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Original Research Article

Clinical study of the patients undergoing stoma reversal in a tertiary care centre: a retrospective study from a developing country

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ABSTRACT

Background: Word "stoma" comes from the Greek word meaning mouth or opening. Fashioning of stoma is commonly one of the components of surgical interventions on the small and large bowel surgeries. Indications of stoma formation in India are different from the western world. Loop ileostomy is relatively superior. This study was done to study the pre and post take down complications of stoma.
Methods: This retrospective, longitudinal, observational study was done on the patients admitted between February and December 2018, in the Department of Surgery (General), King George's Medical University, Lucknow, UP. The data from e- Hospital software system and operative records were collected and was analysed using SPSS software. All the adult patients having age more than 15 year were included in the study. Blunt trauma abdomen was excluded from this study.
Results: Out of total 196 patients male to female were in a ratio of 2:1. Most common diagnosis at the time of stoma creation was ileal perforation 52%. Most common site (42%) of stomas were done at a distance of approximately 12 inches from the ileocaecal junction. Mostly (97.5 %) reversals were performed through the local site. Most common pretake down complication was surgical site infection (22%) and post take down complication was enterocutaneous fistula (5%).
Conclusions: Stomas were mostly given for ileal perforation and reversed through local approach by end to end anastomosis. Change in the pretake down complications from skin complications to surgical site infection in our study.

Keywords: Complications, Colostomy, Ileostomy, Reversal, Stoma

INTRODUCTION

Word "Stoma" comes from the Greek word meaning mouth or opening.[1] Fashioning of stoma is commonly one of the components of surgical interventions on the small and large bowel surgeries. Most common types of stomas are ileostomy and colostomy. Indications of stoma formation in India are different from the western world. Through various studies it has already been proven that loop ileostomy is relatively superior and has low rate of complication during formation and also after reversal.[2,3] the stomas may be temporary or permanent depending on their role.[4]

Stoma reversal is a minimally invasive procedure. It can be performed under General and regional anesthesia by intraperitoneal or extra peritoneal route. For stomas with both ends exteriorised together reversal is done through a local minimal invasive approach but for the end stomas laparotomy needs to be performed. Stoma reversal may

not be possible in all patients. It has been observed to be not possible in one third to two third of all patients.[5]

This study was done determine the causes for stoma creation, site of stoma formation, type of stoma and type of anastomosis performed and pre and post op complications.

METHODS

This retrospective, longitudinal, observational study was done on the patients admitted between February 2018 and December 2018, in the Department of Surgery (General), King George's Medical University, Lucknow, UP. Documents were reviewed to determine the causes for stoma creation, site of stoma formation, type of stoma and type of anastomosis performed and pre and post op complications.

The data from e- Hospital software system and operative records were collected and was analysed using SPSS software.

All the adult patients having age more than 15 year who underwent reversal surgery during the study period were included in the study. Stoma created due to blunt trauma abdomen were excluded from this study.

RESULTS

Total number of patients undergoing stoma reversal who were included in the study was 196. There were 131 males and 65 were females. Male to female ratio was 2:1. Patients who underwent reversal surgery mostly belonged to younger age group (47% persons were <30 years of age) (Table 1).

Among the diagnosis at the time of stoma creation, ileal perforation was found in 52% and this is followed by ileal stricture in 7%. Caecal perforation and dense interbowel was found in about 5.5%. Perineal abscess leading to sigmoid diversion colostomy was found in 5% of patients (Table 2).

On the basis of length of bowel from ICJ 42% of stomas were done at a distance of approximately 12 inches from the ileocaecal junction. In about 27.5 % stoma creation in ileum was approximately 24 inches from the ileocaecal junction. Sigmoid diversion was done in 9 % of patients (Table 3).

Exteriorization of the perforation site was the most common indication for the stoma formation. Second most common indication was oedematous bowel in which anastomosis cannot be done in the same setting due to high chance of leak (Table 4).

In case of stoma types, loop and double barrel have approximately same number (Table 5).

