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Research Article

A clinical study of intestinal stomas: its indications and complications

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ABSTRACT

Background: Intestinal stoma is an opening for fecal diversion. The purpose of the present study was to identify indications for commonly performed intestinal stomas and to study complications related to it.
Methods: This is a prospective study was carried out in a surgical unit of Hamidia Hospital, Gandhi Medical College, Bhopal from January, 2012 to December,2012. Data was collected by meticulous history taking including age, gender, indication, type of stoma, type of surgery, careful clinical examination, appropriate operative findings and follow up of the cases. The results were collected, analyzed and compared with other studies.
Results: A total of 100 patients were evaluated age ranged between 12- 85 years (50.5 ± 29.01 years) Male to female ratio was 7:3. Of the 100 patients 97 were admitted in emergency while 3 in out-patient department. The most common type of stoma made was loop ileostomy (64%) followed by sigmoid colostomy (11%) and transverse loop colostomy (9%). Main indication for a stoma formation was enteric perforation (38%) followed by Koch's abdomen (18%). Of the various complications encountered with intestinal stoma, peristomal skin irritation (36%) was the most consistent complication followed by laparotomy wound infection (13%).
Conclusions: Inspite of vast exposure of general surgeons towards stoma formation the complications are inevitable. Early detection of complication and its timely management is the keystone.

Key words: Intestinal stoma, Indications, Complication

INTRODUCTION

The word "Stoma" comes from the Greek word meaning mouth or opening.[1] An intestinal stoma is an opening of the intestine on anterior abdominal wall made surgically.[2] Stomas are used to divert the fecal stream away from distal bowel in order to allow a distal anastomosis to heal as well as to relieve obstruction in emergency situation. It may be temporary or permanent; depending on their role.[3] Though a life saving procedure, it may result in significant number of complications. Complications are divided into early complications (up to 30 days after operation) and late complications (more than 30 days after operation).

Littre of Paris was the first to make a ventral colostomy in 1710 for a baby with imperforate anus.[4] An ileostomy was first advocated in ulcerative colitis in 1912 but was not widely used until Brooke demonstrated his everted ileostomy in 1952.[5] Various Indications for which intestinal stomas are formed: ulcerative colitis, bowel obstruction, cancer of colon & rectum, crohn's disease, congenital bowel defects, uncontrolled bleeding from large intestine, injury to the intestinal tract, inflammatory bowel disease, ischemic bowel disease, carcinoma urinary bladder and spinal cord injury.[6]

Stoma, though it is a life saving procedure, it carries significant number of complications. Despite extensive

surgical expertise, complications after stoma creation still occur and often cause social isolation and a significant reduction in the quality of life. Factors affecting type and frequency of complications include surgical specialty, surgeon experience, emergency V Selective creation, appropriate preoperative marking and education, and patient issues such as age, obesity, diabetes and ability to care for stoma. The aim of our study is therefore to evaluate our own experience and determine the complications and type and location of the respective ostomy.

METHODS

This is a prospective study was carried out in surgical unit of Hamidia Hospital, Gandhi Medical College, Bhopal from January, 2012 to December, 2012. All patients were admitted through emergency and OPD basis and underwent surgery for various reasons and were followed up to note any complication which resulted in the creation of intestinal stomas, and who fit in to inclusion criteria. Data was collected by meticulous history taking including age, gender, indication, type of stoma, type of surgery, careful clinical examination, appropriate operative findings and follow up of the cases. The results were collected, analyzed and compared with other studies. All patients who underwent elective and emergency intestinal stoma construction for any underlying cause were included in the study. All patients less than 12 years, patients with urinary diversion procedures which involve creation of intestinal stomas and patients with physiological and biochemical complications were excluded from the study.

RESULTS

Out of 100 patients, 70 were male and 30 were females. The mean age was 50.5 ± 29.01 years with a range of 12 to 85 years.97 stoma were made in emergency and only 3 in routine. The indications of performing the stoma are listed in table 1.

Table 1: Common indication for performing the stoma.

