

## Original Research Article

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# Prospective study of 30 cases of temporary ileostomy and their complication

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## ABSTRACT

**Background:** An intestinal stoma is an opening of the intestine or urinary tract onto the abdominal wall, constructed surgically or appearing inadvertently. An ileostomy involves exteriorization of the ileum on the abdominal skin. In rare instances, the proximal small bowel may be exteriorised as a jejunostomy. A colostomy is a connection of the colon to the skin of the abdominal wall.

**Methods:** Data of patients, who were undergone for ileostomy construction in New Civil Hospital, Surat were collected prospectively regarding complete history, clinical features on examination, investigations and management.

**Results:** The most common indication of ileostomy formation was ileal perforation in 46.6% patients followed by Intestinal obstruction in 16.6% patients, obstruction with gangrene in 13.3% patients, adhesion in 10% patients. In total of 30 patients loop ileostomy was performed in 17 patients and double barrel ileostomy in 13 patients. Peristomal skin irritation was the most common complication (90%) cases, followed by stomal necrosis/retraction (3.3%). Complications were recorded in all patients out of which stomal complication seen in 96% of cases (29 out of 30). Of these peristomal skin excoriation was most common (90%) followed by wound related complications, present in 36.6% cases (11 out of 30 patients).

**Conclusions:** In case of a high complication procedure like ileostomy, it is important to know regarding factors which can be avoided and managed. Knowing these factors which can be avoided or managed. Knowing these factors may help in attributing complications to surgical or technical factors, thereby providing opportunity to correct this error. Prediction of ileostomy complication helps in better management before occurrence of complication. It also helps in conservation of resources and better patient outcome.

**Keywords:** Temporary ileostomy, Complications, Stoma

## INTRODUCTION

An intestinal stoma is an opening of the intestine or urinary tract onto the abdominal wall, constructed surgically or appearing inadvertently. An ileostomy involves exteriorization of the ileum on the abdominal skin. In rare instances, the proximal small bowel may be exteriorised as a jejunostomy. A colostomy is a connection of the colon to the skin of the abdominal wall. A urinary conduit involves a stoma on the abdominal wall that serves to convey urine to an appliance placed on

the skin. The conduit may consist of an intestinal segment or in some cases a direct implantation of the ureter, or even the bladder, on the abdominal wall.

Since remote antiquity, the consequences of the injury to the bowel have been known to man. In the Bible, the Book of Judges 3: 16-22 states how Ehud stabbed Elgon, King of Moab. Elgon's bowel was perforated and he died.<sup>1</sup>

The essential principles have remained the same for any stoma surgery since the days of Littré and Ellingham.

Small bowel pathology is a significant cause of morbidity and mortality in developing countries and creation of ileostomy is a frequently performed surgery worldwide. Ileostomies are created for diverting the faecal stream on urgent basis in intestinal obstruction, perforation (typhoid/tubercular), blunt trauma abdomen, or when there is some distal disease process to be rested or a distal operation site to be healed, or as permanent ileostomy when distal bowel is excised for cancer, inflammatory bowel disease, etc. In the past surgeons were content to treat some of the above-mentioned conditions with creation of permanent ileostomy, but as the recognition of the disadvantages of stoma increased, the interest in permanent stomas waned and shifted towards 'continent', or reservoir stomas as the accepted mode of treatment.

Selecting the site for the stoma before operation has profound importance in the overall management of the stoma. An improperly located stoma leads to leakage of stool, which results in painful inflammation of skin, precluding proper adherence of the pouch and rendering ostomy management practically impossible.<sup>1</sup>

The stoma should, therefore, ideally be sited in a lower quadrant of the abdomen through the rectus muscle below the umbilicus. In addition, it should be away from bony prominences, skin folds, existing scars, incision marks, drain sites and previously irradiated skin areas. Furthermore, the site should be readily accessible and visible to the patient in sitting position in order to be cared for properly.<sup>2</sup>

