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Study of Intestinal Stomas in Tertiary Care Hospital of Indore, India

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Abstract

Introduction. Stomas are an intestinal opening for fecal diversion made over anterior abdominal wall. The aim of this study is to identify indications for commonly performed intestinal stomas and to study associated complications. **Material and Methods.** Our study is a retrospective study which was done in the department of General surgery, Mahatma Gandhi Memorial medical college and M.Y hospital, Indore (M.P), India from April 2020 to March 2022. Data was collected from Medical Records Department from files of patients who were admitted through outpatient and emergency department and underwent surgery for various reasons and follow up was done to note complications of intestinal stomas. The results were collected, analyzed and compared with other studies. **Results.** 195 patients were randomly selected for the study. The mean age was 43.6 years with a range of 16-70 years. 172 stomas were made in emergency. There were 107 cases of ileostomy. Out of these, 96 (89.7%) were loop ileostomy. The most common type of stoma made was loop ileostomy (49.23%) followed by Double Barrel (24.10%). Main and common indication for a stoma formation was enteric perforation (36.4%) followed by Koch's abdomen (23.6%). Of the various complications encountered with intestinal stoma, peristomal excoriation (26.7%) was highest. **Conclusion.** We found that complications are inevitable, whatsoever a surgeon tries its best. Thus, early detection of complication and its timely management is the keystone.

Keywords. Intestinal stoma, Indications, Complication, Enteric.

Introduction

Greek word "Stoma" meaning mouth or opening.[1] Intestinal stoma is an opening of the intestine on anterior abdominal wall made surgically.[2] Stomas are made away from distal bowel to relieve obstruction and to protect an anastomosis distal to stoma by diverting the fecal material and allow it to heal. It may be temporary or permanent; depending on their role.[3] Stoma is a lifesaving procedure, it has many complications also. Complications are divided into early complications (up to 30 days after operation) and late complications (more than 30 days after operation). Mostly ileostomy and colostomy are performed. Littre of Paris was the first to make a ventral colostomy in 1710 for a baby with imperforate anus.[2] In World war I, a mortality rate of 60% for primary repair of colonic injuries dropped to 30% in World war II due to the introduction of colostomy.[3] Between 1893 to 1913, ileostomy was suggested for treating of small bowel obstruction, peritonitis due to ruptured appendix and appendicular abscess.[4] Faecal

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contamination, associated injuries, time of presentation and multiple injuries are important factors indicating stoma formation than primary repair.[5] Stoma is formed for the purpose of exteriorization, decompression, lavage, and diversion. It may be temporary or permanent. Ileostomy is indicated in diffuse bowel injury, longstanding peritonitis intestinal obstruction, mesenteric or enteric ischemia and inflammatory bowel diseases and rectal causes. Colostomy is performed in colonic obstruction (primarily due to carcinoma of distal colon / rectum), perforation and peritonitis, rectovaginal fistula and perianal sepsis.[6] A troublesome stoma produces social, domestic and psychological upsets. Early complications of stoma including metabolic derangements, skin excoriation, ischaemia and stoma retraction. Parastomal hernia, prolapse and stenosis are the late complications. Preoperative preparation and good nutritional status, attention to the operative details on timely management of complications usually gives better results. This study is done to evaluate our experience and determine the complications and type and location of the respective stomas.

Materials and methods

The retrospective study was done in the department of General surgery of Mahatma Gandhi Memorial medical college and M.Y hospital, Indore (M.P), India from April 2020 to March 2022. Data was collected through the records in Medical Record Department and included age, gender, clinical examination, indications and type of stoma, type of surgery, appropriate operative findings. 195 patient files were studied. All patients were admitted through outpatient and emergency department and underwent surgery for various reasons. There follow up was done to note complications of intestinal stomas. Data was finally analyzed and compared with other studies and results were calculated.

Inclusion criteria

1. All male and female patients between 16-70 years in whom 3 months follow up was easily done.
2. All patients in whom elective and emergency intestinal stoma was made for any underlying cause.

