

Prevalence of Intestinal Stoma Formation in the Management of Abdominal Surgery in Emergency Department of Allama Iqbal Memorial Teaching Hospital

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ABSTRACT

Aim: To determine the prevalence of stoma formation during abdominal surgical procedures in emergency setting for all the indications in Allama Iqbal Memorial Teaching Hospital, Sialkot

Study Design: Prospective analytical.

Place & duration of study: Department of Surgery, Allama Iqbal Memorial Teaching Hospital affiliated to Khawaja Muhammad Safdar Medical College, Sialkot; from December 2012 to January 2016.

Methodology: All patients of abdominal surgeries operated within 24 hours/ same day of presentation in emergency department were included irrespective of age, presentation and co-morbid pathologies. Patients with known history of malignancies were also included. The surgeries were done by the experienced surgeons not below the rank of senior registrars. The patients without 3 months follow up were excluded from the study.

Results: Total of 2243 abdominal surgeries were carried out, 107 patients fulfilling the inclusion criteria; had a stoma either in small intestine or large intestine. Infections and secondary perforations leading to 33(30.84%) ileostomies/ Exteriorization of perforation were the main pathology; while skin excoriation 19(25.33%) and retraction 5(6.66%) were the complications in small bowel stomas and parastomal hernia 3(4.00%) encountered in colostomies. Psychological 12(16.00%) and social problems 9(12.00%) like depression and dissolution of marriage also was quite worrisome. We had 3 mortalities due to septicemia and patients reporting in late stage.

Conclusion: Stoma formation is a life-saving surgical procedure. It has profound effect on outcome and is a major salvage procedure in protecting the life of patients in emergency setting. These procedures definitely have significant morbidity. All the surgeons must be well trained in these procedures to minimize complications associated with stoma formation.

Keywords: Stoma, Ileostomy, Colostomy, Reversal of stoma.

INTRODUCTION

Surgical stoma was created more than 2 centuries ago for the first ever time. Initially the stomas were created unintentional, like enterocutaneous fistulas resulting after penetrating abdominal trauma or complications of bowel infections and incarcerated hernias¹. In developing countries, including Pakistan, India, intestinal perforation resulting from typhoid fever and tuberculosis are common etiologies and pose a threat because of their high morbidity and mortality². In these patients, most perforations occur in the terminal ileum and at times these perforations are exteriorized as stomas³.

Ostomy is an opening made by a surgeon to drain contents of the viscera usually the intestine in general

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surgical practice. A stoma is the actual end of the small or large bowel that can be seen protruding through the anterior abdominal wall. Intestinal Stomas is a common surgical procedure being faced by surgeons both in emergency and elective situations. Stoma formation and its management is known for early and late complications. Luckily, most stomas are temporary and the complications associated with these are eliminated when the stoma is reversed⁴. Ulcerative Colitis, Bowel obstruction, Cancer of colon & rectum, Crohn's disease, Congenital Bowel defects, Uncontrolled bleeding from large intestine, Injury to the intestinal tract, IBD, enteric perforations, Ischemic Bowel disease are common indications for intestinal stomas⁵. The surgical technique in stoma formation is an important factor for complications and the ease in its reversal. It is essential to observe sound surgical principles for good results. Ileostomy is a surgical procedure in which the ileum is attached to the abdominal wall in order to divert contents from the large intestine. There are many types of ileostomy but those commonly made are Loop Ileostomy and End

Ileostomy. Colostomy involves creating an opening in the abdomen and to bring a portion of large colon to drain and collect stools out of body in colostomy bag. There are many types of colostomy but mostly made are Loop Colostomy and End Colostomy⁶.

Abdominal surgeries carried in emergency setting are associated with high rate of morbidity and mortality. These surgeries are carried with a range of indications like intestinal obstruction, peritonitis, blunt and penetrating trauma to abdomen. Irrespective of the cause and indication of surgery, the patients are operated without formal preparation of gut and there is less time for resuscitative measures. Though the definitive procedures are carried to get rid of the pathologies; the intra operative findings lead the surgeons to formation of stomas as salvage measure⁷. Varied indications and operative findings lead to such procedures. The advantages of stomas cannot be stressed upon and associated problems of stoma care is usually not well received by the patients and their attendants. So there is a continuous pressure over the surgeons to weigh the indications and morbidity of stoma formation⁸. Immediate postoperative care not only influence early postoperative complications but also have impact over quality of life and psychological effects for the person living with stoma⁹. Keen assessment skills, early recognition of signs and symptoms of a complication, and prompt interventions are crucial to maintaining a viable stoma and a successful surgical outcome¹⁰.

The bulk of this problem is generally managed at public sector hospitals and especially in teaching hospitals. No study has been conducted in our hospital to evaluate the quantum of such procedures. We wanted to determine the statistics of causes, indications of stoma formation in such patients at emergency department of Allama Iqbal Memorial teaching hospital.

METHODOLOGY

From January 2012 to January 2016, we enrolled 188 who were admitted in the surgical ward after being operated for abdominal pathologies in emergency department of Allama Iqbal Memorial Teaching Hospital, Sialkot city, Pakistan.

