

FREQUENCY OF INDICATION AND WOUND INFECTION FOLLOWING INTESTINAL STOMA CLOSURE

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ABSTRACT

Introduction: Despite the major advancement in the field of intestinal surgery construction of intestinal stoma is still a common and one of the most frequent operation in visceral surgery. Stoma closure is so often considered a “minor” procedure but it is associated with significant morbidity and mortality⁴. The morbidity of Stoma includes bowel obstruction, malnutrition, electrolyte imbalance, skin excoriation, abscess formation, sepsis and dehydration.

Objective: To determine the frequency of indication and wound infection following intestinal stoma closure

Materials And Methods: It was a Descriptive case series study, in which consecutive 124 patients requiring stoma closure were included between 1st Jan 2012 to 31st Jan, 2014 at Govt City hospital Lakki Marwat. Closure was done on the next day of admission by a consultant blinded from the details and inclusion of the patient in the study. Patients were advised to report to OPD if they develop wound infection in between the scheduled follow up visits. The follow up period being one month after the procedure.

Results: There were 124 patients with intestinal stoma who underwent stoma closure and were observed for wound infection, in which 92(74.19%) were male and 32(25.81%) were female patients. Colostomy was done in 70(56.45%) patients and ileostomy was carried out in 54(43.55%) of patients. The age of patients included in study ranged from 13 to 70 years. Average age was 35.69 years \pm 16.5SD. In 10(8.06%) cases, wound infection was observed during the hospital stay. At 14th post- op day, wound infection was recorded in 8(6.45%) patients. At 21st post-op day, it was seen in 8(6.45%) patients and on 30th day of post-op follow up period, it decreased to just 7(5.64%). Average hospital stay was 4.96 days \pm 2.06SD with a range of 3-10 days.

Conclusion: Wound infection was observed and compared to other national and international studies. Male were more suffered of wound infection as that of female.

Key Words: Sigmoid Volvulus, Colostomy, Ileostomy, Indications.

INTRODUCTION

Intestinal stoma or fecal diversion can be defined as the surgical opening between the bowel (small or large) and the surface of the abdominal wall.¹ Temporary ostomies can be created from small or large bowel in a variety of manners and serves a valuable role in persons undergoing surgery for acute infectious events, malignancy or trauma.²

Temporary faecal diversion is recommended with a low colorectal, coloanal or ileoanal anastomosis.³ Despite the major advancements in the field of intestinal surgery, construction of an intestinal stoma is still a common and one of the most frequent operations in visceral surgery.^{4,5}

Temporary stoma creation is an essential part
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of emergency and elective colonic surgery.⁶ Surgical patients frequently need some type of intestinal stomas for a wide spectrum of disorders. Maintaining effective and enough decompression of gastrointestinal tract, securing distal bowel segments and anastomosis are the primary goals of ostomy formation as well as providing a minimum complication rate of closure.⁷

Traditionally it was considered to be the safest method of treatment of colonic injuries and was practiced as a routine in World War-II, Korean and Vietnam wars.¹ Despite new operation techniques and a more restrictive use of stomas, stoma formation remain an often necessary procedure.⁴ Stoma closure is so often considered a “minor” procedure but it is associated with significant morbidity and mortality.^{4-6,8}

The morbidity of stoma closure includes bowel obstruction, anastomosis leak/fistula/stricture, intra-abdominal abscess, wound infection, stomal site hernia and intestinal hemorrhage.²

The commonest complication of stoma closure is wound infection/sepsis.^{5,6,8-10} Wound infection remains the commonest post-operative complication which not only prolongs the hospital stay, increases cost of treatment but can also lead to septicemia and long term complications like incisional hernia.¹¹ It is the most

common nosocomial infection accounting for 28% of all such infections.¹²

The incidence of wound sepsis ranges from 2 to 37% but most series report an incidence of approximately 10%.⁸

This part of the world is in a state of war being faced with the menace of terrorism resulting in heavy casualties. In such circumstances stoma surgery is an essential part of emergency abdominal surgery which contributes to elective stoma closure surgery. My study will not only highlight and determine (the frequency of) this common post-operative complication but will also help to reduce the morbidity of wound infection (following stoma closure) by taking preventive measures and precautions. It may invite further studies on this subject which have not been done before.

