

## RESEARCH ARTICLE

### EARLY COMPLICATIONS AND THEIR MANAGEMENT IN ABDOMINAL STOMA ANALYSIS OF 117 CASES

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#### ABSTRACT

**Introduction:** An abdominal stoma is an opening of intestine on the anterior abdominal wall made surgically. The commonly performed procedures on the anterior abdominal wall include ileostomy and colostomy. The purpose of the present study was to identify indications of commonly performed intestinal stomas, nature and rate of complications related to stoma.

**Materials and Methods:** This is a prospective study which was carried out in patients of intestinal stoma in the department of general surgery, Pt. B D Sharma PGIMS Rohtak. A total of 117 patients were studied who were admitted through accident and emergency department needing intestinal stomas. The parameters studied include- age group of patients; causes of stoma formation, type of immediate complications, and rate of early complications with duration of symptoms related to stomas.

**Results:** Ninety nine (84.62%) of patients were males and 18 patients were females (15.38%) in the ratio of 11:2. There were 101(86.32) ileostomies in which 64(54.70) were end and 37 (31.62) were loop ileostomies. There were 16(13.67) cases of colostomy making a total of 117 patients. Main indications of Ileostomy formation was enteric perforation (58.11%) 68 and injuries (14.52%) 17 Colostomy was mostly required in traumatic injuries (6.83%) 8, and colonic malignancy (4.27%) 5. Skin excoriation and ulceration were the most common (25%). These complications were worse in ileostomy than colostomy. In laparotomy wound infection (9.40%), stoma diarrhea (7%), and stoma retraction (6%) and prolapsed (6%) were other notable complications. A mortality rate of 1.7% was found in cases of ileostomy.

**Conclusion:** Common indications for abdomen stomas were enteric perforation, trauma, and tuberculosis. Main complications included local skin problems, stoma diarrhea, prolapsed and retraction. Despite extensive surgical experience, complications of intestinal stomas still occur frequently and result in high morbidity.

**Key words:** Abdominal stoma, Ileostomy, Colostomy, Indications, Complications

#### INTRODUCTION

Littre of Paris was the first to make a ventral colostomy in 1710 for a baby with imperforate anus (Khalid, 1991). Shock, marked blood loss, significant fecal contamination, associated injuries, time till presentation and multiplicity of injury are important factors favoring stoma formation than primary repair (Memon 1995). A troublesome stoma produces social, domestic and psychological upsets. These can be skin irritation, ischemia and stoma retraction (Brand, 2008). In the present study, an attempt was made to identify common indications and complications associated with intestinal stoma in a tertiary care set-up.

#### MATERIALS AND METHODS

This is a prospective study which was carried out in patients of intestinal stoma in the department of general surgery, Pt. B D Sharma PGIMS Rohtak from October, 2016 to May, 2017.

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A total of 117 patients were studied who were admitted through accident and emergency department needing intestinal stomas- ileostomy or colostomy, were included in the study. Patients under 16 years and urinary conduits were excluded from study. Operative findings, procedure done, immediate and late complications were recorded. Usually good stoma care bag for ileostomy or colostomy along with stoma adhesive paste was also used. During stay in the ward, patient and their attendants were also briefed about management of stoma and related problems. We have studied their age group, causes of stoma formation, type of immediate complications, and rate of early complications with duration of symptoms related to stomas and their management was recorded. We have tried to identify different types of complications of stoma formation in less than three days and up to discharge of patient.

#### RESULTS

There were (99) males and (18) females in the ratio of 11:2. The commonest age group for stoma formation was in 21 –30 years in either sex which is 26.49% as shown in Table 1.

**Table 1. Showing age group and sex distribution**

Age Group	Total Patients	% age total	Male	% Age	Female	% Age
ALL	117	100	N=99	84.64	N=18	15.38
<20	9	7.69	7	5.98	2	1.70
21-30	31	26.49	21	17.94	10	8.54
31-40	17	14.52	15	12.82	2	1.70
41-50	18	15.38	17	14.52	1	0.85
51-60	19	16.23	18	16.23	1	0.85
>60	22	18.80	20	17.09	2	1.70

**Table 2. Comparison of complications with durations of stoma**

Type of Complications	Complications in Duration of Stoma.	
	<72Hrs (n=48)	>72Hrs (n=69)
Number and durations		
Ischemia	2	4
Edema of stoma	25	32
Ileus	19	29
Fecal fistula	1	4
Retraction	8	2
Superficial bleeding	13	8
Skin excoriations	18	37
Steno sis	7	6
Stoma diarrhea	21	29
Wound infections	23	32
Mucosal prolapsed	3	5
Burst abdomen	4	13
Para stoma hernia	5	9
Mortality	2	5