Patients operated on for abdominal surgeries landing up with some sort of stoma were eligible for our study. A total of 188 patients (66%) were operated on within 24 hours of admission, the others after this period. Eighty one patients were lost to follow-up. There was no any preoperative selection criteria for the patients; patients were evaluated with detailed history, clinical assessment, and blood investigations like complete blood counts, blood urea,

X-ray chest in erect position and Widal test. The surgical procedure as laparotomy and possibility of stoma formation was explained to the patients and attendants and written consent obtained for the stoma formation. All patients were managed with intravenous fluids for resuscitation, nasogastric tube decompression, Foley’s catheterization to measure urine output, third generation cephalosporins, and analgesics if required. After initial resuscitation in the casualty department, emergency laparotomy through midline incision were performed. The operative findings, site, number, and size of perforations, extent of soilage and peritonitis, status of bowel loops, presence of lymph nodes, and condition of mesentery, were recorded and peritoneal lavage was carried out. End or loop ileostomy or colostomies were formed depending on the indications following surgical principles. Patients were managed postoperatively and their histopathology reports were also maintained.

In postoperative period, complications which came across were stomal ischemia, skin excoriation, wound sepsis, intra-abdominal abscess, burst abdomen, and postoperative septicemia leading to death. The record was maintained for the indications of abdominal operative procedures, type and nature of intestinal stomas and its postoperative course. The variables were entered in SPSS version 22 and statistics calculated and analyzed.

RESULTS

Total of 2243 abdominal surgeries were carried out, of which 107 patients who fulfilled the inclusion criteria and had a stoma either in small intestine or large intestine were included in the study. The general data of our patients in the study is shown in Table I.

Table I: General Demographic Data

Total no of abdominal surgeries/laparotomies	2243
Total no. of stomas	188
No. of stomas included in the study	107
Age	5 to 69 years (mean 39.34 yrs)
Sex M:F	89: 8(4.94:1)

Out of 107(100%) patients; sixty five(60.74%) patients had ileostomy and thirty eight (35.51%) patients received colostomy while only four (3.73%) patients had jejunostomies. Most of the stomas were 61(36%), formed in age group 25-50 years, followed by 13(17%) in 20-25 years and 12(16%) in 50-69 years. Commonest stoma formed was Loop ileostomy in 56 out of 65 patients with ileostomies

(86%) followed by End colostomy in 19 patients out of 38 colostomies (50%). Typhoid enteric perforation (32%) was the leading indication of stoma formation in followed by Traumatic perforation .Tuberculosis (9%) was the 3rd common cause of stoma formation and carcinoma rectum 8(7.47%). Overall morbidity with ileostomy was higher as compared to colostomy.

There were 75(100 per cent), complications in total; 52 major complications (excluding excoriation and slough) occurred in 107 patients, of which the commonest was skin excoriation 19(25.33%) parastomal hernia 3(4%). were associated with an increased risk of complications. Leading complication

was peristomal skin excoriation 19(25.33%), Stenosis 1(1.33%) Prolapse (1.33%) Retraction 5(6.66%) were the major complications. The systemic complications noted were; Gaping of Main Wound 1(1.33%), Septicemia 3(4%), Faecal Fistula 1(1.33%) and Psychological complications 12(16%) and social problems 9(12%).

Out of 3 jejunostomies all three have been reversed, while 52 ileostomies and 22 colostomies have been reversed. Permanent ileostomies were 3 and colostomies 9 while 7 patients with ileostomies and 6 patients with colostomies are still on follow up and awaiting closure of their stomas.

Table II: Indications of stomas n=107 (100%)

	Jejunostomy 4 (3.73%)	Ileostomy 65(60.74%)	Colostomy 38(35.51%)
Blunt trauma	1(0.93%)	9(8.41%)	3(2.80%)
Penetrating trauma including firearm injuries	0	17(15.88%)	11(10.28%)
Intestinal obstruction (mechanical reasons like bands, adhesions, mesenteric ischaemia,volvulus, herniations, tumours)	2(1.86%)	4(3.73%)	18(16.82%)
Infections and secondary perforations	1(0.93%)	33(30.84%)	2(1.86%)
Iatrogenic injuries	0	2(1.86%)	4(3.73%)

Table III: Morbidity data n=75 (100%)

Early complication (n=45)	Total	Ileostomy	Colostomy	Jejunostomy
Skin excoriation	19(25.33%)	17	1	1
Infections	5(6.66%)	3	2	0
Bleeding	1(1.33%)	1	0	0
Stenosis	1(1.33%)	0	1	0
Retraction	5(6.66%)	4	0	1
Ischaemic necrosis of edge	4(5.33%)	2	1	1
Obstruction /poor functioning	3(4.00%)	1	2	0
Faecal fistula	1(1.33%)	0	1	0
Burst abdomen	1(1.33%)	0	1	0
Abdominal abscess	2(2.66%)	1	1	0
Mortality	3(4.00%)	1	1	1
Late complications (n= 30)				
Prolapse	3(4.00%)	2	1	0
Parastomal Hernia	3(4.00%)	0	3	0
Intestinal obstruction	3(4.00%)	1	2	0
Psychological problems	12(16.00%)	6	5	1
Social Problems	9(12.00%)	7	2	0