OBJECTIVE

To determine the frequency of indication and wound infection following intestinal stoma closure.

MATERIAL AND METHOD

This cross sectional study was carried out over 124 cases in surgical department Govt City Hospital, Lakki Marwat from 1st Jan 2012 to 1st Jan 2014 after taking the approval of ethical committee. Patients requiring stoma closure were booked and admitted through OPD. Pre-operative distal loopogram was done to check any distal pathology like stricture or leakage in patients who required stoma to protect distal anastomosis. Detailed history, clinical examination, routine pre-operative investigations like CBC, ECG, X-ray chest, blood sugar, HBsAg and Anti HCV were done in each case pre-operatively.

Informed written consent was taken. Mechanical bowel preparation was done the day before surgery. Proximal loop was prepared using 200ml 20% mannitol solution mixed with 1-litre fruit juices taken orally. Distal loop was cleaned by orthograde lavage using normal saline and Kleen enemas per rectally. Closure was done on the next day of admission by a consultant blinded from the details and inclusion of the patient in the study. Prophylactic antibiotics were administered intravenously one hour before induction of anaesthesia. Elliptical incision was given around stoma and deepened into the peritoneum. Upon full mobilization of the loop, gut continuity was restored using polyglycolic acid 3/0 suture in extra-mucosal single interrupted layer. Both layers of rectus sheath were closed with polypropylene no.1 in continuous layer. Skin was approximated with polypropylene 2/0 suture in simple interrupted layer.

Patients were kept nil by mouth and continued on i/v antibiotics and i/v fluids for 2-3 days post-operatively and/or till they open their bowels. They were observed for signs of infection or complications on daily basis. Patients were discharged from the hospital by the

attending surgeon when they started oral intake, there were no complications and once they were clinically stable.

All patients were followed up on 14th, 21st and 30th post operative day. All cases were observed for post-operative wound, during stay in the hospital and on follow up visits. Patients were advised to report to OPD if they develop wound infection in between follow up visits. Patient having pre-existing stomal site wound infection, age below 12 years, death of patients and post anastomatic leak were excluded from the study.

RESULTS

The study include 124 patients with intestinal stoma closure, in which 92(74.19%) were male and 32(25.81%) were female patients. Male to female ratio was 2.9:1.

There were two types of stoma closure performed, in which colostomy closure was done in 70(56.45%) patients (out of which 18-end,28-loop and rest of double barrel) and ileostomy closure was carried out in 54(43.54%) of patients.(out of which 22 are dou-

Table No. 1: Post Op Wound Infection

		No. of patients	Percentage
Wound infection at hospital	Yes	10	8.06%
	No	114	91.93%
Wound infection at 14th post operative day	Yes	8	6.45%
	No	116	93.54%
Wound infection at 21st post operative day	Yes	8	6.45%
	No	116	93.4%
Wound infection at 30th post operative day	Yes	7	5.64%
	No	117	93.54%

Table No 2: Indication of Stoma

	No. of Patients	Percentage
Penetrating injury/blunt injury (gunshot)	70	56.45
Sigmoid Volvulus / Adhesive	25	20.16
Typhoid ileal perforation	13	10.48
Intestinal Tuberculosis	8	6.45
Diversion (Carcinoma Colon)	3	2.41
Iatrogenic colonic injury	2	1.61
Rectal Foreign body	1	0.81

ble-barrel and 32 were loop doubl-barrel and the rest were ilio-colostomies). Patient's age was divided in five categories, out of which most common age group for ileostomies was 13–20 years and 21–30 years for colostomies. Majority of the patients were of the age less than 30 years. Average age was 35.69 years \pm 16.5SD.

Wound infection was observed in 10(8.06%) during the hospital stay. At 14th post-op day, wound infection was recorded in 8(6.45%) of patients. At 21st post-op day, it was seen in 8(6.45%) patients and decreased to 7(5.64%) at 30th post-op day. (Table 1)

Age wise distribtuion of wound infection shows that there were 45.5% patients presenting with wound infection were of the age of more than 40 years, 18.2% patients with wound infection were of the age of 31-40 years, 9.1% patient had age of 21-30 years and 27.3% patients were of 12- 20 years of age.