Indications of Stoma	Percentage/ Number
Unknown	08
Enteric fever	38
Koch's abdomen	18
Carcinoma rectum	11
Stab injury abdomen	06
Small intestinal obstruction	05
Fecal fistula following ra leak	04
Sigmoid volvulus	03
Carcinoma colon	02
Blunt trauma abdomen	02
Rectal prolapsed	01
Post ileal tear	01
Colon obstruction	01

The type of stomas performed is given in table 2. There were 76 cases of ileostomy out of these, 64 (84.2%) were loop ileostomy, 4 (5.3%) double barrel ileostomy, 3 (3.9%) end ileostomy, 5 (6.6%) were ileostomy with mucus fistula. 21 colostomy were done of which 11 (52.4%) were sigmoid colostomy, 9 (42.9%) were transverse colostomy and 1 (4.8%) was descending colostomy and 3 jejunostomy.

Table 2: Types of stomas performed.

Types of Stoma	Numbers
Loop ileostomy	64
Double barrel ileostomy	04
Ileostomy with mucus fistula	05
End ileostomy	03
Sigmoid colostomy	11
Transverse loop colostomy	09
Descending colostomy	01
Jejunostomy	03

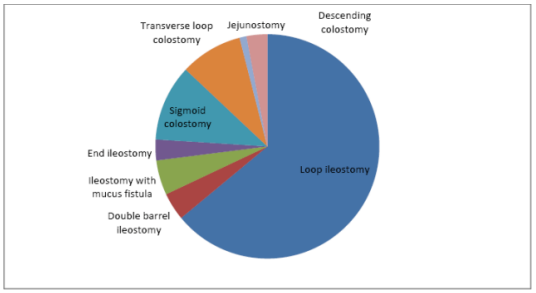

Figure 1: Types of stomas performed.

The complications encountered in our study in all the procedures performed are listed in table 3.

Table 3: Distribution of various complications associated with intestinal stoma.

Complications	Percentage
Peristomal skin irritation	36.2%
Stoma necrosis	5.4%
Stoma retraction	2.7%
Prolapsed stoma	4.7%
Bleeding	7.4%
Mucocutaneous separation	8.1%
Stenosis	4.0%
Parastomal hernia	4.7%
Peristomal infection, abscess, fistula formation	8.1%
Laparotomy wound infection	13.4%
Stoma diarrhoea	5.4%

The complications encountered by us were again redistributed as the ones observed in the patients undergone ileostomy and colostomy. The details of the complications are given in table 4 and figures 2 & 3.

Table 4: Distribution of complication of ostoma.

Complications	Ileostomy		Colostomy	
	Number	Percentage	Number	Percentage
Peristomal Skin Irritation	30	39.47	04	19.04
Stoma Necrosis	04	05.26	00	00
Stoma Retraction	02	02.63	00	00
Prolapsed Stoma	02	02.63	04	19.04
Bleeding	06	07.89	01	04.76
Mucocutaneous Separation	07	09.21	01	04.76
Stenosis	04	05.26	00	00
Parastomal Hernia	03	03.94	04	19.04
Peristomal Infection, Abscess, Fistula Formation	07	09.21	01	04.76
Laparotomy Wound Infection	08	10.52	05	23.80
Stoma Diarrhoea	03	03.98	01	04.76

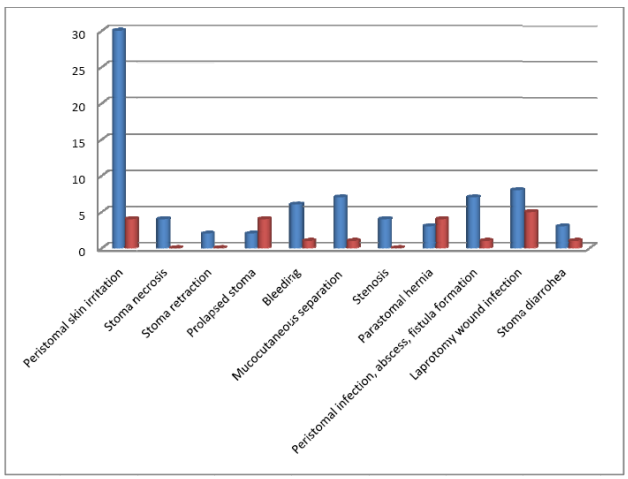

Figure 2: Graphical representation of complications encountered in ileostomy and colostomy.

