ORIGINAL ARTICLE

The Trends and Outcome of Stoma Procedures in Abdominal Surgery

MUHAMMAD AHMAD GHAZI, AMIR RIAZ BHUTTA, HAFIZ MUHAMMAD ASIF MAQBOOL, *NAUMAN DAWOOD, NASIR MAHMOOD, AZHAR BASHIR, FARRUKH BASHIR, M AZEEM MIAN, MUHAMMAD ARSHAD CHEEMA*

ABSTRACT

Introduction: Stoma surgery is the hallmark of the abdominal surgery and General surgical units bear a huge load of this type of abdominal surgery.

Material and Methods: This is a retrospective study of the different ostomies done at our unit. We reviewed all the patients undergoing the stoma surgery from January 2008 till May 2009 and looked for the pattern of the indications, surgical techniques and various outcomes.

Results: A total of 211 procedures were studied and number of stoma formation operations was 133 (63%) and those of reversal were 78 (36.9%). Most of the stomas were formed for the penetrating abdominal injuries (19.9%), followed by the typhoid perforation (19.4%) and abdominal tuberculosis (18.5%). Ileostomy was made the most frequently (50.2%) followed by colostomy (30.3%). Common complications of stoma formation were skin excoriations (7.6%) followed by prolapse (3.3%). Most of the stomas were reversed late (more than 2 months after the stoma formation with a mean duration before reversal being 6.5 months.

Summary: Abdominal Surgery is incomplete without stomas and the art of stoma formation is an indispensable armamentarium of a general surgeon. We have reviewed various factors associated with the outcome of stoma surgery and the data will help the preoperative patient counseling regarding the outcome of the stoma surgery.

Key Words: Stoma, Ileostomy, colostomy complications

INTRODUCTION

A Stoma is a surgically designed intestinal conduit constructed for the temporary or permanent fecal diversion or for the feeding purposes. If it is constructed for the fecal diversion for the unhampered healing it can be reversed at a later stage. The technique of the stoma formation has a direct impact on the complications and the difficulty in reversal of the stoma. The aim of our study was therefore to evaluate our own experience and determine the complications and mortality of stoma formation and closure in relation to the type and location of the respective ostomy.

MATERIAL AND METHODS

This a retrospective cross sectional study of the patients who presented in our unit from January 2008 till May 2009. All the patients were admitted in NSW, Mayo Hospital (affiliated with King Edward Medical University) either through emergency or the out patient department depending upon the severity of the disease. The preoperative consent was taken rom all the patients regarding the stoma formation and the reversal.

Department of Surgery, King Edward Medical University/Mayo Hospital, Lahore

Correspondence to Dr. Muhammad Ahmad Ghazi, Email: drmaghazi@hotmail.com

In acute emergency cases patients were resuscitated with intravenous fluids and antibiotics before exploratory laprotomies. Antibiotics prescribed according to hospital policy as available in hospital formulary. The reversal procedures were conducted in the elective list with adequate mechanical and chemical bowel preparation where required. . Complete blood examination, blood urea, serum electrolytes, urinalysis, x-rays chest and abdomen done in all cases. Ultrasound Abdomen, Mycodot, ESR, Typhidot and serum amylase were carried out where indicated. Post-operatively histopathology of the specimen was studied to confirm the diagnosis.

The data including age, sex, indications for surgery, type of surgery performed, type of ostomy created, co morbidities like smoking and Diabetes mellitus, complications, length of hospital stay, ostomy reversal, interval until reversal, and follow up evaluation were collected.

The data were analyzed using the SPSS version13.

