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Original Research Article

A clinical study of intestinal stomas in emergency laparotomy: its 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 emergency laparotomy, 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 Saveetha Medical College & Hospital, Chennai, Tamilnadu, from August 2012 to August 2013. 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.
Results: A total of 74 patients were evaluated age ranged between 16 to 78 years. Male to female ratio was 7:2. The most common type of stoma made was loop ileostomy (60%) followed by end ileostomy (30%) and loop colostomy (9%). Main indication for emergency laparotomy was intestinal obstruction (44%). The most common type of stoma performed was loop ileostomy (60%). The most dreaded complication of stomal closure is anastomotic leakage.
Conclusions: Early referral to the tertiary hospital, early diagnosis, proper preoperative management like intravenous fluids, antibiotics, etc., early detection and prevention of hypotension, reduction of time duration for emergency laparotomy, close post-operative monitoring definitely reduce the morbidity and mortality of stomal closure, when intestinal stomas kept for emergency cases.

Keywords: Complication, Emergency laparotomy, Intestinal stoma

INTRODUCTION

Millions of laparotomies were performed all over the world for elective as well as emergency cases. Emergency laparotomy is a lifesaving procedure done for trauma and non-trauma cases, as a damage control as well as definitive procedure. Abdominal injuries occur either due to blunt injury or due to penetrating injury. Indication for emergency laparotomy for trauma is ever increasing especially over the past century. In trauma, emergency laparotomy was done to identify which organ involved, identify and manage active bleeding, toxic fluids and hemoperitoneum can be drained, perforation if present can be sutured, stomas can be kept if needed in case of severe damage to the bowel, as DE functioning procedure for distal anastomosis, sepsis where primary anastomosis increases morbidity and mortality of the patient and to remove foreign body in case of penetrating injury. Among non-traumatic cases, the common indications for emergency laparotomy is hollow viscus perforations, inflammatory pathology producing peritonitis like appendicitis, diverticulitis, necrotising pancreatitis, etc., acute intestinal obstruction, vascular, urological problems and obstetrics and gynaecological emergencies. Various study was conducted and still goes on all over the world regarding stomas in emergency laparotomy cases. 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 lifesaving 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 and 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 lifesaving 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 Saveetha Medical College and Hospital, Chennai, Tamilnadu, from August 2012 to August 2013. 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, analysed 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 16 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 74 patients, 73% were male and 27% were females. The mean age was 37.8 years with a range of 16 to 78 years. The most common age group of patients for whom emergency intestinal stoma kept were 40 to 49 group (24.3%) followed by 30-39 age group (20.2%) and above 60 years were 20.2%. Trauma patients were more among younger age groups while older patients for whom emergency stomas kept were mostly for non-traumatic causes. The indications of performing the emergency laparotomy are listed in Table 1 of total patients, blunt injury abdomen cases were 10 (13.5%), penetrating injuries were 17 (22.9%).

Table 1: Indication for emergency laparotomy.

Indication for emergency laparotomy				
Trauma		Non-trauma		
Blunt injury	Penetrant injury	Intestinal obstruction	Perforation	Vascular
10	17	33	10	4

Among non-traumatic cases 33 (44%) were due to intestinal obstruction and perforation were 10 (13%) and vascular pathology producing bowel ischemia were 4 cases (5.4%). Entry of foreign objects and bowel injuries produce more contamination and increases the need for stomas in emergency laparotomy cases. The type of stomas performed is given in Table 2.

Table 2: Types of stomas performed.

Types of stoma	Numbers
Loop ileostomy	33
End ileostomy	17
Double barrel ileostomy	5
End jejunostomy	5
Loop jejunostomy	1
Loop colostomy	7
End colostomy	4
Hartmann	2

There were 55 cases of ileostomy out of these, 33 (60%) were loop ileostomy, 17 (30%) were end ileostomy, and 5 (9%) double barrel ileostomy, 3 (3.9%). 5 (6%) end jejunostomy were done. Loop jejunostomy were done in 1 (1%) patient. 11 colostomies were done of which 7 (63.6%) were loop colostomy, 4 (36.3%) were end colostomy and 1 (4.8%).