Table IV: Surgical procedures to deal complications

	ileostomy	colostomy	jejunostomy
Re fashioning of stoma	3	1	1
Re sitting of stoma	4	1	0
Closure of old stoma & New stoma formation	1	0	0
Re-exploration/ Laparotomy	1	2	0

DISCUSSION

In our study : male to female ratio of 4.94 : 1 which is the higher than the ratio 4 : 1 reported by Adesunkanmi et al¹¹, 3:1 shown by Wani et al¹² and Talwar et al¹³ and lower than 6.5 : 1 in the study by Prasad et al¹⁴ and lower than 6.4 : 1 in the study by Beniwal et al¹⁵. The mean age was 39.34 years with range of 5–69. Most of the patients were in group 25–50 years (62.13%). Typhoid perforations with a history of delayed presentation remained the most common reason for landing up with a stoma formation. Ileal perforation is more prevalent in male gender as seen in our study. In other studies, male patients were more than 75% of all the patients. This is due to males being involved in outdoor affairs and is prone to GI infections complications including perforation peritonitis. However, Park et al¹⁶ claims that there is no relation between sex and complications. Chun et al¹⁷ encountered more than 65% patients with BMI >25. They found that obesity was a significant risk factor for overall ileostomy complications, outpatient complications, and severe peristomal skin problems. Our study did not cater for the variable of obesity.

There were 3 mortalities in our study which were attributed to delay in seeking surgical treatment by the patients who were ASA Class V but it was independent of age while; Park et al¹⁶ had strong relation of age for early complications while late complications did not correlate with age. Mock et al¹⁸, depicts that morbidity and mortality increase as age increases due to comorbid conditions and poor immunity. Mock et al¹⁸ in their series of 221 patients found that the increased number of perforations was associated with a significantly higher mortality rate. In the present study, all the patients had single perforations with severe enteritis.

Morbidity data shows that skin excoriation appeared in 17 patients, retraction in 1, stenosis in 1 and prolapse in 1 patients while these complications as reported in study by Mittal et al¹⁹ were 33.33% skin excoriation, retraction 13.33% and prolapse was reported as 3.3%. In the study by Mittal et al. even higher incidence of these complications were reported by Bakx et al²⁰.

Typhoid perforations were leading pathology in our study i.e., followed by penetrating trauma abdomen while same was reported by Duchesne et al.²¹ and Hussain et al²² but tuberculosis was the second leading pathology. Delay in seeking treatment, severe sepsis, and poor health status are the common factors in these patients presenting with perforation peritonitis, so it was safe to perform temporary loop ileostomy over primary repair or resection of the diseased segment and restoring

continuity. Similar were the findings by Chaudhary et al²³. Skin excoriation was found to be the major complication in this study. The usual incidence of peristomal skin problems is 10-14% and the probable cause may be improper siting, high or low BMI, and postoperative care. 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.

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 ileostomy over primary closure or resection of the diseased segment and anastomosis. The authors found that there was a greater likelihood for a patient to undergo a diversion loop stoma if he presented late. This is a direct reflection of the fact that a delay in presentation leads to worsening peritoneal contamination and subsequently an increase in the adverse factors that lead to the creation of a diversion stoma.

Ileostomy closure on an average was performed with interval of 10-12 weeks. Although there is trend towards early ileostomy closure even in primary admissions but considering the psycho-social factors we followed the safe protocol. These durations are comparable to the study by Babuet al²⁴.

Skin excoriation was found to be the major complication in this study. The usual incidence of peristomal skin problems is 10-14%, and the probable cause may be improper siting, high or low BMI, and postoperative care. 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 obesity. In our study, 5 patients undergoing appendicectomies had dense adhesions and iatrogenic injuries lead to ileostomy formation. Only 2 cases of colostomy formation for the obstructed inguinal hernias with sliding of sigmoid colon being gangrenous due to delayed presentation were encountered. Depending upon the injuries to colon, the commonest site for stoma was left iliac region followed by right hypochondrium. Preoperative siting was associated with a reduced risk of complications related to stoma formation.

Limitations: The biggest limitation of this study was the lack of randomization. The study included patients from all the three surgical units of Khawaja Muhammad Safdar Medical College, Sialkot and standardization of operating protocol was lacking. Similarly all varieties of intestinal stomas were studied and analyzed so the comparison of statistics with different variables of international studies is not

truly applicable. Studies for single stomas in emergency settings need to be conducted.

CONCLUSIONS

Though significant morbidity is associated with these stomas and problems in stoma care are to be faced by the patients and the treating surgeons; the stoma formation remains the best tool for war against mortality. Intestinal stomal complications are common, occurring in almost half of patients. There are certain factors which determine the complications. Preoperative siting was associated with a reduced risk. Preoperative counselling, postoperative follow up and stoma care advice is required in all cases.

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