Exclusion criteria

1. All patients less than 16 years.
2. Patients who have urinary diversion procedures which involve creation of intestinal stomas and patients with physiological and biochemical complications.
3. Patients in whom follow up is not possible.

During the stay of patient in the ward, attendants were briefed about management of stoma and associated problems. Hospital stay and patient's follow up in out – patient clinic at 1, 6 and 10 weeks were done. Reversal of stoma after distal loopogram and proper gut preparation was done after 12 weeks on elective list. Any complication was also recorded.

Results

195 patients were randomly selected for the study with 7% margin of error and standard deviation of 0.5 at 95% CI. 116 (59.5%) were males and 79 (40.5%) were females. The mean age was 43.6 ± 15.9 years. 172 stomas were made in emergency and only 23 elective. As per Table 1

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the common indication for performing stoma was enteric fever (36.4%). Second commonest Koch's abdomen (23.6%). Table 2 shows the type of stomas performed, the commonest was loop ileostomy (49.23%) and second common was Double barrel ileostomy (24.10%). Table 3 shows the complications which were seen in the study, in all procedures. The most common complication was peristomal excoriation (26.7%). As seen from Table 4, enteric fever was common in our hospital (36.4%) for which loop ileostomy was commonly performed. However in other cases of enteric fever, double barrel was also performed. For Koch's abdomen (23.6%) also loop ileostomy was commonly performed.

Table 1: Common indications for performing the Stoma (N=195)

Indications	**N (%)**
Unknown	09 (4.62)
Enteric Fever	71 (36.4)
Koch's Abdomen	46 (23.6)
Carcinoma rectum	12 (6.15)
Stab injury abdomen	13 (6.67)
Small intestinal obstruction	15 (7.69)
Sigmoid Volvulus	08 (4.10)
Carcinoma Colon	06 (3.08)
Blunt trauma abdomen	15 (7.69)

Table 2: Type of Stomas performed (N=195)

Type of Stoma	**N (%)**
Loop Ileostomy	96 (49.23)
End Ileostomy	11 (5.64)
Double barrel Ileostomy	47 (24.10)
Sigmoid colostomy	20 (10.26)
Transverse loop colostomy	11 (5.64)
Descending colostomy	06 (3.08)
Jejunostomy	04 (2.05)

Table 3: Complications related to intestinal stomas (N=130, 66.7%)

Complications	**N (%)**
Peristomal excoriation	52 (26.70)
Stomal necrosis	10 (5.13)
Stomal retraction	08 (4.10)
Prolapsed stoma	10 (5.13)
Bleeding	05 (2.56)
Mucocutaneous separation	14 (7.18)
Stenosis	08 (4.10)
Parastomal Hernia	15 (7.69)
Stomal diarrhea	08 (4.1)

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.**Table 4 Distribution of stomas made with the indication of surgery**

	Loop Ileostomy	End Ileostomy	Double Barrel	Sigmoid	Transverse Loop	Descending	Jejunostomy	Total
Unknown	2	0	1	3	1	1	1	**9**
Enteric Fever	56	0	15	0	0	0	0	**71**
Koch's Abdomen	25	0	21	0	0	0	0	**46**
Ca Rectum	0	2	0	4	4	2	0	**12**
Stab Injury Abdomen	2	2	2	4	1	1	1	**13**
SI Obstruction	10	0	5	0	0	0	0	**15**
Sigmoid Volvulus	0	0	2	3	3	0	0	**8**
Ca Colon	1	5	0	0	0	0	0	**6**
Blunt Trauma Abdomen	0	2	1	6	2	2	2	**15**
Total	**96**	**11**	**47**	**20**	**11**	**6**	**4**	**195**