Hartmann's procedure was done in 2 (2.7%) patients. The complications associated with stomal closure encountered in our study are listed in Figure 1. The most dreaded complication of stomal closure is anastomotic leakage. Total cases who had anastomotic leakage is 5 among 18 who had morbidity of stomal closure. All five cases had delayed presentation (more than 48hrs) to the hospital.

Total cases with delayed presentation are 31 among 74. Hence 17 % chances of anastomotic leakage were there with delayed presentation. 4 of them presented with shock had anastomotic leakage. (4 out of 22) 18% has chance of leakage when presented with shock. Similarly, 4 among 5 patients who had anastomotic leakage had generalised peritonitis. overall generalised peritonitis cases in this study is 24. Seventeen percentage who had generalised peritonitis have chance of anastomotic leakage. 3 out of 5 patient had intra/post op hypotension and all 5 patients needed ventilatory support. 3 out of 5 cases had comorbid illness and there is 9% risk of anastomotic leakage. 2 of them had colo-colic anastomosis, one had ileo colic anastomosis, and 2 had ileo ileal anastomosis. 3 out of 5 cases had re-surgery as the enterocutaneous fistula does not settle by conservative method. Among 5 patient who had anastomotic leakage. 2 patients died, of which one had re-surgery.

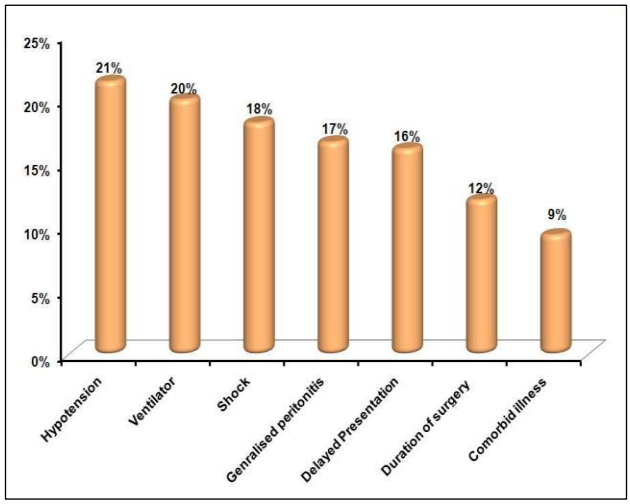

Figure 1: Complications associated with stomal closure.

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 surgeon's experience.[10]

The most common stoma made in our study was loop ileostomy (60%), similarly loop ileostomy was the most common stoma formed (70%).[11] Ileostomy accounted for 70% stomas in another study followed by colostomy in 30%.[12] In a study loop ileostomy was formed in 43% cases and loop colostomy in 17.4% cases.[13] Stoma related complications rate between 10 and 70%, which may be because of varying lengths of follow up.[14] 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). Reported a complication rate of 41 % associated with loop ileostomy construction, with 6% requiring surgical intervention.[15] A study shows colorectal carcinoma (22%) as the most common cause of stoma formation followed by trauma (20%) and typhoid perforation (20%).[14]

Typhoid ileal perforation usually occurs in 2nd or 3rd week of illness. Simple as compared to lengthy surgery improves survival. The high incidence of unrecognized abdominal tuberculosis and typhoid leading to acute abdomen in our subcontinent is alarming and requires further research.

A study shows complications in 70% patients and much higher than western studies by Pearl, Duschesne, and Harris, who reported complications in 26% and 25% cases respectively.[16-19] The 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. A study has shown peristomal irritation in 53% cases while peristomal skin erythema as the most common complication in 42%.[19,20] It was reported skin excoriation in 18% cases.[21] Skin erythema in 12% followed by prolapsed (6%) and retraction (4%).[14] Higher overall complication rate with ileostomy.[22]

CONCLUSION

Early referral to the tertiary hospital, early diagnosis, proper preoperative management like intravenous fluids, antibiotics, etc., early detection and prevention of hypotension, reduction of time duration for emergency laparotomy, close post-operative monitoring definitely reduce the morbidity and mortality of stomal closure, when intestinal stomas kept for emergency cases.

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