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# A clinical observational study of intestinal stoma and their complication from a tertiary care center in India

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## ABSTRACT

**Background:** The present study is designed to deal with an indication of various stoma surgery, type of stoma formed, and various ju = of General surgery, RG Kar Medical College and hospital, Kolkata, from June 2020 to May 2021 The study includes patients 12 years and < 65 years of populations All data were collected in a prospective manner with a questionnaire and analyzed. **Aims and Objectives:** The aim of the study was to study various type of stoma and their indication and to identify the various complication encountered that occurs after the construction of intestinal stomas to assess the ways in which these complication can be minimized and managed in a better way. **Materials and Methods:** This was a prospective and observational study conducted in the Department of General Surgery, R.G.KAR Medical College and Hospital both the emergency and elective department. The study was approved by the Institutional Ethics Committee. **Results:** From the study, it was observed that among the study population, most were male 32 (80%) than female 8 (20%). There were two peak age group found to undergo stoma surgery most of which is 31–40 years consisting of 25 (27.5%) and 51–60 years consisting of 25 (27.5%). Most of the stoma surgery was found to be done in emergency 31 (77.5%) than in elective 9 (22.5%) setting. The most common cause of stoma formation was found to be hollow viscous perforation 12 (30%). Among the type of stoma ileostomy is more common than colostomy. Loop stoma formations are more common than end stoma and double barrel stoma. The most common complication following stoma surgery was found to be skin excoriation 30%. **Conclusion:** Stoma surgery was associated with a high rate of complication irrespective of the surgical expertise, surgical setup, and per operative planning resulting in higher morbidity. With meticulous dissection, post-operative stoma care, early detection, and management of complications, also patient education helps to achieve good outcomes following stoma surgery.

**Key words:** Ileostomy; Colostomy; Intestinal stoma; Stomal complication; Stoma care

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## INTRODUCTION

Stoma means an opening in the anterior abdominal wall which is created surgically. The "word" stoma comes from the Greek word meaning mouth or opening.[1] Stoma is created to purposefully diverted the feces from the distal bowel loop to relieve any obstruction dismally or to protect distal anastomosis. Temporary stoma and permanent stoma are basic two types depending there role.[2] The abdominal stoma can be formed for various indications such as benign or malignant disease, most cohmon indications for stoma were perforation with peritonitis or intestinal obstruction,[3] ulcerative colitis or Crohn's disease and mesenteric ischemia, colonic and colorectal malignancies, anorectal malformations, high anal fistula, ischemic bowel disease, carcinoma urinary bladder, and spinal cord injury.[4] Elective colostomy is created in cases like to protect a distal colonic anastomosis, rectovaginal fistula, incontinence, and radiation proctitis.[5] The important factor which favor abdominal stoma is blood loss, shock, fecal contamination of the cavity, and multiple perforations,

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in comparison to primary closure. Many factors are related to a different type of complications. They are the patient's presentation, the timing of surgery, pre-operative education, location of stoma, ileostomy versus colostomy, comorbidity, and quality of life. Most of the complications are minor and may be managed with proper care of stoma and appliance, sometimes major complications require intervention by means of surgery with high morbidity and mortality risk.

First ileostomy was created in an ulcerative colitis patient in1912 but not widely accepted until Brooke did an exerted ileostomy,[6] litter of Paris first performed a ventral colostomy in a baby with imperforate anus in,[7] although the baby died of sepsis.

### Aims and objectives

The objectives of the study are as follows:

1. To study various type of stoma and their indication
2. To identify the various complication encountered that occurs after the construction of intestinal stomas
3. To assess the ways in which this complication can be minimized and managed in a better way.

## MATERIALS AND METHODS

This was a prospective and observational study conducted in the Department of General Surgery, R.G.KAR Medical College and Hospital both the emergency and elective department. The study was approved by the Institutional Ethics Committee.

The study consists of around 40 patients who underwent detailed pre-operative assessment, their pre-operative findings, indication for stoma construction, and post-operative complication and various complication related to stoma formation were recorded properly as per study protocol within the aforesaid time period.

Categorization of case population done in the below groups –

- Age of the patient
- Sex of the patient
- Setting of surgery when stoma did i.e., emergency or elective
- Primary indication for stoma creation
- Type of stoma or nature of stoma
- Complications of stoma creation recorded both intra and postoperatively.

### Exclusion criteria

The following criteria were excluded from the study:

1. Extremes of age
2. Patients on immune –suppression iii. Patients on corticosteroids.
3. Musculoskeletal comorbidities (rheumatoid/osteoarthritis
4. Prolonged immobility
5. Poor ASA status
6. Respiratory comorbidities, smoking, and diabetes.

### Follow-up patients

Interviews of patients of all patients with formed questions are at 2 weeks, 1 month, 2 months, and 6-month intervals with clinical examination and laboratory investigations.