RESULTS

A total of 211 patients were included in the study. Males were 128(60.7%) and females were 83 (39.3%). The mean age of the study group was 32.4±15.2 years. The minimum age was 13 years and the maximum age was 90 years. 46.4 % of the patients were admitted through the out patient

department and most of these presented for the reversal of their stomas. 53.6% presented in the emergency with the acute abdomen or a traumatic injury. The number of stoma formation operations was 133 (63%). The various indications for the Stoma surgery are as follows:

Table 1 Different Indications for the Stoma formation

Diagnosis	=n	%age
Penetrating injuries	42	19.9
Typhoid Perforation	41	19.5
Tuberculosis	39	18.5
Other Perforations	14	6.6
Post D&C (dilatation and curettage) Peritonitis	13	6.2
Malignancy	11	5.2
Blunt Trauma	11	5.2
Volvulus	9	4.3
Adhesion Obstruction	8	3.8
Corrosive intake	5	2.4
Missed injuries	4	1.9
Enterocutaneous Fistula	4	1.9
Iatrogenic Injury	3	1.4
Strangulated inguinal Hernia	2	0.9
Rectovesical fistula	2	0.9
Familial Polyposis Coli	1	0.5
Crohns Disease	1	0.5

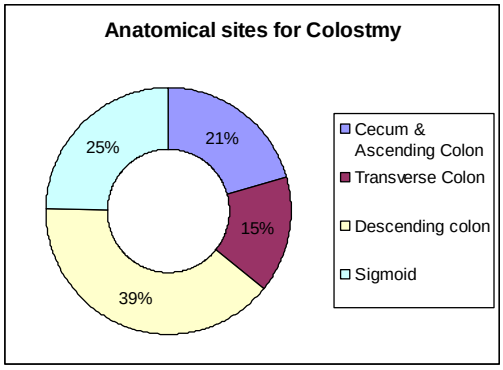


Figure 3: Anatomical sites for the colostomies

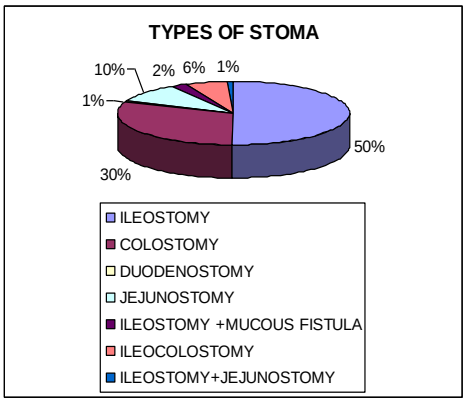


Figure 2 Percentage of different stomas

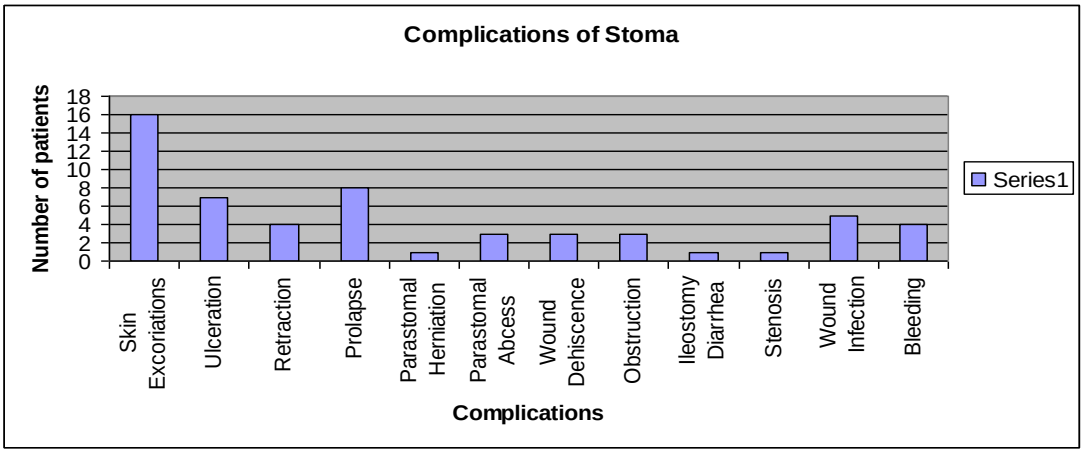
Table 2 Number and percentage of different Stomas made