Table 1: Intraoperative diagnosis at stoma creation.

Diagnosis	Number	Percentage (%)
Caecal gangrene	2	1
Caecal perforation	11	5.5
Dense Adhesions	11	5.5
Ileal gangrene	5	2.5
Ileal perforation	102	52
Ileal stricture	14	7
Iliocoloc intussuception	2	1
Mesenteric hernia	1	0.5
Meckels diverticula	5	2.5
Obstructed incisional hernia	2	1
Obstructed inguinal hernia	5	2.5
Perineal tear	3	1.5
Perineal Abscess	8	5
Colon perforation	3	1.5
Rectovaginal fistula	3	1.5
Sigmoid perforation	3	1.5
Rectal perforation	1	0.5
Sigmoid volvulus	7	3.5
Fibromatosis of colon	1	0.5
Fournier gangrene	5	2.5
Transverse colon perforation	2	1

Table 2: Location of stoma.

Location	Number	Percentage(%)
6 inch proximal to ICJ	5	2.5
12 inch proximal to ICJ	83	42
18 inch proximal to ICJ	15	7.5
24 inch proximal to ICJ	54	27.5
30 inch proximal to ICJ	2	1
36 inch proximal to ICJ	2	1
Ileo asccending	16	8
Sigmoid	18	9
Descending colon	1	0.5

Table 3: Indications of stoma.

Indications	Number	Percentage (%)
Defunctioning	44	22
Oedematous Bowel	50	26
Exteriorise perforation	101	51.5
Anastomotic leak	1	0.5

In terms of type of anastomosis that was done in our setting, end to end anastomosis (98%) was much far ahead in terms of type of anastomosis. Side to side anastomosis was done in cases with luminal disparity in proximal and distal limbs of stoma. End to side anastomosis was done in a single case that had developed perforation in the terminal ileum that needed to be resected and end to side ileocolic anastomosis was performed (Table 6).

Table 4: Types of stoma.

Types	Number	Percentage (%)
Loop ileostomy	79	40.5
Double barrel ileostomy	80	41
End ileostomy	3	1.5
Ileo ascending colostomy	15	7.5
Loop colostomy	17	8.5
Double barrel colostomy	1	0.5
End colostomy	1	0.5

Table 5: Type of anastomosis.

Type	Number	Percentage (%)
End to end	192	98
End to side	1	0.5
Side to side (ileo-ileal)	3	1.5

Table 6: Accesses to abdominal cavity.

Accesses	Number	Percentage (%)
Local site	191	97.5
Mid line laparotomy	5	2.5

Table 7: Complications prior to take down.

Complication	Number	Percentage (%)
Enaterocutaneous fistula	4	2.0
Parastomal hernia	1	0.5
Surgical site infection	43	22
Skin excoriation	8	4
Dyselectrolytemia	1	0.5
Prolapse	3	1.5

In terms of access to the abdominal cavity, stoma take down was done through the incision at the local site in 97.5% patients and through midline in about 2.5 % patients. Midline laparotomy was done in cases that had developed enterocutaneous fistula after primary surgery and in one case that had healed with secondary intention and difficulty was expected in case of local approach (Table 7).

Most common complication was surgical site infection that was present in 43(22%) of patients. Followed by skin excoriation that was found in 8(4%) patients (Table 8).

In case of complications after reversal, enterocutaneous fistula were most common complication in 10(5%) patients and this was closely followed by surgical site infection in 9 (4.5%) patients.

Table 8: Post take down complications.

