

Original Research Article

Clinical study of post-operative complications of various stomas (ileostomy versus colostomy) for obstructing distal colorectal malignancies in an emergency setting: a prospective hospital-based study

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ABSTRACT

Background: This study aims to provide an overview of all complications that may occur after construction of an ileostomy or colostomy (loop or end) for obstructing distal colorectal malignancy in emergency setting.

Methods: It was a prospective observational study. Forty-eight patients were included in this study. Patients were divided into two groups, group (A) included patients with ileostomies (number of patients=24) and group (B) included patients with colostomies (number of patients=24).

Results: Most common age group in both groups was >60 years, Peristomal skin irritation occurred in 33% of patients who have undergone ileostomy and 13% of patients who had undergone colostomy. 4% of patients who had undergone ileostomy developed retraction of the stoma. None of the patients who underwent colostomy developed retraction of stoma, 17% of patients who had undergone colostomy developed stomal prolapse; Stoma prolapse was seen in only 5% of patients who had undergone ileostomy.

Conclusions: Stoma formation is a frequently performed surgical procedure. Ileostomy and colostomy are the most commonly made stomas in surgical practice. Ileostomies have slightly higher complication rate than colostomies. Peristomal skin irritation is the most common complication among all the complications. The second most common complication is stomal prolapse.

Keywords: Ileostomy, Colostomy, Hernia

INTRODUCTION

Surgically made iatrogenic opening of the intestine on anterior abdominal wall is called intestinal stoma.¹ It comes from the Greek word meaning mouth or opening.² Diversion is done to protect contamination of the distal large bowel segment by stool and is commonly done for trauma or distal rectal elective surgeries.³ When there is

obstructed large bowel decompression is done. Examples include sigmoid volvulus and malignant left side tumours.⁴ Indications of ileostomy include bowel injury which predisposes primary anastomosis to leak like longstanding peritonitis intestinal obstruction, radiation enteritis ischemia and inflammatory bowel diseases and rectal causes. In colonic obstruction (primarily due to cancer of distal colon/rectum) colostomy is done, perforation with peritonitis, recto-vaginal fistulas and perianal sepsis.⁵

