FREQUENCY OF WOUND INFECTION IN EARLY REVERSAL OF ILEOSTOMY

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ABSTRACT

Background: The reversal of ileostomies carries complications like intestinal hemorrhage, anastomosis leak/fistula, intra-abdominal abscess, stricture, bowel obstruction, wound infection and stomal site hernia. The commonest complication of Ileostomy closure is wound infection/sepsis. Wound infection not only prolongs the hospital stay, increases cost of treatment but can also lead to septicemia and long term complications like incisional hernia.

Objective: The objective of this study was to determine the frequency of wound infection in early reversal of ileostomy

Materials and Methods: This descriptive, case series study was conducted in Surgical "A" unit-PGMI Lady Reading Hospital Peshawar from June 2010 to December 2011. Patients requiring ileostomy closure was booked and admitted through outpatient department for early closure at 4weeks of initial surgery. Informed written consent was obtained. Pre-operative distal loopogram was done to check any distal pathology like stricture or leakage, presence exclude such patients. Patients fulfilling inclusion criteria was included in the study. All patients were followed up on day 14th, and 30th after surgery. All cases were evaluated for post-operative fever, pain (in wound), redness, swelling of wound margins and discharge of pus from wound during stay in the hospital and on follow up visits. Swabs/pus was taken from all the cases with any of the above findings and was sent to the laboratory for culture. . Data was stored and analyzed.

Result: There were 121 patients with ileostomy who underwent reversal and were observed for wound infection, in which 101(83.5%) were male and 20(16.5%) were female patients. Average age was 36.87 years ±16.493SD. There were total 29(23.9%) wound infections observed. There were 24(19.8%) wound infections observed during the hospital on 5th post operation day. After 14th post op follow up, wound infection was recorded in 4(3.3%) of patients, while at 30th day of follow-up it was seen in 1(0.8%) only. Average hospital stay was 4.56 days + 1.102 SD.

Conclusion: Wound infection was observed as comparable to other studies in early reversal of ileostomy. Stoma reversal can be done safely at an earlier date and its use should be encouraged as routine method.

Key words: Early reversal of ileostomy, Indications, Complications.

INTRODUCTION

An ileostomy is a surgically created opening of the ileum onto the body surface.[1] Temporary ileostomy can be created from small bowel in a variety of manners and serves a valuable role in persons undergoing surgery for acute infectious events, malignancy or trauma.[2]

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 ileostomy formation as well as providing a minimum complication rate of closure.[5]

Stoma closure is so often considered a "minor" procedure but infact it is a major procedure and is associated with significant morbidity and mortality.[3,4,6,7] It should be done by consultant level surgeon.

The morbidity of stoma closure includes wound infection anastomosis leak/fistula/stricture, intra-abdominal abscess, bowel obstruction,stomal site hernia, intestinal hemorrhage.[2] The commonest complication of stoma closure is wound infection/sepsis.[4,6,7,9] 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.[10] It is the most common nosocomial infection accounting for 28% of all such infections.[11]

It remains a major clinical problem in terms of morbidity, mortality and cost of treatment.[12-15] Patients who develop wound infection are up to 60% more likely to spend time in an ICU, 5-times more likely to

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be re-admitted to the hospital and 2-times more likely to die than are patient without wound infection.[16] The incidence of wound sepsis ranges from 2 to 37% but most series report an incidence of approximately 10%.[7]

Krando O A et al in their study at Istambol stated that ileostomy is usually reversed at 8 to 12weeks but Ileostomy related complications decreases if closure is done early (44% vs 16%)[11].

Surgical site infection has a tendency to occur more often in the colostomy group 5-15% in colostomy vs. 0.5-6% in ileostomy,[2] as in the pre closure period, and this might be due to the nature of microbial flora in the stoma.[17]

krando O A et al in their study at Istambol also reported comparable complications following stoma closure in both early or delayed groups (16% to 8%)[11] while Alves A et al in their study at Paris reported wound sepsis, in case of early closure to be 19%[18].----

In our part of the world ileostomy is a common surgical procedure following abdominal trauma, infectious causes, and covering distal anastomosis in cases of malignancies. Due to various complications of ileostomy, the quality of life of these patients is very poor. Early closure of ileostomy may improve the quality of life of such patient. My study helped find the acceptable range of wound infection after early closure of ileostomy and thus we suggest health professional for early reversal of ileostomy.