The new technologies available in surgery have made an immense impact on stoma management in the past few decades. Plastic appliances and the use of hypoallergenic glues to fix the appliances have vastly improved patients' life styles. The revolution in suture material and development of stapling are other great advances that have made their mark in stoma surgery.<sup>3</sup>

Another recent technological revolution engulfing us is the laparoscopy. Laparoscopic ileostomy and colostomy have opened up new vistas in the realm of stoma surgery.<sup>4-6</sup>

Though ileostomy is frequently a lifesaving procedure, it can lead to complications, often devastating like necrosis, retraction, stenosis or stricture, prolapse, skin infection, dermatitis, malnutrition, etc. The outcome varies in ileostomy patients according to their indications, age, gender, nutritional status, ileostomy type, type of procedure, site of stoma. The present study is for finding out the predictors of such complications as well as occurrence of early complications.

### **Objectives**

Objectives were 1) to study the indications of temporary ileostomy in patients undergoing routine or emergency exploratory laparotomy 2) to study early, immediate or

late complications of temporary ileostomy 3) to study about treatment modalities of various complications of temporary ileostomy either medical management or surgical management depending on the type of complication 4) to study of outcome of different treatment modalities of complications of temporary ileostomy.

### **METHODS**

#### *Source of data*

The study was designed to carry out a prospective evaluation of patients undergoing ileostomy for various indications admitted in New Civil Hospital, Surat attached to Government Medical College, Surat August 2017 to September 2018. Selection criteria included those patients who were operated in this institution for creation of ileostomy.

#### *Type of study*

This was a prospective study for indication and complications in patients with newly constructed ileostomies.

#### *Inclusion criteria*

All the patients who were presented to general surgery department and fulfilled above criteria and undergone for creation of ileostomy, included in the study.

#### *Exclusion criteria*

Exclusion criteria were 1) patient undergone colostomy formation 2) patient undergone permanent ileostomy formation 3) enterocutaneous fistula 4) age <18 years 5) ileal conduits

#### *Method for collection of data*

Data of patients, who were undergone for ileostomy construction in New Civil Hospital, were collected prospectively regarding complete history, clinical features on examination, investigations and management.

A specially designed proforma was used for recording data collected.

Various pre- and per-operative findings including the type of surgical procedure carried out, site of ileostomy creation, stoma type (temporary/permanent), etc were studied.

Postoperatively patient's condition was assessed and following observations were documented: Time of functioning, Skin complications (Infections/Dermatitis), Stoma output / ileostomy diarrhoea, malnutrition / weight loss, electrolytes imbalance, Ileostomy prolapse, Peri ileostomy hernia, necrosis, retraction, etc. All

complications or morbidity parameters occurring within 30 days of performing ileostomy were noted as early complications.

Appropriate statistical method was used to analyse the data collected.

## RESULTS

A total of 30 patients were included in the study. The maximum numbers of patients were in age group 18-29 (40%). The youngest patient in the study was 18 years old and the eldest was 59 years old. Age ranged from 18 to 59 years. Paediatric age group (0-18 years) patients were not included in the study.

**Table 1: Age wise distribution of patients of ileostomy (n=30).**

Age (years)	Frequency	%
<b>18-29</b>	12	40
<b>30-39</b>	8	26.6
<b>40-49</b>	6	20
<b>50-59</b>	4	13.4
<b>&gt;60</b>	0	0

**Table 2: Sex wise distribution of patients of ileostomy (n=33).**

Sex	Frequency	%
<b>Male</b>	22	73.3
<b>Female</b>	8	26.6

**Table 3: Distribution of patients according to presenting symptoms in case of ileostomy (n=33).**

Symptoms	Frequency	%
<b>Pain abdomen</b>	30	100
<b>Vomiting</b>	15	50
<b>Abdominal distension</b>	18	60.6
<b>Constipation</b>	14	46.6
<b>Bleeding P/R</b>	1	3.0
<b>Fever</b>	15	50

Of the total 30 patients included in the study 22 patients were male and 8 were female. M: F ratio was 2.3:1. Out of 30 patients 5 patients had h/o previous abdominal procedure and 25 had negative history.