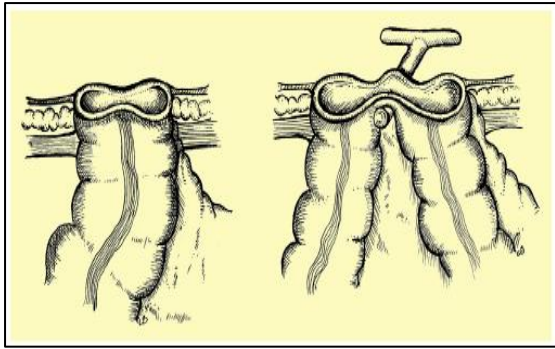


Figure 1: End colostomy (left) and loop colostomy (right).⁹

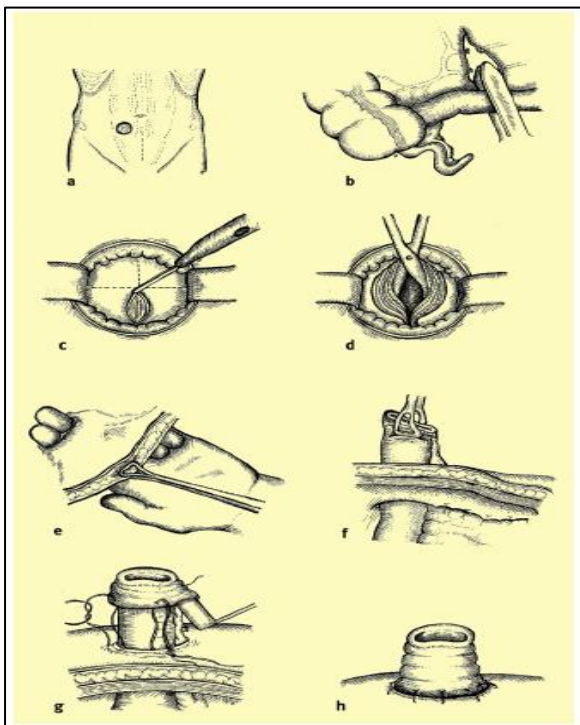


Figure 2: Formation of end ileostomy (a) Site of stoma marking. (b) Division of distal ileum with GIA stapler. (c) Cruciate incision in anterior rectus sheath following excision of circle of skin. (d) Splitting of rectus muscle. (e) Ensuring opening accommodates two fingers. (f) Gentle delivery of end of ileum through abdominal wall with Babcock forceps. (g) Eversion of the end ileostomy with Langenbeck forceps and suturing to abdominal wall. (h) Completed end ileostomy.⁹

Colostomies can be either temporary or permanent. Temporary colostomies are reversed after some time usually after 6 weeks when the patient's condition is optimized.⁶ Permanent colostomies are indicated when the cancer is unresectable or the sphincter is damaged beyond repairable and following abdomino-perineal resection.⁷

Small-bowel (ileostomies) can be distinguished from large bowel ostomies (colostomies) and loop ostomies from end

ostomies. In end ostomies, the bowel is divided and the proximal stump is brought out; while in case of a loop ostomies, the intestine is not transected; rather the anterior wall is opened to create the ostomy, ileostomies are preferentially created in the right abdomen, colostomies mostly in the left abdomen.⁸

Aims and objectives

In this study following parameters were studied: age group, gender, peristomal skin irritation, stoma retraction, prolapsed stoma, parastomal hernia, peristomal infection, abscess, fistula formation, post-operative bowel obstruction and post-operative ileus.

METHODS

It was a prospective observational study carried out in the department of general surgery of SMHS Hospital Srinagar, over five years, from May 2015-April 2020. Forty eight patients were included in this study. Patients were divided into two groups, group (A) included patients with ileostomies (number of patients=24) and group (B) included patients with colostomies (number of patients=24) Qamar et al (2010). Patients under 18 years of age with enterocutaneous fistula and urinary conduits were excluded from the study. On arrival in emergency, routine laboratory and radiological tests were done. Final diagnosis and operative procedure was decided by a surgeon who then operated. Operative findings, procedure done, and complications were recorded. Final diagnosis was made after a report of histopathology was collected. The details about stoma, appliances, complications and its management were recorded. Usually stoma bags were applied by a trained doctor or a dispenser. During the stay in ward, attendants were briefed about management of stoma and related problems. Hospital stay and patient's follow up in out- patient clinic at 1, 6 and 10 weeks were carried out. Reversal of stoma after proper gut preparation was done after 12 weeks on elective list. Any associated complications were also recorded.

Ethical approval was not required as it's an observational study.

Statistical analysis was done using chi-square chart and Statistical package for social sciences (SPSS) version 20.

Inclusion criteria

In order to be included in the analysis, studies had to: loop ileostomy and loop colostomy for de-functioning colorectal anastomoses.

Exclusion criteria

Studies were excluded from the analysis if: history of previous abdominal surgery and age of patient <18 years.

RESULTS

Age in group

In our study of 58 patients; group A (ileostomy) consisted of 24 patients and group B (colostomy) consisted of 24 patients. Most of the patients belongs to age group of above 60 years as is shown in table 1.

Table 1: Age distribution of patients undergoing ostomies.

Age group (in years)	Ileostomy		Colostomy	
20-29	2	9.12%	2	9.68%
30-39	5	19.86%	4	17.9%
40-49	5	21.6%	5	20%
50-59	4	17.2%	4	17.2%
>60	8	35.6%	9	36.8%

Gender

In our study of 58 patients 24 patients underwent ileostomy and 24 patients underwent colostomy for obstructing distal colorectal malignancy as shown in table 2.