MATERIALS AND METHODS:

This descriptive, case series study was conducted Surgical "A" unit-PGMI Lady Reading Hospital Peshawar from June 2010 to December 2011.

Non-probability consecutive sampling method was adopted.

Patients requiring ileostomy closure were booked and admitted through outpatient department for early closure at 4weeks of initial surgery. Informed written consent was obtained. Pre-operative distal loopogram was done to check any distal pathology like stricture or leakage, presence exclude such patients. Patients fulfilling inclusion criteria was included in the study. Detailed history, clinical examination, routine investigations like CBC,ECG,X-ray chest, blood sugar, HBsAg and Anti HCV was done in each case pre-operatively.

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 antigrade lavage using normal saline and Kleen enemas per rectally. Closure was done on the next day of admission by a same consultant blinded from the details and inclusion of the patient in the study. Prophylactic antibiotics (ceftriaxone 1gm+metronidazole 500mg) was administered intravenously at the time of induction of anesthesia. 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 extramucosal single interrupted layer.Rectus sheath was 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 while I/V antibiotics and fluids were continued for 2-3 days post-operatively and/or till they pass stools and flatus. Daily progress including bowel sounds, passage of stool and flatus and any complications were noted. Patients were discharged from the hospital when they were able to take orally, stable clinically and there were no complications which was decided by the attending surgeon.

All patients were followed up on day 14th, and 30th after surgery. All cases were evaluated for post-operative fever, pain (in wound), redness, swelling of wound margins and/or discharge of pus from wound during stay in the hospital and on follow up visits. Swabs/pus was taken from all the cases with any of the above findings and was sent to the laboratory for culture. All laboratory investigations were done by same pathologist and same laboratory.

Patients were advised to report to OPD if they develop wound infection or any other problem in between follow up visits. Data was collected using a specially designed proforma which is attached along with. The control of bias and confounders was done by strictly confining to exclusion criteria.

All the qualitative variables like gender, wound infection, type of ileostomy, indications of ileostomy, were analyzed for percentages and frequencies in early closure of ileostomy. Mean + standard deviation was calculated for quantitative variables like age, duration of hospital stay. For gender male to female ratio was calculated. The results were presented through tables, cross tabulation, graphs and charts. Data was stored and analyzed by statistical program SPSS version 16.

RESULTS

Total number of patients observed in this study were 121, in which 101(83.5%) were male and 20(16.5%) were female patients. Male to female ratio was 5.05:1. Common age range for ileostomies was 20-30 years. Average age was 36.87 years + 16.493SD. Wound infection was observed in 29(23.9%) out of total 121 patients. Wound infection was decreasing after increasing the post operation follow up. There were 24(19.8%) wound infections observed during the hospital on 5th post operation day. After 14th post op day follow up, wound infection was recorded in 4(3.3%) of patients, while at 30th day of

Table No: 1 Age Wise Distribution Of Wound Infection

%age (n= number)

	Wound infection				
Age Range	**No infection**	**Infection on 5th post op day**	**Infection on 14th post op day**	**Infection on 30th post op day**	**Total/%age of wound infection**
<20 years	10 (8.2%)	4 (3.3%)	2 (1.6%)	0 (0%)	16/6 (4.9%)
20-30 years	29(23.9%)	11 (9.09%)	0(0%)	0 (0%)	40/11(9.09%)
31-40 years	20(16.5%)	3(2.47%)	0(0%)	1 (0.8%)	24/4(3.3%)
41-50 years	11(9.09%)	2(1.6%)	0(0%)	0 (0%)	13/2(1.6%)
51-60 years	17(14.04%)	3(2.47%)	1(0.8)	0 (0%)	21/4(3.3%)
>60 years	5(4.1%)	1 (0.8%)	1(0.8%)	0 (0%)	7/2(1.6%)
T0tal /percentage	92(76.03%)	24(19.8%)	4(3.3%)	1(0.8%)	121/29(23.9%)

Table No: 2gender Wise Distribution Of Wound Infection

	Wound Infection				
Sex	**No infection**	**Infection on 5th post op day**	**Infection on 14th post op day**	**Infection on 30th post op day**	**% age of Wound infection/ Total**
Male	76(62.8%)	24(19.8%)	1(0.8%)	0(0%)	25(20.6%)/ 101
Female	16(13.2%)	0(0%)	3(2.47%)	1(0.8%)	4(3.3%) /20
Total	92(76%)	24(19.8%)	4(3.3%)	1(0.8%)	29(23.9%)/ 121

follow-up it was seen in 1(0.8%) only. Average hospital stay was 4.56 days +1.102 SD with a range of 4-8 days.