In our study most common presenting symptom was pain abdomen which was present in all patients followed by abdominal distension in 60.6% and vomiting in 50% patients. In our study most common sign on per abdomen examination was abdominal tenderness which was present in 100% patients. Distension was present in 60.6%, while guarding and rigidity was present in 56.6% patients each.

**Table 4: Per abdomen clinical findings in case of ileostomy (n=30).**

Per abdomen findings	No. of patients	%
<b>Abdominal distension</b>	18	60.6
<b>Tenderness</b>	30	100
<b>Guarding</b>	17	56.6
<b>Rigidity</b>	17	56.6
<b>Palpable lump</b>	1	3.0

**Table 5: Radiological investigations in patients of ileostomy (n=30).**

Radiological investigations	Radiological findings	No. of patients	%
<b>X-ray chest/ abdomen erect (n=30)</b>	Free gas under diaphragm	17	56.6
	Air fluid levels	10	33.3
<b>USG (n=12)</b>	Distended loops with fluid filled bowel loops	7	58.3
	Free fluid	4	33.3
<b>CT scan (n=3)</b>	Appendicitis	1	8.3
	Intra-abdominal mass	1	33.3
	Obstruction	2	66.7

**Table 6: Indication findings for ileostomy construction (n=30).**

Indications	No. of patients	%
<b>Ileal perforation (not to trauma)</b>	14	46.6
<b>Intestinal obstruction</b>	5	16.6
<b>Intestinal obstruction with distal bowel gangrene</b>	4	13.3
<b>Intestinal obstruction with bowel mass (malignancy)</b>	1	3.33
<b>Blunt trauma abdomen with perforation</b>	3	10
<b>Adhesions/pyoperitonium/ post lscs</b>	3	10

**Table 7: Types of ileostomy that were constructed (n=30).**

Type of ileostomy	No. of patients	%
<b>Loop ileostomy</b>	17	56.6
<b>Double barrel ileostomy</b>	13	43.7

In our study X-ray chest and abdomen was done in all cases. USG was done in 12 cases and CT scan was done in only 3 cases. On X-ray chest; gas under diaphragm was present in 17 (56.6%) patients followed by air fluid levels in 10 (33.3%) patients. Abdominal USG showed distended fluid filled bowel loops in 7 (58.7=3%) of 12 patients who underwent this investigation. 4 patient

showed signs of free fluid in abdomen. Of the 3 patients who underwent abdominal CT scan one (33.3%) showed presence of abdominal mass.

**Table 8: Distribution of various complications associated with ileostomy (n=30).**

Complications	Number of patient	%
<b>Peristomal skin irritation/ excoriation</b>	27	90
<b>Stoma necrosis</b>	1	3.3
<b>Stoma retraction</b>	1	3.3
<b>Prolapsed stoma</b>	0	0
<b>Stenosis</b>	0	0
<b>Parastomal hernia</b>	0	0

**Table 9: Distribution according to non stomal complication.**

Complications	No. of patients	%
<b>Surgical site infection and procedure related</b>	11	36.6
<b>Septicaemia</b>	1	3.3
<b>Mortality</b>	1	3.3

**Table 10: Treatment modalities for various complication.**

Complication	Treatment	%
<b>Peristomal Excoriation (n=29)</b>	Zinc oxide paste	96
<b>Main wound gap (n= 11) (10+1)</b>	secondary suturing	30
<b>Ulcer</b>	STG	3.3
<b>Stomal necrosis</b>	Refashioning	3.3
<b>Stomal retraction</b>	Early stoma closure	3.3

The most common indication of ileostomy formation was ileal perforation in 46.6% patients followed by Intestinal obstruction in 16.6% patients, obstruction with gangrene in 13.3% patients, adhesion in 10% patients. In total of 30 patients loop ileostomy was performed in 17 patients and double barrel ileostomy in 13 patients.