Ileostomy (n) Percent	Colostomy type (n)Percent	Jejunostomy (n)Percent
Loop (65) 31%	Double Barrel (30) 14.2%	Feeding (12) 5.7%
Double Barrel (48) 28%	Loop (34) 16.1%	Non-Feeding (12) 5.7%
End Ileostomy (7) 3.3%	End Colostomy (2) .9%	
Tube Ileostomy (1) .5%	Diversion Colostomy (3)1.4%	

Most of the stomas were formed for the penetrating abdominal injuries (19.9%), followed by the typhoid perforation (19.4%) and abdominal tuberculosis (18.5%).

Ileostomy was made the most frequently (50.2%) followed by colostomy (30.3%)
Anatomically colostomies had the following distribution:

Figure 3 Complications of the Stoma Formation: The percentage is out of the cases having complications only



There was no complication in 139 patients (71.3%). The rest are shown in the Fig. 3

Common complications of stoma formation were skin excoriations (7.6%) followed by prolapse (3.3%).There were 78 (36.9%) reversals and it was noticed that there is no complication in 92% (72) of patients during or after the stoma reversal. The rest are shown in table 4

Table 4 Complications of the stoma reversal surgery

Complications of Stoma reversal	%age
Anastomotic Leak	0.9
Adhesion Obstruction	0.5
Stricture formation	0.9
Enterocutaneous fistula	0.5
Iatrogenic Injury	0.5

ost of the stomas 74 (94%) were reversed late (more than 2 months after the stoma formation with a mean duration before reversal being 6.5 months. The early reversal was done in 6% cases with no adverse outcomes. Regarding the technique of the reversal single layer anastomosis was done in 23 cases (29.4%) and double layer anstomosis was done in 55 (70.1%) cases. In our patients anastomotic leak occurred in 2 patients only and the technique was different in both of these patients.

The time before reversal was 6.5± 3.9 months. None of the deaths was related to the stoma surgery. Most of the patients died of the distributive shock or multi organ failure due to sepsis.

The comparison of the complications of stoma reversal and the rank of surgeon in our study is as follows:

Table 5 Complications of reversal and rank of surgeon

	Rank of surgeon				
Complication of reversal	PGT	Senior MO	SR	Consultant	Total
None	23	17	24	8	72
Anastomotic leak	0	0	1	1	2
Adhesion obstruction	0	1	0	0	1
Stricture formation	0	0	2	0	2
Enterocutaneous Fistula	0	0	1	0	1
Iatrogenic injury	0	0	0	1	1
Total	23	18	28	10	79

The mean duration of Hospital Stay 12.4 ± 13.9 days depending upon the disease process and the general nutritional build up of the patient. Th23.7% (n=50) of the patients were smokers and all of them were male. And only 2.8 % (n=6) of the patients were diabetic. No significant association could be found between these factors and the outcome of stoma surgery.

DISCUSSION

The aim of our study was to evaluate our own experience and determine the complications and mortality of stoma closure in relation to the type and location of the respective ostomy. The outcome of this study shows that penetrating abdominal injuries especially the firearm injuries/Gunshot wounds are the most common reason for the formation of stoma in the emergency cases. This is followed by the enteric perforation either because of typhoid or the abdominal tuberculosis. Of significant note are the injuries due to Post D&C peritonitis (6%) and the abdominal malignancy (5.2%).While in some western studies malignancy and diverticulitis are the top most common indications of the stoma formation. Sigmoid Volvulus was the indication of stoma formation in 4% cases and studies have shown that the resection of sigmoid colon with primary anastamosis and a proximal defunctioning colostomy is a safer procedure in inexperienced and learning hands in emergency situations.[7] In general we avoided primary anastomosis in patients with fulminant enteritis, severe bowel edema, septicaemia, haemodynamic instability and multiple perforations

Both Ileostomies and colostomies have there inherent benefits and disadvantages. Ileostomies have better blood supply while colostomy survival depends largely on the operator technique. Having an ileostomy, rather than a colostomy, was associated with higher severity of skin irritation. In some studies the result suggest that ileostomy closure is a simpler procedure.[5]Difficulty adjusting to the ostomy is related to all 4 quality-of-life domains i.e., physical, psychological, social, and spiritual [1]. In our study most of the stoma formation was performed in the emergency and preoperative patient counseling regarding these four aspects is less than ideal in most of the cases.