Age and gender wise distribution shows that the infection was found in male more than females. Out of 101 male patients, 25 (24.75%) wound were infected while out of 20 female patients, 4 (20%) have wound infection post operatively. (Table 1,2)

DISCUSSION

Ileostomy remains an effective option to treat a variety of gastrointestinal and abdominal conditions. Ileostomies are commonly made intestinal stomas in surgery. [19]

Males were five times more common to have stoma than females. The main reason behind it, is exposure of male to fire arm and bomb blast injury more as compare to female. According to the available international and national studies, ulcerative colitis is the common indication of ileostomy in the westren world while in our part of the world i.e, South East Asia fire arm injries and typhoid are common reason[20]. In one national study from Karachi typhoid stand top accounting 2/3rd of the list[9]. In comparision to these studies penetrating injuries are common indication of ileostomies in our study. These penetrating injuries are in the form of fire arm injuries, bomb blast and stab injuries which are quite common in the catchment area of our department due to international terrorism local enmities.

Complication rates reported after early ileostomy reversal range from 4 to 5% to 30% [8]. 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 our study the wound infection rate is 23.9% which is comparable to the rate reported in Alves at el study at Paris, France. In Alves at el study overall morbidity rates were similar in the early reversal and late groups (31 versus 38 per cent respectively; P = 0.254). Overall surgical complication (both 15 per cent; P = 1.000) and reoperation (both 8 per cent; P = 1.000) rates were similar, but wound complications were more frequent after early closure (19 versus 5 per cent; P = 0.007)[18]

In our study none of the patients required any major surgical interventions. The little rise in infection rate may be due to poor management and control upon sterilization and post operative care in our set up. In our study neither readmission was done for any patient nor do we have any mortality.

Most of the complications in our study appeared in ileostomy constructed by residents or less experienced senior registrar in emergency. A surgeon

trained in stoma formation observing all technical details usually give good results.[21]

Krando O A et al in their study at Istambul stated that ileostomy is usually reversed at 8 to 12weeks but Ileostomy related complications decreases if closure is done early (44% vs 16%) .[11] There is no recognized optimal timing for reversal of temporary ileostomies, however most surgeons would advocate early reversal of ileostomies in medically fit and willing patients. The morbidity of early Ileostomy closure includes bowel obstruction, anastomosis leak/fistula/stricture, intra-abdominal abscess, wound infection, stomal site hernia and intestinal hemorrhage.[2] The commonest complication of early ileostomy closure is wound infection/sepsis.[4,6,8]

The vast majority of patients experience an overall improvement in quality of life, physical function and social function following early reversal of ileostomy. A patient's general medical fitness, which includes age and co-morbidity, may worsen after major surgery and is important in planning any further surgical procedures. A further factor is the patients' experience of the primary procedure, particularly if they suffered any post-operative complications.[22]

A routine contrast study is not practiced in every Hospital. 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 unnecessary. Routine gastrograffin enema in the absence of a clinical suspicion of anastomotic failure would appear to be of little value[24].

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 closure[25].

In my study the mean hospital stay after early reversal was 4.56 days, which was 16 days in elves at al study[18]. The short hospital stay is due to routine practise of fast track surgery and to control over burden in our set up. This practice significantly reduces the use of hospital resources and decreases economic cost without compromising care[26].

CONCLUSION

Wound infection was seen six times more in male than female following early reversal of ileostomy and was comparable with other studies. Stoma reversal can be done safely at an earlier date, with minimal requirement of special anesthesia and minimal access to the abdomen, and is safe without expecting serious complications and its use should be encouraged as routine method.

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