Peristomal skin irritation was the most common complication (90%) cases, followed by stomal necrosis/ retraction (3.3%). Complications were recorded in all patients out which stomal complication seen in 96% of cases (29 out of 30). Of these peristomal skin excoriation was most common (90%) followed by wound related complications, present in 36.6 % cases (11 out of 30 patients). Mortality was 3.3% in our study (1 out of 30). The most common cause of death was septicemic shock.

## DISCUSSION

Intestinal stomas are routinely created as part of many operations for bowel perforations, malignant tumours,

trauma, inflammatory bowel diseases, etc. Previous reviews documented significant morbidity associated with stoma construction and its closure. However, majority of these studies were conducted in Western tertiary care specialty clinics and consisted of patients whose lifestyles were vastly different from those of rural south Gujarat, a population dwelling in deprived, squalid conditions and for most of whom, the longest journey undertaken in their lives was that from their village to the medical college hospital where this study took its shape. It therefore, goes without saying that the morbidity which is so emphatically highlighted in the Western literature may not even be considered as morbidity by the subjects of our study exposed to a multitude of hardship in their lives.

Fecal diversion remains an effective option to treat a variety of gastrointestinal and abdominal conditions<sup>7</sup>. Ileostomies are commonly made intestinal stomas in surgery. The first surgical stoma was created more than 200 years ago. The earliest stomas were actually unintentional ones, enterocutaneous fistulas resulting from penetrating abdominal injuries or complications of intestinal diseases such as incarcerated hernias.<sup>8</sup> 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. Many factors have been 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.<sup>9</sup>

**Age:** In our study total 30 case were included, whose mean age was 30 years (range 18-59 years), the maximum number of patients were in the age group 18-29 years (40%), followed by 30-39 years (26.6%). A similar study found that the mean age was  $50.5 \pm 29.01$  years with a range of 12 to 85 years.<sup>10</sup>

In another study mean age was  $36 \pm 12.58$  years with a range of 12 to 61 years, patients below 12 years were excluded.<sup>11</sup> In the present study, enteric perforation commonly occurred in the second to fourth decade of life with 69% of patients between the ages of 20 and 50. This may be due to the fact that young patients have higher activities for job purpose and are compelled to eat unhygienic food outside the home. Also, the associated comorbidities like hypertension and diabetes are more in third and fourth decade.

## Sex

Out of 30 patients 73% patients were male and 27% were female and M:F ratio was 2.3:1. Similar results have shown in a study in which 73 were males and 27 were

female cases and another study has shown 76% cases were males and 23% cases were females.<sup>10,11</sup> Other published literature shows a similar finding with reported ratios from 2.3:1 to 6.1:1.<sup>12</sup> This is probably because males are at higher risk for exposure to infections like Tuberculosis or Typhoid, or trauma because of higher activities for occupational reasons.

**Symptoms:** In our study all of the patients presented with abdominal pain (n=30, 100%), abdominal distension in 60.6% cases and vomiting in 50% cases. A similar study has shown that abdominal pain was present in 100% cases and vomiting in 43.9% cases.<sup>13</sup> Another study has shown that pain abdomen was present in 100% cases, vomiting was in 71% cases, abdominal distension in 81.5% cases and abdominal mass in 7.6% cases.<sup>14</sup> Another study showed the most common symptoms to be pain abdomen (88%), abdominal distension (75%), and absolute constipation (36.7%).<sup>15</sup>

Most of patients in the present study had acute abdominal condition like perforation or obstruction which leads to peritonitis and so patients presented with pain, distension or vomiting.

In emergency situations, it is often not possible to mark the stoma site in standing and sitting position as the patients who present late are usually in shock at the time of presentation. In such cases, it is difficult to judge the skin folds and waist line in patients with high BMI.

