wide variety of indications. However, stomas are common procedures performed in a broad range of diseases. Second, the follow-up is relatively short. We feel, however, that even with these limitations, this study contributes to the management of with ostomies showing patrons when describing a protective stoma as an important and common indication of stoma and raising questions about the factors affecting timing of closure and non-reversal of temporary stomas in our region.

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Conflict of Interest

All authors approved the manuscript and this submission and have no conflict of interest.

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