Complication	Number	Percentage (%)
Enaterocutaneous fistula	10	5
Surgical site infection	9	4.5
Dyselectrolytemia	1	0.5
Ileus	4	2.0
Incisional hernia	1	0.5
Obstruction	1	0.5

DISCUSSION

In the management of certain abdominal and gastrointestinal conditions diversion of faecal contents remains a very good option.[6] earliest stoma were spontaneous stomas that were formed as a result of variety of abdominal conditions such as penetrating injury abdomen, incarcerated hernias.[7] Reversal of stoma is 2 times is more common in males as compared to females.[8]

Most common diagnosis at the time of stoma formation was ileal perforation (52%). This observation is similar to the observation in the study done by Rajput A et al.[9] In their study also the most common diagnosis leading to stoma formation was enteric perforation in 62% patients. In contrast, the study done by Safirullah et al showed that the colorectal carcinoma (22%) as the most common diagnosis leading to stoma formation and this was followed by trauma (20%) and typhoid perforation (20%).[10]

In our study the most common location of ileostomy creation was approximately 12 inches (1 feet) proximal to ileo-caecal junction in 42% patients. This was followed by the ileostomy formation at 24 inches (2 feet) proximal to ICJ. Third in number was sigmoid colostomy that was done in 9% patients.

Among the indications that lead to the formation of temporary stoma. The most common indication was exteriorization of perforation in 51.5%. This was followed by presence of oedematous bowel in 26% cases in which anastomosis could not be done due to high chances of anastomotic dehiscence. Defunctioning stoma to protect distal structures from the faecal contents was done in 22% patients. Among the defunctioning stomas, ileostomy was mostly done to protect distal anastomosis while sigmoid colostomy was done mostly to prevent

faecal contamination of the perineal structures. This is in contrast to the study done by Shah et al.[11] According to them the most indication for stoma formation was oedematous or friable bowel in 39% patients.

Among the types of stomas loop ileostomy (41%) and double barrel ileostomy (40.5%) almost equal in number. followed by loop colostomy (8.5%) and ileoascending colostomy (7.5%) both having almost equal percentage. This is in contrast to the studies Safirullah et al loop ileostomy was the most common stoma formed (70%) followed by loop colostomy (17%) and Ahmad Z et al in which the most common type of stoma was loop ileostomy in 64% and second was sigmoid colostomy that was 11%.[10,12]

Regarding the type of anastomosis performed, most commonly end to end anastomosis was performed in 98% of patients. Second in line was side to side anastomosis performed in 1.5% of patients.

Access to the abdominal cavity was most commonly achieved through the local site in 97.5% by excising peristomal skin and entering into the peritoneal cavity. Midline laparotomy was required only in 2.5% patients. Patients who were managed on laparostomy and healing by secondary intention were reversed through local site incision.

While evaluation the complications prior to stoma take down, we found that surgical site infection was most common present in 43 (22%) of patients. This was followed by skin excoriation that was found in 8(4%) patients. Third most common was enterocutaneous fistula formation present in 4 (2%) patients. This is in contrast to the studies of Ahmad et al in which they reported skin excoriation in 36 % patients and surgical site infection was reported to be 13% while other studies Ratliff et al showed the peristomal irritation in 53% cases while in another study Pearl et al showed peristomal skin erythema as the most common complication present in 42% patients.[12-14] Muneer reported skin excoriation in 18% cases. Safirullah et al reported skin erythema as most common in 12% followed by prolapsed (6%) and retraction (4%) of patients.[15,10] We found that the skin complications has drastically decreased probably due to improvement in the stoma appliances that has happened recently.

In Post take down complications, enterocutaneous fistula were most common complication in 10(5%) patients and this was closely followed by surgical site infection in 9(4.5%) patients. Post take down complications were very less in our study when compared to other studies that report them to be between 28 and 48%.[16-18]

In our study mortality rate was 1 (0.5%) which is very less when compared to the study of Joseph et al in their study the mortality rate was 18%.[19] This is similar to the study done by Chow et al in their systematic review reported a mortality rate of 0.4% after reversal surgery.[20]

CONCLUSION

Formation of stoma is very frequently used to divert faecal content and protect distal anastomosis and also to prevent contamination of the perineal region. Most common disgnosis leading to stoma formation is ileal perforation. Stoma was most commonly formed to exterorise the perforation. Loop ileostomy and double barrel ileostomy were created in almost equal number of patients. Most common method used for anastomosis was end to end anastomosis. Change in the pretake dowm complications from skin complications to surgical site infection in our study. The information gathered from this study will help in improving the practice of surgeons and also improving the quality of life of patients and also for better management of patients attending surgical emergency.