### Data collection and interpretation

The statistical analysis will be carried out using available statistical software for windows version 10. All statistical tests will be one-tailed and $P<0.005$ will be taken as significant. The parametric data analyzed with an unpaired t-test or Mann–Whitney test and the non-parametric data will be analyzed by u-7=n using a Chi-square test.

## RESULTS

In our study, total number of patients was 40. This study was undertaken for the following reasons –

Based on study, we made following observations –

The age group where a maximum number of stoma surgery done was 31–40 and 55–60 years. Stoma was found to be more common in emergency surgeries than elective procedure. Most of the undergoes emergency stoma creation was a loop ileostomy followed by end colostomy followed by double barrel ileostomy, cases undergoing from June 2020 to May 2021 stoma creation, the most common indication for stoma construction was hollow viscus perforation followed by intestinal obstruction {small or large gut} consists of followed by colonic carcinoma and sigmoid volvulus consists of, followed by rectal carcinoma (Figure 1).

The most common complication was skin excoriation, followed by laparotomy site wound infection/burst

**Table 1: Shows comparison of different study showing complication of stoma.**

| | | |
|---|---|---|
| A clinical study of intestinal stomas: Its indications and complications | Ahmad et al. | Skin excoriations – 36%<br>Wound infections- 13% |
| Complications of colostomies | Porter et al. | Strictures- 16%<br>Wound infections- 13% |
| Bowel stomas in najaf, indications and complications | Alfaham et al. | Wound infections- 32%<br>Prolapsed- 30% |
| Various complications in ileostomy construction | Muneer et al. | Skin excoriations – 17.64%<br>Wound infections 5.80% |
| Temporary loop Ileostomy: Prospective Study of indications and complications | Rajput et al. | Skin excoriations – 21.4%<br>Poor sitting of stoma- 7.1% |

abdomen, other complications were stoma prolapse and parastomal hernia. followed by stoma necrosis. Although apparently ileostomy patient develops more skin excoriation as a complication whereas colostomy patients develop more parastomal hernia as a complication. Most of the complication develops within 6–15 days of stoma creation, followed by more than 30 days.

## DISCUSSION

Stoma surgery was important means of fecal diversion in many gastrointestinal and abdominal condition. About 200 years ago, first stoma surgery was performed. In the previous days, Warfield injury and stab wound were common indications for stoma surgeries, nowadays because the advent of newer techniques and supportive care primary anastomosis was preferred over stoma whenever possible.

Patients undergoing stoma surgeries were prone for some inevitable complications even after best surgical care, mostly because of the high bacterial load containing fecal material exposed to the surgical field and also the comorbidity continues of the patient undergoing stoma surgery such as diabetes, obesity, malnutrition, and intrabdominal contamination. This prospective study was conducted in R.G KAR Medical College and Hospital with 40 patients who underwent different stoma formation surgery. Form this study, it was evident that the peak age group of patients undergoing for surgery was 31–35 years with another peak at 55–60 years similar study carried out by Ahmed et al.,[9] in 2013 shows a peak age group around 50 years. According to their study, common indications for a stoma formation were enteric fever (38%), Koch's abdomen (18%), and carcinoma rectum (18%).

In this study, about 40 patient 80% were male and 20% female, similar findings were found in the Ahmed et al., study where 70% were male and 30% were female. Patients who underwent stoma surgery found that 77.5% (n=31) were operated on under emergency step-up and about 22.5% (n=9) operated on elective stoma creation, similar reports were found in the Ahmed et al., study were emergency cases were more emergency patients (97%) underwent stoma surgery than elective cases (3%). In our study, most common stoma done was found to be the most common type of stoma constructed that was ileostomy 55%. In the ileostomy loop, ileostomy was most common 27.5% (n=11) followed by double ileostomy 17.5% (n=7) followed by end ileostomy 10% (n=4). Among 40 patients, 45% underwent colostomy. In colostomy, most common was end colostomy 22.5% (n=9), followed by loop