**Table 3. Comparison of complications between types of stoma**

Complication	End ileostomy n=64	Loop n=37 ileostomy	End n=11 colostomy	Loop n=5 colostomy
Ischemia	2	4	0	0
Edema of stoma	35	27	1	3
Ileus	25	14	2	3
Fecal fistula	3	2	0	0
Retraction	6	4	0	0
Superficial bleeding	11	9	1	1
Skin excoriations	33	22	0	0
Stenos is	7	6	0	0
Stoma diarrhea	36	24	0	0
Wound infections	29	23	2	1
Mucosal prolapsed	5	3	0	0
Burst abdomen	9	7	1	0
Para stoma hernia	3	5	0	0
Mortality	4	2	1	0

Out of 117 operated patients, 101 (86.32) were ileostomies in which 64 cases of end ileostomies 37 cases of loop ileostomies and in 16 (13.76) cases of colostomies were done in the present study as shown in table 3. The local complications are listed as per table two in reference to duration of complication. In the first 72 hrs complications were seen in 48 patients of which stoma edema is most commonly observed which is seen in twenty five patients. The less common complications were wound infections in 23 patients. Ileus was present in nineteen patients and stoma diarrhea in twenty one patients. Two patients died during treatment with in this period. Complications in end and loop ileostomies are maximally seen in 36 patients of stoma diarrhea and 35 patients of stoma edema in end ileostomy patients. In the loop ileostomy patients, stoma edema and diarrhea were present in 27 and 24 patients respectively. Six patients of ileostomies died. Ileus and stoma edema were the most common complications seen in three patients of loop ileostomy as shown in table three. Stoma edema and wound infections were most commonly observed complications in first 72 hrs of stoma formation. Skin excoriation, stoma edema, ileus and stoma diarrhea are most common complications found after third day of stoma formation.

The complications with reference to type of stoma showed, stoma edema, skin excoriation mortality maximally in end ileostomies. Loop ileostomies have stoma edema, stoma diarrhea, wound infection are major complications. Colostomies have very less complications as compared to ileostomies as shown in table five. A mortality of seven patients were seen in which two were died within three days and five patients died after three days of stoma formation.

## DISCUSSION

The word stoma is derived from the Greek word meaning "mouth" or "opening". The stoma is the mucous membrane or the lining of the intestine or the lining of the urinary tract that is exposed to the abdominal surface ([http://www.ostomy.org/ostomy\\_info/whatis.shtml](http://www.ostomy.org/ostomy_info/whatis.shtml). Accessed September 11, 2011.). Surgical complications of intestinal stoma formation can broadly be divided into those that occur early, those that occur long after their construction. Early complications of stoma construction include necrosis, retraction, skin irritation, small bowel obstruction, surgical wound infection, and sepsis. Late complications are dominated by prolapsed, peristomal hernia, skin irritation, and fecal

fistula (Edwards, 2001). Peristomal skin complications have been estimated as high as 57% for patients with ileostomies and 35% with colostomies. 77% could be related to contact with stoma effluent (Herlufsen, 2006). Peristomal skin problems are frequently unrecognized, underreported, and untreated, even in populations with ready access to ostomy specialists. Many patients with peristomal complications do not necessarily perceive early signs of skin irritation as problematic (McMullen, 2011).

The effluent of ileostomies is strongly alkaline and contains unabsorbed waste products and enzymes that break down protein. Protein b is a major constituent of the outermost layers of the skin and protects the skin from harmful substances. The stratum corneum is resistant to quite acidic fluid, but it is more vulnerable to alkaline substances (Vujnovich, 2006). In our study of 117 patients, 101 were ileostomies and 16 were colostomies with high incidence of ileostomies. In a study done by Hellman J *et al* (Hellman, 1990) reported 93 patients, with 58 ileostomy and 35 colostomy formation. In our study, among 101 ileostomies, End ileostomy (54.70%) was most common type of ileostomy. loop ileostomy was performed in 31.62% of patients. In similar study by Cheape *et al.* (1994) 36 loop ileostomies were performed. We have colostomies done in 16 patients in which 9.40% were end colostomies, and 4.27% were loop colostomies colostomies, while similar study by Hwang YF *et al.* (1990) reported 49.7% end colostomy, 37.8% loop colostomy and 15% double barrel colostomy.