**Clinical finding:** Most of the patients in our study presented with features suggestive of peritonitis. Clinical finding in our study was abdominal distension in 60.6% cases, tenderness in 100% cases, guarding and rigidity 56.6% in each and palpable lump in 3.03% cases. A similar study shows all the patients had signs of peritonitis, namely, guarding, rigidity and free fluid in the peritoneal cavity.<sup>15</sup>

Peritonitis had an adverse effect on the morbidity hence pre-operative resuscitation, judicious use of antibiotics and acid base imbalance correction plays an important role in preventing future morbidity of the patients.

In cases of intestinal perforation or obstruction with features of peritonitis a defunctioning proximal protective loop/end ileostomy is considered advisable due to presence of one or more of the following intraoperative findings: high chance of insecure repair or anastomosis, multiple perforations, matted bowel loops, and grossly unhealthy bowel due to severe edema and inflammation.

### **Investigations**

Malnutrition and hypoalbuminemia have been found to increase post-operative morbidity, mortality, and duration of hospital stay.<sup>16,17</sup> In our study all the patients of Malnutrition have been found to increased post-operative morbidity and duration of hospital stay.

In our study X-ray chest and abdomen was done in all cases and it was found to be positive for gas under diaphragm in 56.6% cases. A similar study has shown that X-ray abdomen for gas under diaphragm was positive in 80% cases.<sup>13</sup> Another study showed air under diaphragm on X-ray abdomen in erect position in 60% cases, dilated bowel loop in 40% cases, and ground glass appearance in 11.7% cases.<sup>15</sup> A higher incidence of gas under diaphragm with a range from 75 to 82.5 percent is reported in some studies.<sup>18,19</sup> Few studies in literature have also reported a lower incidence of pneumoperitoneum, the reasons could be due to adhesions around perforation, sealing of perforation and reabsorption of gases due to delayed presentation.<sup>19</sup>

In our study ultra-sonography of abdomen and pelvis was done in 12 cases and CT scan was done only in 3 cases. Abdominal ultrasound showed moderate free fluid in 90% of the cases and dilated loops in 58.3% cases. Sonography is as sensitive but more specific than abdominal X-ray in the diagnosis of intestinal obstruction and perforation, but CT is the most accurate method<sup>20</sup>. Obstructed bowel loops appear sonographically to be dilated, thick walled and fluid filled with hyperechoic spots (gas).

### **Procedure**

All ileostomies in our study were formed in emergency conditions. The most common type of ileostomy made in our study was loop ileostomy (56.6%) and double barrel ileostomy (43.4%). A similar study has shown that loop ileostomy was the most common stoma formed (84%) followed by ileostomy with mucous fistula (6.57%), double barrel ileostomy (5.26%).<sup>10</sup> Ileostomy accounted for 70% stomas in another study, followed by colostomy in 30%.<sup>21</sup> A similar study has shown loop ileostomy was formed in 43% cases and loop colostomy in 17.4% cases.<sup>22</sup> 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).<sup>22,23</sup>

Loop ileostomy does not provide complete defunctioning but it decreases the incidence and severity of sepsis following a leak from the anastomosis or primary closure site. Loop ileostomy is considered generally easier to manage and is not associated with a greater rate of complications than loop colostomy. Shorter duration of ileostomy surgeries as compared to lengthy surgeries improves survival. In the present study, proximal ileostomy was performed and simple closure of ileal perforation or resection and anastomosis of distal bowel segment done.