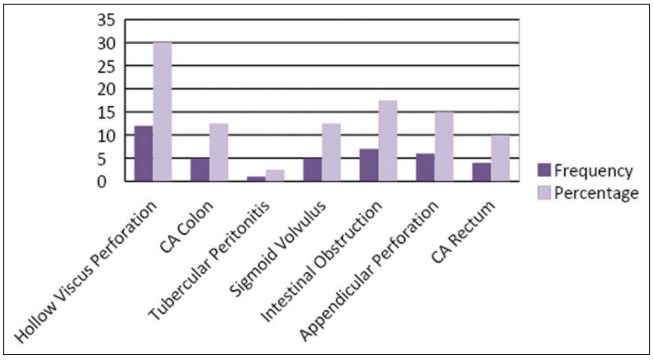


**Figure 1:** Indication of stoma

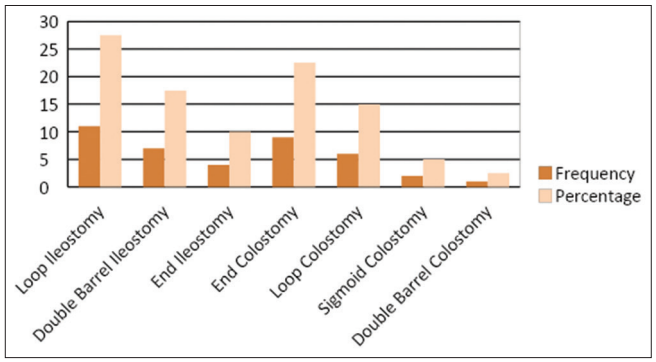


**Figure 2:** Different type of stoma

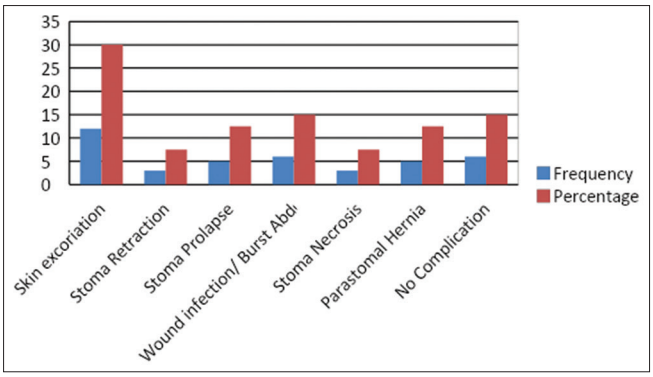


**Figure 3:** Various complications of stoma

colostomy 15% (n=6) (Figure 2). Loop ileostomy followed by double barrel ileostomy was common in emergency procedure whereas end colostomy was commonly done in elective procedure.

Temporary stoma were more commonly formed on ileum and mostly related to condition such as perforation, mesentric ischemia, and structure. Jayarajah et al.,[8] shows complication rate of 34.2% , I want to compare the complication rate of this study with my present study . End stoma/permanent stoma were more common on colon, in cases of car Imon a rectum sigmoid volvulus and colonic growth. On selection of stoma site, the right lower quadrant is ideal for ileostomy, and the left lower quadrant for most

of the colostomy was formed. Transverse stoma was created in the upper abdomen in some condition. Stoma-related complication found in 34 patients which comes to 85% of incidence rate of stoma-related complication 15% of case were found to have no complication, similar to Ahmed et al.,[9] study where incidence of complication rate 87%, and study by Mahjoubi et al.,[10] with reported rate of complication about 70%, very much high than some western study like Duschene,[11] Harris.[12] In the present study shows, most common complication was excoriation (30%), followed by laparotomy site wound infection.

About (15%), next was stoma prolapse (12.5%), and parastomal hernia (12.5%) followed by stomal necrosis (7.5%). Those complication was seen comparable with similar study (Table 1 and Figure 3).

In the present study, parastomal skin excoriation was found to be the most common complication following ileostomy, which was about 30% followed by laparotomy site wound infection, the similar result was found in Ahmed's study where skin excoriation has seen 36% of cases. It supports the literature that after ileostomy skin irritation and erosion were more because of poor location of the stoma, more volume of effluent, more liquid content, and more caustic nature of effluent. To avoid these conditions, ileostomy is constructed in a way to less contact of effluent with the skin and maintains proper stoma appliance. In our study, no correlation was found between gender and skin excoriation, a similar study on skin problems of stoma patients found no relation with gender.[13]

### Limitations of the study

This study is limited by possible selection and information biased as it was a nonrandomized ,unblinded and single tertiary are hospital centric research work.The number of patient included in this study is relatively small resulting a low power study.

## CONCLUSION

In this study, common complication found were peristomal skin excoriation, stomal retraction, stoma prolapse, wound infection/burst abdomen, stomal necrosis, and stoma prolapse. Although most common stomal complication was peristomal skin excoriation, caused by the caustic nature of the stoma effluent which also most common seen in ileostomy cases rather colostomy patient.

Unavailabilty of good quality stoma appliance, shortage of stoma care staff, cost factor, and poor patient compliance are main cause for morbidity. Proper pre-operative education of the patient and post-operative multidisciplinary team work needed for better patient compliance and stoma care. Meticulous skin care is mandatory with frequent interval follow-up needed to approach all such problems related to stoma surgery. A team approach including surgeon, stoma care staff, trained ostomy nurse is essential requirement.

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**Authors' Contributions:**
**TKS-** Concept and design of the study prepared the first draft of the manuscript; **PG-** Interpreted the result, review the literature, and manuscript preparation; **JP**- Concept, coordination and statistical analysis; **GG**- review of statistical analysis; and **BCG-** Preparation of manuscript and revision of the manuscript.

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