In case of colostomies, main indication was blunt and penetrating injury (6.83%), representing increasing violence in our society. A report by Bugis *et al.* (1992) blunt trauma resulted in 2-15% colonic injuries. In the present study colostomy was made in 4.27% cases of anorectal malignancy, one case of sigmoid volvulus, one sphincter injury and one patient of unknown rectal perforation. The study done by Memon *et al.* (1995) and they reported colostomy formation in 9.7% cases of acute intestinal obstruction. The most common indication of stoma formation in our study was enteric fever perforation in 58.11 % cases followed by blunt and penetrating injury 14.52% tubercular perforation in 4.27% cases and carcinoma rectum and colon in 6.83% cases. Study of Akram Rajput *et al.* (2007) reported enteric perforation (60%) as the commonest indication of stoma formation. Adnan Aziz *et al.* (2009) demonstrated typhoid perforation (66%) followed by tuberculosis as the most common indication. In contrast, a study of Safirullah *et al.* (2005) showed colorectal carcinoma (22%) as the most common indication followed by trauma (20%) and typhoid perforation (20%). In our study complications were seen in almost all patients, may be minor or major, while some other studies showed a complication rate which is significantly less than our study (Caricato *et al.*, 2007; Kalashnikova, 2011).

Complication rate is high in our study compared to other studies because most patients presented with acute abdomen and were operated in emergency OT for exploratory laparotomy, pre-op stoma site marking was not done. And we have no enterostomal therapist available in our hospital. In our study most complications were local stoma related. Some of these complications were systemic in nature. In a study by Kalashnikova *et al.* (2011) stoma-related and peristomal skin complications were 69.9% and 64.2%, respectively, while Formijne Jonkers *et al.* (2012) reported that 82% of the patients had stoma-related complications.

In our study most common local stoma complications were peristomal skin irritation- excoriation, dermatitis, desquamation., other local stoma complications were stoma diarrhea in 36 patients of end ileostomy and 24 patients of loop ileostomy due to irritation, edema of stoma in 35 and 27 patients end and loop ileostomy respectively, skin excoriations in 33 and 22 patients, wound infections in 29 and 23 patients of end and loop ileostomy respectively. Eight patients of mucosal prolapsed, ten patients of stoma retraction, parastomal hernia eight patients, superficial bleeding in twenty patients, ischemia in six patients, seven patients were died during treatment, while in a similar study by Duchesne *et al.* (2002) reported complications were stomas necrosis (4.3% of all patients, 17.1% of complications), and stoma retraction (1.2% of all patients, 4.6% of complications).

Arumagam *et al.* (2003) reported complications were retraction (23 patients), poor stoma site (18 patients) in 97 stomas. Redmond *et al.* (2009) reported 20% complications of bothersome folds and scars and 17% parastomal hernias, stomas retraction (10%) and prolapsed (1%). Nastro *et al.* (2010) reported 46.4% of complications, of which the commonest was parastomal hernia 14.1%. A study by KalashnikovaI *et al.* (2011) reported stoma complications including parastomal hernia (25.1%), mucocutaneous separation (18.6%), prolapsed (16.8%), retraction (14.2%), stenosis (7.8%), mucosal hypergranulation (7.8%), and fistula (4.9%). In a study by Formijne Jonkers HA *et al.* (2012) reported complications were fixation problems (46%) and leakage (40%). Superficial necrosis, bleeding and retraction occurred in 20%, 14% and 9% of patients, respectively.

Stomas have risks and costs of their own including local, systemic complications and a second hospitalization for closure. Major complications like sepsis, intra abdominal abscesses, wound infection or dehiscence and pneumonia are important indicators of clinical outcome but gut related complications are often used to gauge effectiveness and risks of gut procedures. Most of the complications appeared in stomas which were constructed by residents or less experienced senior registrar in emergency. A surgeon trained in stoma formation usually give good results (Demetriades *et al.*, 1988). Early application of stoma adhesive paste and appropriate size of stoma bag were used to avoid the stoma related complications. Management included either Zinc oxide paste, some other stoma care cream, local methods like egg white, silver paints and keeping it dry till the ulceration is healed. Proper stoma care requires patient training and services of stoma care specialist.

## Conclusion

The common complications were stoma diarrhea edema of stoma and excoriations which is caused by chemical dermatitis due to exposure to the stoma effluent because of leakage from appliance most commonly seen ileostomy and meticulous skin care is mandatory for management such problems.. Operating surgeon should be familiar with the techniques used to fashion various types of stomas and also be able to deal with the complications that may arise in the post-operative setting.

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