DISCUSSION

Fecal diversion remains an effective option to treat a variety of gastrointestinal and abdominal conditions.[7] Ileostomy and colostomy are commonly made intestinal stomas in surgery. The first surgical stoma was created more than 200 yrs ago. The earliest stomas were actually unintentional ones, enterocutaneous fistulas resulting from penetrating abdominal injuries or complications of intestinal diseases such as incarcerated hernias.[8] A number of patients undergo surgeries for fecal diversion. But despite a great 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.[9] There are many factors suggested to predispose to stoma complications like high body mass index, inflammatory bowel diseases, use of steroids and immunosuppressant drugs, diabetes mellitus, old age, emergency surgery, surgical technique and surgeons' experience.[10]

Stomas in our study were formed in emergency are 97% while 3% were made electively. The most common stoma made in our study was loop ileostomy (64%) followed by sigmoid colostomy (11%) and transverse loop colostomy (9%) with most of them being formed in males 76%. Similarly in a study by Shah JN et al[11] loop ileostomy was the most common stoma formed (70%) followed by loop colostomy (17%). Ileostomy accounted for 70% stomas in another study by Ghazi MA et al[12] followed by colostomy in 30%. In a study by Safirullahetal[13] loop ileostomy was formed in 43% cases and loop colostomy in 17.4% cases. Robertson et al[14] reported stoma related complications rate between 10 and 70%, which may be because of varying lengths of follow up. Many surgeons consider loop ileostomy as preferred method for temporary fecal diversion. Loop ileostomy is considered generally easier to manage and is not associated with a greater rate of complications (in its construction and closure). Wexner SD et al[15] reported a complication rate of 41 % associated with loop ileostomy construction, with 6% requiring surgical intervention.

The most common indication of stoma formation in our study was enteric perforation in 38 cases (38%) followed by Koch's abdomen in 18 cases (18%) and carcinoma rectum in 11 cases (11%). This data is similar to that in the study by Akram Rajput et al[16] in which enteric perforation was the most common indication of stoma formation (60%). Similarly a study in Adnan Aziz et al[17] demonstrated typhoid perforation (66%) and tuberculosis as the most common cause of stoma formation. In contrast, a study of Safirullah et al[14] showed colorectal carcinoma (22%) as the most common cause of stoma formation followed by trauma (20%) and typhoid perforation (20%).

Typhoid ileal perforation usually occurs in 2nd or 3rd week of illness. Simple as compared to lengthy surgery improves survival. In the present study, loop ileostomy for multiple typhoid perforations and simple closure with proximal ileostomy were performed. The high incidence of unrecognized abdominal tuberculosis and typhoid leading to acute abdomen in our subcontinent is alarming and requires further research.

In our study, 13% cases remained free of complications while 87% cases developed some sort of complication. This percentage is near to the study by B Mahjoubi[18] who reported complications in 70% patients and much higher than western studies by Pearl[19], Duschesne[20] and Harris[21] who reported complications in 26%, 25% and 25% cases respectively. The early reported incidence of peristomal skin irritation 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 our study was peristomal skin irritation and erythema (36%) followed by laparotomy wound infection (13.4%) and peristomal skin infection, abscess formation and fistula formation (8.1%). A study by Ratliff et al[22] has shown peristomal irritation in 53% cases while Pearl et al[19] showed peristomal skin erythema as the most common complication in 42%. Ambreen Muneer[23] reported skin excoriation in 18% cases. Safirullah et al[14] reported skin erythema in 12% followed by prolapsed (6%) and retraction (4%). Apart from these peristomal complications, the systemic complications like electrolyte disturbances, gaping of the main wound and faecal fistula have been reported in much higher incidence in ileostomy in our study. Katia et al[24] reported higher overall complication rate with ileostomy.

In our study there was a mortality rate of 9% where patients died due to primary disease; which is comparable to the mortality rate of 18% reported by Joseph C etal.[25]

CONCLUSION

Surgeries resulting in stomal complications show a higher frequency of complication in loop ileostomy and in male gender. Enteric fever was the most common cause of stoma formation. Peristomal skin irritation is the most common of all complication due to nature of the spilled content. This study makes important contributions to the evidence related to ostomy complications and risk factors. Studying the incidence and severity of ostomy complications and the factors that lead to the development of such complications contributes new scientific knowledge and provides a foundation upon which to build future research. This new information may potentially lead to the development of interventions that will improve care and quality of life for individuals living with an ostomy.

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