Table 2: Sex distribution of patients undergoing ileostomy and colostomy.

Gender	Ileostomy	Colostomy
Male	16	17
Female	8	7

Complications of ostomies

Peristomal skin irritation

In our study of 58 patients, peristomal skin irritation was seen in 08 out of 24 (33.47) patients which underwent ileostomy and 03/20 (15.04) patients who underwent colostomy. As is shown in table 3 and figure 3, with p value of 0.8 which was statistically insignificant.

Table 3: Comparison of peristomal skin irritation in patients of ileostomy versus colostomy.

Name of procedure	Number of the patients	Peristomal skin irritation	%
Ileostomy	24	08	33.47
Colostomy	24	03	13.60

Stoma retraction

In our study of 58 patients; 01 out of 24 (03.96%) patients who underwent ileostomy and none of the patients which underwent colostomy developed stoma retraction. As shown in table 4. with p value of 0.3 which was statistically insignificant.

Table 4: Comparison of stoma retraction in ileostomies versus colostomies.

Name of procedure	Number of the patients	Stoma retraction	%
Ileostomy	24	01	03.96
Colostomy	24	00	00

Prolapsed stoma

In our study of 58 patients; 01/24 (04.53%) patients who underwent ileostomy and 04/24 (16.66%) of the patients which underwent colostomy developed prolapse of stoma. As shown in table 5 and figure 4. with p value of 0.5 which was statistically insignificant.

Table 5: Comparison of stoma prolapse in ileostomies versus colostomies.

Name of procedure	Number of the patients	Prolapsed stoma	%
Ileostomy	24	01	04.53
Colostomy	24	04	16.66

Parastomal hernia

In our study of 58 patients; none of the patients who underwent ileostomy and 01/24 (04.63%) of the patients which underwent colostomy developed parastomal hernia. As shown in table 6 with p value of 0.2 which was statistically insignificant.

Table 6: Comparison of parastomal hernia in ileostomies versus colostomies.

Name of procedure	Number of the patients	Parastomal hernia	%
Ileostomy	24	00	00
Colostomy	24	01	04.63

Peristomal infection, abscess, fistula formation

In our study of 58 patients; 02/24 (9.21%) patients who underwent ileostomy and 01/24 (04.16%) of the patients which underwent colostomy developed peristomal infection, abscess, or fistula formation. As shown in table 7 and figure 5. with p value of 0.3 which was statistically insignificant.

Post-operative bowel obstruction

In our study of 58 patients; 01/24 (4.66%) patients who underwent ileostomy and none of the patients which underwent colostomy developed post-operative bowel obstruction. As shown in table 8 with p value of 0.6 which was statistically insignificant.

In our study of 58 patients; 02/24 (9.33%) patients who underwent ileostomy and 01/24 (4.76%) of the patients

which underwent colostomy developed post-operative bowel ileus. As shown in table 9 and figure 6. with p value of 0.7 which was statistically insignificant.

Table 7: Comparison of developed peristomal infection, abscess, or fistula formation in ileostomies versus colostomies.

Name of procedure	Number of the patients	Peristomal infection, abscess, fistula formation	%
Ileostomy	24	02	09.21
Colostomy	24	01	04.16

Table 8: Comparison of developed post-operative bowel obstruction in ileostomies versus colostomies.

Name of procedure	Number of the patients	Post-operative bowel obstruction	%
Ileostomy	24	01	04.66
Colostomy	24	00	00

Table 9: Comparison of developed post-operative bowel ileus in ileostomies versus colostomies.

Name of procedure	Number of the patients	Post-operative ileus	%
Ileostomy	24	02	09.33
Colostomy	24	01	04.76

DISCUSSION

Age

In our study of 58 patients; group A (ileostomy) consisted of 24 patients and group B (colostomy) consisted of 24 patients. Most of the patients belongs to age group of above 60 years and above.