### **Etiology**

The most common indication of ileostomy construction in our study was ileal perforation in 17 cases (56.7%) in

which typhoid ileal perforations were 11 (64.7%) and tubercular perforations were in 5.8% (n=1), followed by intestinal obstruction accounting for 33.3% (n=10); of which koch accounted for 70% of cases of obstruction (n=7). A similar study showed the most common indication to be typhoid enteric perforation accounting for 63.8% of ileostomies while tuberculosis accounted for 17% of ileostomies.<sup>24</sup> This data is similar to that with a similar study, in which enteric perforation was the most common indication of stoma formation (60%).<sup>11</sup>

Similarly, a study, demonstrated typhoid perforation (66%) and tuberculosis as the most common cause of ileostomy formation.<sup>23</sup> In contrast, a study showed colorectal carcinoma (22%) as the most common cause of stoma formation followed by trauma (20%) and typhoid perforation (20%).<sup>22</sup>

Unlike the West typhoid is still a common cause of perforation in our country, followed by tuberculosis, being common diseases of India. In developing countries, including India, intestinal perforation resulting from typhoid fever and tuberculosis has always been a concern because of their high morbidity and mortality rates.<sup>7,22,23</sup> In these cases, most perforations occur in the terminal ileum.

Typhoid fever is endemic in India with the prevalence rate of 88 cases/lac populations and death rate 0.029/lac population for the year 2017<sup>25</sup>. Typhoid ileal perforation usually occurs in 2nd or 3rd week of illness. Delayed presentation, marked sepsis, and poor nutritional status were the common factors in these patients with perforation peritonitis, so preference was given to temporary loop/end ileostomy over primary closure or resection of the diseased segment and anastomosis.

The most common site of involvement of abdominal tuberculosis is the terminal ileum and cecum. Patients with tuberculosis had poor nutritional status, so increased morbidity and complications were observed in our study. The high incidence of unrecognized abdominal tuberculosis and typhoid leading to acute abdomen in our subcontinent is alarming and requires further research.

Intestinal obstruction due to adhesion or mass was also an important indication observed in 10% cases in the study. 17% of patients of obstruction had a history of previous abdominal surgeries in which multiple adhesions found intraoperatively led to difficulties in stoma formation.

### **Complications**

In our study all cases had complications (stomal or non stomal) while 29 (96.6%) cases developed stomal with or without other complication. This percentage is near to a study, who reported complications in 80% patients and much higher than Western studies who reported complications in 26%, 25% and 25% cases

respectively.<sup>2,26-28</sup> Another study by showed complication rate of 52.5%.<sup>24</sup>

### **Stoma related complications**

Robertson, reported stoma related complication rate between 10-70%, which may be because of varying lengths of follow up.<sup>29</sup> In our study we observed 96.6% of complications rate with loop ileostomy/double barrel ileostomy. A similar study has reported a complication rate of 41% associated with loop ileostomy construction, with 6% requiring surgical intervention.<sup>30</sup>

A loop ileostomy has an adverse effect on quality of life, which gets further enhanced if stoma related complications occur. Complication rate of temporary loop ileostomy ranges between 5-94%. These rates vary due to varying length of follow up. Complication rates between 10 and 90 percent were also reported and this difference may be related with different time points. Among the patients (96.6%) who developed complications with loop ileostomy construction, 3.03% required surgical intervention while rest of patients were treated conservatively.

The most common complication reported in our study was peristomal skin irritation (96.6%), followed by stoma retraction (3.03%). A similar study has shown peristomal irritation in 53% cases while another study showed peristomal skin erythema as the most common complication in 42%.<sup>26</sup> Muneer reported skin excoriation in 18% cases while a similar study, reported skin erythema in 12% followed by prolapse (6%) and retraction (4%).<sup>22</sup>

Skin excoriation was found to be the major complication in this study. The usual incidence of peristomal skin problems is 10-90%, and the probable cause may be high or low BMI, and postoperative care. In our study, the problems of skin excoriation and retraction were seen mostly in patients with leakage from the stoma, high BMI, low socioeconomic status, and poor hygiene. The ileostomy effluent has high alkaline property and high levels of digestive juices which causes skin damage and leads to dermatitis. The probable reasons for skin excoriation and retraction in patients with high BMI are a thickened fatty mesentery making mobilization of the bowel loop more difficult and traction being exerted on the bowel wall. On the other hand, in patients who have thin build and poor nutritional status, bony prominences pose a problem in proper placement of stoma appliances and result in frequent leakage and skin excoriation.