Gender wise distribution shows that the infection in hospital was found more in male than females. Out of 92 male patients, 8 (8.69%) had wound infection while out of 32 female patients, 2 (6.25%) had wound infection during hospital stay, post operatively.

Majority of the patients were presented with penetrating/blunt injury 56.45%, followed by sigmoid volvulus/adhesive 20.16%. Table 2

DISCUSSION

Ileostomy and colostomy are commonly made intestinal stomas in surgery. Faecal diversion remains an effective option to treat a variety of gastrointestinal and abdominal conditions.¹³ Males were three times more common to have stoma than females. Compared to ulcerative colitis in western world, the main indications of ileostomy were intestinal tuberculosis (58.4%) and enteric perforation (30.6%).¹⁴ This was in contrast to a study reported from Karachi in which main indication was typhoid perforation, accounting for two third of all cases. Other less common included iatrogenic perforation, rectal cancer, tuberculosis, blunt abdominal trauma and anastamotic leakage.¹⁰ Tuberculous abdomen is quite common in this part of the world. The incidence of perforated tuberculous ulcer in operated cases varies from 10.5 – 39% whereas the incidence of intestinal stricture and ileocecal mass were 66% and 20% respectively.¹⁵ Our results are also in contrast to these studies because this part of country is extremely hit by terrirsom and extremism that is why the penetrating injuries are found in majority of cases in our study.(IPUP) Reported complication rates after stomas range from 2.4% to 50%^{16,17}. A comparison between these complication rates is difficult because of the different definitions of complications. We have included all deviations from the normal postoperative course as complications. In the stomas created at city hospital, 39% of patients had pre-takedown complications, out of which 26% were superficial wound infections, and 13% had signs of

paralytic ileus. None of the patients required any major surgical interventions. No significant comparison could be made on the occurrence of complications between the ileostomy and colostomy groups, neither in the loop nor in the end group.

Blunt trauma by roadside accidents resulted in 22.4% colostomies. In a report by Mansfield et al,⁹⁴ blunt traumas resulted in 2 – 15% colonic injuries. In the present study colostomy was made in 14% cases of anorectal malignancy, 12% sigmoid volvulous and only 2% cases of adhesive obstruction study. This is in comparison to a study done by Memon et al and they reported colostomy formation in 9.7% cases of acute intestinal obstruction.¹⁹

A further factor is the patients' experience of the primary procedure, particularly if they suffered any post-operative complications²⁰. In the present study, 69% of stomas were reversed within 12 weeks. There were no significant differences in outcome among early or delayed closure; although some authors have mentioned increasing the delay from creation to reversal may result in fewer complications while others argue that early reversal is feasible²¹.

A routine contrast study is not practiced in city hospital. Among the 23 patients, only 1 had a distal loopogram for suspicion of obstruction as multiple inter-loop adhesions were noted in the index operation. The loopogram revealed contrast passing normally up to the rectum. In patients with an ileostomy, with a smooth postoperative course, a radiological examination of the anastomosis prior to ileostomy reversal appears unnecessary²². Routine gastrograffin enema in the absence of a clinical suspicion of anastomotic failure would appear to be of little value²³.

Prospective comparison between primary closure and delayed primary closure of the wound has unexpectedly shown less wound infection in primary closure than in delayed primary closure²⁴.

The mean hospital stay after stoma reversal was 7 days with the patients undergoing loop ileostomy reversal being discharged earlier (mean 3 days). There was no readmission. This practice significantly reduces the use of hospital resources and decreases economic cost without compromising care²⁵.

CONCLUSION

Advantages of stoma creation clearly outweigh the disadvantages considering the very low percentage of serious complications associated with stoma creation and reversal. Our study did not find any differences in the complication rates associated with the type of stoma formation, timing of reversal. Wound infection was observed as comparad to other national and international studies. Male were three times more than females and wound infection was seen more in males. We therefore conclude that stoma reversal can be done safely at

an earlier date, with minimal requirement of special anesthesia and minimal access to the abdomen, and that early discharge is safe without expecting serious complications and readmissions.

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