Engida et al in their study observed that majority of patients undergoing stomas belonged to the age group of 60 years and above.¹⁰

Gender

Most of the patients in our study were males. Ileostomy group consisted of 24 out of which 16 were males and 8 were females, with a male: female ratio of 2:1. The colostomy group also consisted of 24 patients with 17 males and 7 females; male: female ratio of 2.4:1.

Engida et al reported in their study a male predominance with male to female ratio of 2.21:1.¹⁰

Peristomal skin irritation

It occurs when the stoma materials or leakage caused dermatitis or excessive erythema in our study of forty eight

patients, it was the most common complication. Peristomal skin irritation occurred in 33% of patients who have undergone ileostomy and 13% of patients who had undergone colostomy.

Ahmad et al in their study observed that peristomal skin irritation was the most common complication and occurred in 39% and 19% of patients who had undergone ileostomy and colostomy respectively.¹¹

Our results were consistent with the literature.

Stoma retraction

Stoma retraction was defined as a stoma that is 0.5 cm or more below the skin surface. It results because of stomal pull on mucocutaneous junction causing it to separate or invert. In our study of forty-eight patients only 4% of patients who had undergone ileostomy developed retraction of the stoma. None of the patients who underwent colostomy developed retraction of stoma.

Ahmad et al in their study observed that stoma retraction seen in 3% and 0% of patients who had undergone ileostomy and colostomy respectively. Our results were consistent with the literature.¹¹

Prolapsed stoma

Stomal prolapse is defined as full thickness protrusion of bowel through a stoma. In our study of forty-eight patients its the second most common complication. It's most commonly seen with patients undergoing colostomy. 17% of patients who had undergone colostomy developed stomal prolapse; stoma prolapse was seen in only 5% of patients who had undergone ileostomy.

Güenaga et al in their study concluded that stoma prolapse was seen in 19% of patients who underwent colostomy and only 2% of patients who underwent ileostomy.¹²

Thus, comparing our study and the literature, our results are consistent with the literature.

Parastomal hernia

Parastomal hernia is the formation of a hernia beside the stoma. They are incisional hernias. In our study of forty eight patients only 4% of patients who underwent colostomy developed parastomal hernia. None of the patient who underwent ileostomy developed parastomal hernia.

Güenaga et al in their study observed that parastomal hernias were seen in 3% and 2% of patients undergoing ileostomy and colostomy respectively.

Peristomal infection, abscess, fistula formation

In our study of 58 patients peristomal infection, abscess, fistula formation was seen in 9% of patients who had

undergone ileostomy and in 5% of patients who had undergone colostomy. The results are consistent with the observation made by Güenaga et al. They observed that Peristomal infection, abscess, fistula formation in 9% and 4% of patients undergoing ileostomy and colostomy respectively.

Post-operative bowel obstruction

Post-operative bowel obstruction is defined as any mechanical obstruction of bowel that requires conservative or surgical treatment. In our study of forty eight patients 5% of patients undergoing ileostomy developed post-operative bowel obstruction. None of the patient undergoing colostomy developed this complication.

Güenaga et al in their study concluded that 5% of patients undergoing ileostomy and 4% of patients undergoing colostomy developed post-operative bowel obstruction.

Post-operative ileus

Post-operative ileus is defined as temporary bowel dysfunction. In our study of forty eight patients 9% of patients undergoing ileostomy and 5% of patients undergoing colostomy developed post-operative ileus.

Güenaga et al concluded in their study that 6% of patients which underwent ileostomy developed post-operative ileus as compared to 2% patients which underwent colostomy.

CONCLUSION

Stoma formation is a frequently performed surgical procedure. Ileostomy and colostomy are the most commonly made stomas in surgical practice. Ileostomies have slightly higher complication rate than colostomies. Peristomal skin irritation is the most common complication among all the complications. The second common complication being prolapsed stoma.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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