The early reported incidence of peristomal skin irritation ranges from 3-42% but, the degree of irritation ranges from mild peristomal dermatitis to full thickness skin necrosis to ulceration.<sup>31</sup>

Skin excoriation was also seen in patients with abdominal tuberculosis due to generalized muscle wasting and

weight loss which is a feature of this disease process. Patients with abdominal tuberculosis had very prominent bony prominences due to the significant weight loss before surgery, so it became difficult to apply stoma appliances properly in these patients which resulted in frequent leakage of bag and spillage of relatively watery effluent from the bag. After initiation of standard antituberculous treatment and high protein diet, BMI improved in these patients and peristomal skin complications also decreased.

Retraction was seen in one patient who was managed by revision surgery. Retraction or prolapse of stoma and transient stomal ischemia are usual sequel of an improper surgical technique.

Many patients with loop ileostomy are known to have episodes with excessive fluid loss through the stoma. In some of these patients of stomal diarrhoea, the losses over several days can severely derange water and electrolyte balance. During the first few post-operative days, fluid and electrolyte imbalance is the main problem, which needs great care and this was found in 20% of our patients, needing fluid and electrolytes.

**Non-stomal complications:** In our study, the rate of non stomal complications was 36.6%. A higher complication rate was seen in patients with typhoid fever and tuberculosis, and in those who presented in shock at emergency. These complications are systemic complications like, respiratory tract infection, septicaemia and the electrolyte disturbances and main wound related complications like surgical site infection, gaping of wound, loosening of sutures have been reported in much higher incidence in ileostomy in our study. The majority of these complications were treated conservatively. A similar study reported higher overall complication rate with ileostomy.<sup>32</sup> Delayed presentations, age of the patient, urgency of surgery, degree of contamination, diagnosis at the time of presentation, and presence of shock at admission are the factors associated with a high level of morbidity.

Ileostomy complications were much more when done in emergency setting. In our study 100% patients had ileostomy construction under emergency circumstances and so higher complications rate were observed. A study has quoted similar higher values of complications when stomas have been created in the emergency setting, 64% complication rate among emergency and 36% among elective cases.<sup>33</sup>

Though the study also has a focus on surgical techniques, but no significant association was found between type of procedure and complications occurrence. The loop of intestine which is used to create the stoma must lie comfortably relaxed outside the abdomen without any tension and a rod of a feeding tube should be employed. Otherwise, the chance of the stoma retracting and causing intra-abdominal abscesses and peritonitis is very high.

### **Morbidity and mortality**

In our study maximum length of stay in the hospital in ileostomy cases was 16-20 days (35%) followed by 11-15 days with the median length of 15 days. The duration of hospital stay in our study is longer as compared to the data given in a study, wherein the median length of stay was 10 days for ileostomy.<sup>34</sup>

Patients with longer stay were those who had excessive skin excoriation and peristomal ulceration. However, a longer duration of hospital stay is not necessarily a drawback, because all ileostomies were performed in emergency conditions and most of the patients had poor general condition or presented with poor nutritional conditions, so post operatively their longer hospital stay was used in improving general condition.

Out of 30 patients one patients died (3.03%). These patients presented late, with shock and deranged RFT at the time of admission. These patients also had severe sepsis as intra op findings and died due to septicemia.

### **CONCLUSION**

In case of a high complication procedure like ileostomy, it is important to know regarding factors which can be avoided and managed. Knowing these factors which can be avoided or managed. Knowing these factors may help in attributing complications to surgical or technical factors, thereby providing opportunity to correct this error. Prediction of ileostomy complication helps in better management before occurrence of complication. It also helps in conservation of resources and better patient outcome.

In spite of advantages and disadvantages of making various ileostomies, patient will continue to need and surgeons shall continue to make it in the times to come. So the only way out is to provide a good stoma care and increase the availability of quality, and inexpensive, stoma appliances and accessories to increase the patient's acceptability of a lifesaving procedure.

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