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REFERENCES

1. Taylor P. An introduction to stomas: reasons for their formation. Nurs Times. 2005;101:63-4.
2. Edwards DP, Leppington-Clarke A, Sexton R, Heald RJ, Moran BJ. Stoma-related complications are more frequent after transverse colostomy than loop ileostomy: a prospective randomized clinical trial. Br J Surg. 2001;88:360.
3. Chow A, Tilney HS, Paraskeva P, Jeyarajah S, Zacharakis E, Purkayastha S. The morbidity surrounding reversal of defunctioning ileostomies: a systematic review of 48 studies including 6,107 cases. Int J Colorectal Dis. 2009;24(06):711-23.
4. Saunders RN, Hemingway D. Intestinal Stomas. Surg Int. 2005;71:44-7.
5. Jatal S, Pai V, Demenezes J, Desouza A, Saklani A. Analysis of Risk Factors and Management of Anastomotic Leakage After Rectal Cancer Surgery: An Indian Series. Indian J Surg Oncol. 2015;29:1-7.
6. Abbas MA, Tejirian T. Laparoscopic stoma formation. JSLS. 2008;12:159-61.
7. Kaider-Person O, Person B, Wexner SD. Complications of construction and closure of temporary loop ileostomy. J Am Coll Surg. 2005;201:759-73.
8. Bhamre R, D Pai V, Saklani AP. Defunctioning Stoma Reversal-does the Approach to Primary Surgery Influence the Post Operative Outcomes?. Colorec Cancer. 2015;1:1.
9. Rajput A, Samad A, Khanjada TW. Temporary Loop Ileostomy: Prospective Study of Indications and Complications. Rawal Med J. 2007;32:159-62.

10. Safirullah, Mumtaz N, Jan MA, Ahmed S. Complications of intestinal stomas. J Postgrad Med Inst. 2005;19(4):407-11 .
11. Shah J, Subedi N, Maharjan S. Stoma Reversal, A Hospital-Based Study of 32 Cases. Internet J Surg. 2009;(1).
12. Ahmad Z, Sharma A, Saxena P, Choudhary A, Ahmed M. A clinical study of intestinal stomas: its indications and complications. Int J Res Med Sci. 2013;1:536-40.
13. Ratliff CR, Tomaselli N. WOCN Update on Evidence-Based Guideline for Pressure Ulcers. J Wound Ostomy Continence Nurs. 2010;37(5):459-60.
14. Pearl RK, Prasad ML, Orsay CP, Abcarian H, Tan AB, Melze MT Early local complications from intestinal stomas, Asch Surg. 1985;120(10):1145-7.
15. Muneer A, Razaque A, Shaikh, Shah GA, Qureshi A. Liaquat University of Medical and Health Sciences, Jamshoro, Sind Pakistan. World Applied Sci J. 2007;2(3):190-3.
16. Phang PT, Hain JM, Perez-Ramirez JJ, Madoff RD, Gemlo BT. Techniques and complications of ileostomy takedown. Am J Surg. 1999;177:463-6.
17. Lahat G, Tulchinsky H, Goldman G, Klauzner JM, Rabau M. Wound infection after ileostomy closure: a prospective randomized study comparing primary vs. delayed primary closure techniques. Tech Coloproctol. 2005;9:206-8.
18. Pokorny H, Herkner H, Jakesz R, Herbst F. Mortality and complications after stoma closure. Arch Surg. 2005;140:956-60.
19. Stothert JC Jr, Brubacher L, Simonowitz DA. Complications of Emergency Stoma Formation. Arch Surg. 1982;117(3):307-9.
20. Chow A, Tilney HS, Paraskeva P, Jeyarajah S, Zacharakis E, Purkayastha S. The morbidity surrounding reversal of defunctioning ileostomies: a systematic review of 48 studies including 6,107 cases. Int J Colorectal Dis. 2009;24:711-23.

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