The complication rate can approach to 60% in some series.[2] In our study there were no complications in 71.3% cases of stoma formation 92% of the cases undergoing the reversal. In majority of the patients, these complications were managed with conservative

measures while some of the patients required revision of the stoma.

The majority of cases were reversed at a late stage and early reversal was done in 6% cases only. The late reversal is thought to be good for the general buildup of the patient and it allows adequate time for subsiding of the disease process. However our patients who underwent early closure had an unremarkable recovery with no post operative complications. Therefore, we may try to do early reversal more frequently especially in the high output entrostomies like jejunostomies and ileostomies.

The limitations of this study include a retrospective study which showed the experience at a single institute which has the inherent biases. Moreover all the procedures where done according to the surgeon preferences and the level of expertise because of the lack of a uniform algorithm for the management of patients for a specific abdominal surgery. The psychological aspect of the stoma surgery could not be studied as there was no deliberate attempt to ask such questions before or after the operations.

CONCLUSION

We conclude that a larger prospective study may be helpful in predicting the outcome of the stoma surgery especially if it is multi- centered and encompasses the factors associated with the stoma surgery in a greater detail. Our study has outlined the important trends of the patient presentation, diagnosis, outcomes, complications and reversal techniques. It may help in understanding the diagnostics, intraoperative decision making and the predicting the outcomes in terms of both stoma formation and reversal surgery.

REFERENCES

1. Pittman J, Rawl SM, Schmidt CM, et al. , Demographic and Clinical Factors Related to Ostomy Complications and Quality of Life in Veterans With an Ostomy. J Wound Ostomy Continence Nurs. 2008 Aug 21.
2. Sanjay Daluvoy, Florencia Gonzalez, Kashayar Varizi et al., Factors associated with Ostomy reversal. Surg Endosc (2008) 22:2168-2170
3. Krouse RS, Mohler MJ, Wendel CS. Et al., The VA Ostomy Health-Related Quality of Life Study: objectives, methods, and patient sample. Curr Med Res Opin. 2006 ;22(4):781-91.
4. Kaiser AM, Israelit S, Klaristenfeld D. et al., Morbidity of ostomy takedown. J Gastrointest Surg. 2008; 12(3):437-41.
5. Bada-Yllán O, García-Osogobio S, Zárate X. et al., Morbi-mortality related to ileostomy and colostomy closure. Rev Invest Clin. 2006 ;58(6):555-60.
6. Mosdell DM, Doberneck RC. Morbidity and mortality of ostomy closure. Am J Surg. 1991;162(6):633-6; discussion 636-7.
7. Ainul Hadi, Nadim Khan, Syed Murad Ali Shah, et al., Emergency management of sigmoid Volvulus: experience of Lady Reading Hospital Peshawar. J Postgrad Med Inst 2006; 20(1):82-5.
8. Najamuddin Shabbir, Zahid Ali Memon, Misbah Nizami, et al., Colostomy related complications. Pak J Surg 2008;24(2):102-4.
9. Azfaruddin Qureshi, Shams Nadeem Alam, Syed Ashraf Hassan et al., Morbidity And Mortality Following Colostomy In Penetrating Colonic Injuries. Pak J Surg 2006; 22(3):141-5.
10. Anwarul Haq, Hasnat Ahmad Butt, Ashfaq Ahmad. A study of complications related with colostomy closure. Ann King Edward Med Coll 2006;12(2):261-6.
11. Safirullah, Naeem Mumtaz, Mian Asad Ullah Jan et al. Complications of intestinal stomas. J Postgrad Med Inst 2005; 19(4):407-11.