Discussion

Ileostomy and colostomy are the common intestinal stomas made over anterior abdominal wall. The first surgical stoma was created more than 200 years ago. Earlier the stomas were actually unintentional ones, enterocutaneous fistulas resulting from penetrating abdominal injuries or complications of intestinal diseases such as incarcerated hernias.[7] Fecal diversion is an effective method to treat various gastrointestinal and abdominal conditions.[8] There are many factors predispose to stoma related complications like emergency surgery, surgical technique and surgeons' experience, high body mass in sex, old age, diabetes mellitus inflammatory bowel diseases, use of steroids and immunosuppressant drugs.[9] Many patients undergo surgeries for fecal diversion, but despite of a huge number of such surgeries done, complications are almost inevitable. Patients undergoing stoma formation are at risk of developing a wide range of complications following surgery.[10] Loop ileostomy (49.23%) was the most common stoma made in our study followed by Double barrel Ileostomy (47%) and sigmoid colostomy (10.26%) with

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most of them being formed in males 73%. Similar study was done by Safirullahetal[11] loop ileostomy was made in 43% patients and colostomy in 17.4% patients. Another study was done by Ghazi MA et al[12] ileostomy was most common (70%) then colostomy (30%). Similar study was done by Shah JN et al[13] loop ileostomy was the most common stoma made (70%) followed by loop colostomy (17%). Another similar study was done by Robertson et al[14] reported complications rate related to stoma between 10 and 70%, which may be due to varying lengths of follow up. Loop ileostomy is considered as a preferred method for temporary fecal diversion by many surgeons. Loop ileostomy is easy to manage and rate of complications were less. Wexner SD et al[15] reported a complication rate of 41 % related to loop ileostomy construction and 6% required surgical intervention. Enteric perforation in 71 patients (36.4%) was the most common indication of stoma formation in our study followed by Koch's abdomen in 46 cases (23.6%), Small intestinal obstruction and Blunt trauma abdomen, both in 15 cases (7.69%). A Similar study was done by Adnan Aziz et al[16] reported typhoid perforation (66%) was the most common indication of stoma formation followed by tuberculosis. Another similar study was done by Akram Rajput et al[17] in which enteric perforation was the most common cause of stoma formation (60%). Typhoid ileal perforation mostly occurs in 2nd or 3rd week of illness. In our study, for multiple typhoid perforations simple closure with proximal ileostomy were performed. The high incidence of unrecognized abdominal tuberculosis and typhoid leading to acute abdomen in our subcontinent is a big health related issue. In our study, 66.7% cases developed some sort of complication while 33.3% cases remained free of complications. This data is similar to the study done by B Mahjoubi[18] who reported complications in 70% patients and higher than western studies done by Harris, Pearl and Duschesne[19,20,21] who noted complications in 25%, 26% and 25% cases respectively. The early reported incidence of peristomal skin excoriation ranges from 3-42%. The degree of irritation ranges from mild peristomal dermatitis to full thickness skin necrosis to ulceration. The most common complication reported in the present study was peristomal skin excoriation and erythema (26.7%) followed by parastomal hernia (7.69%), mucocutaneous separation 7.18% and stomal necrosis and prolapsed stoma in 5.13% patients. Other complications included stomal retraction, stenosis and stomal diarrhea (4.10%). A study was done by Ratliff et al[22] has shown peristomal irritation in 53% cases while Pearl et al[20] showed peristomal skin erythema as the most common complication in 42%. In another study done by Ambreen Muneer[23] reported skin excoriation in 18% cases. Safirullah et al[11] reported skin erythema in 12% followed by prolapsed (6%) and retraction (4%). A study by Katia et al[24] noted higher overall complication rate with ileostomy.

Conclusion

Early referral to a tertiary care hospital, early diagnosis, early preoperative management like intravenous fluids, antibiotics, and symptomatic supportive treatment etc, early detection and prevention of severity of stoma related complications and the factors that lead to the development of such complications improves the prognosis of the patient and contributes new scientific knowledge and provides a foundation upon which to build future research. This may be

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the milestone to development of modalities that will improve hospitality and quality of life for individuals living with stomas.

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Figure 1 Carcinoma rectum with metastasis *Figure 2 Rectal perforation*
Figure 3 Stab injury

Figure 4 Loop ileostomy