

FREQUENCY OF WOUND INFECTION FOLLOWING INTESTINAL STOMA CLOSURE

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ABSTRACT

OBJECTIVE: To know the incidence of wound infection following intestinal stoma closure

MATERIALS AND METHODS: This descriptive study was conducted in surgical "D" unit, Lady Reading Hospital Peshawar. Total 99 patients requiring stoma closure were included in the study from 1st June 2013 to 1st June 2014. Closure was done on the next day of admission. Patients were advised to report to OPD if they develop wound infection in between follow up visits. Data were collected using a specially designed proforma. SPSS version 19.0 was used for the data entry and analysis.

RESULTS: A total 99 patients with intestinal stoma who underwent stoma closure in which 74(74.74%) were male and 25(25.18%) were female patients. Colostomy was done in 59(59.6%) patients and ileostomy was carried out in 40(40.4%) of patients. The age ranged from 13 to 70 years. Average age was 34.69 years \pm 16.5SD. 9(9.09%) of patient having wound infections were observed during the hospital. After 14-days of post-op follow up, wound infection was recorded in 5(5.05%) patients, at 21 days of follow-up it was seen in 5(5.05%) patients and at 30th day of post-op follow up decreased to just 4(4.04%). Average hospital stay was 4.96 days \pm 2.06SD with a range of 3-10 days.

CONCLUSION: Wound infection in intestinal stoma closure does not result in major morbidity in our setup and is of comparable incidence to national and international studies.

KEY WORDS: Colostomy, Ileostomy, Indications, Complications.

INTRODUCTION

An intestinal stoma is a surgically created opening of the bowel onto the body surface¹. Temporary stoma creation is an essential part of emergency and elective colonic surgery². 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 stoma formation as well as providing a minimum complication rate of reversal.³ Ileostomy carries complications like bleeding, dehydration, necrosis, retraction, prolapse, stenosis and contact dermatitis^{4,5}.

Reversal of gastrointestinal stoma is associated with wound infection being one of the most frequent problems. A review of the literature shows wound infection incidence of 2% to 41%^{6,7}.

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.⁸ It is the most common nosocomial infection accounting for 28% of all such infections⁹. Patients who develop wound infection are upto 60% more likely to spend time in an ICU, 5-times more likely to be re-admitted to the hospital and 2-times more likely to die than are patient without wound infection¹⁰. 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 hemorrhage¹¹.

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 stoma¹².

Trauma and terrorism is a common occurrence in our part of the world and as a result stoma surgery is commonly performed abdominal procedure in our local settings. My study will not only highlight and determine the incidence of stoma site wound infection 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.

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MATERIALS AND METHODS

This Descriptive Cross sectional study was conducted at surgical "D" unit Lady Reading Hospital Peshawar from 1st June 2013 to 1st June 2014. We got approval from the local hospital ethical committee and written informed consent from the patients. The inclusion criteria were, patients having age 13 years and above, both genders and all types of temporary intestinal stomas which required closure. The exclusion criteria were, patients having pre-existing stomal site wound infection, and patients with postoperative anastomotic leak.

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. Patients fulfilling the exclusion and inclusion criteria were included in the study. 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. Mechanical bowel preparation was done the day before surgery. Closure was done on the next day of admission by a senior resident, registrar or consultant blinded from the details and inclusion of the patient in the study. Prophylactic antibiotics (ceftriaxone 1gm+metronidazole 500mg) were administered intravenously after 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 started on i/v antibiotics and fluids 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 started oral intake, stable clinically and there were no complications which were decided by the attending surgeon.

All patients were followed up on day 14th, 21st and 30th after surgery and patients were advised to report to OPD if they develop wound infection in between follow up visits. All cases were evaluated for post-operative fever, pain (in wound), and redness (erythema), swelling of wound margins (cellulitis) 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 to know the culture and sensitivity.

Data were collected using a specially designed proforma for this study. All ethical issues were addressed and maintained throughout the course of study. Bias in the study were controlled by strictly following

the exclusion criteria.

Data were analyzed by statistical program SPSS version 19.

RESULTS

In this study, 99 patients with intestinal stoma closure were observed, in which 74 (74.74%) were male and 25 (25.18%) 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 59(59.6%) patients and ileostomy closure was carried out in

Age Distribution

S. No	Age range years	No. of Patients	Percentage
1.	13-20	30	30.30
2.	21-30	40	40.40
3.	31-40	18	18.18
4.	41-50	8	8.1
5.	51+	3	3.0

Post Op Wound Infection

	No. of patients	Percentage
Wound infection at hospital upto 10 days	19	19.1%
Wound infection at 14th post operative day	2	2.0%
Wound infection at 21st post operative day	1	1.0%
Wound infection at 30th post operative day	1	1.0%

40(40.4%) of patients. Majority of the patients were of the age less than 30 years. The study included age ranged from 13 up to 70 years. Average age was 34.69 years \pm 16.5SD. (Table No. 1)

The total incidence of wound infection was 23(23.23%) observed. (Table No. 2).

Average hospital stay was 5.63 days \pm 2.06SD with a range of 3-10 days.

DISCUSSION

Many potential stoma-related complications are recognized. Skin irritation and infections are the most common complications with pediatric stomas. Excoriation from stoma effluent, candidal infection, and dermatitis are frequent; improper location or construction of the stoma and poor stoma care are often responsible. Wound infection, wound stoma separation, dehiscence, and postoperative sepsis may also occur after formation of

a stoma, particularly if the stoma has been brought out through the wound¹³.

In our study the main indication of stoma formation was penetrating/blunt injury 52(52.53%), while in western world the ulcerative colitis is the main indication for stoma. A study reported from Karachi in which main indication was typhoid perforation, accounting for two third of all cases.

Post reversal complications have been reported to be between 20 and 48%^{14,15}, wound infections and anastomotic leakage being the most common surgical complications. The results are comparable to our study.

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 care¹⁶.

CONCLUSION

Wound infection in intestinal stoma closure does not result in major morbidity in our setup and is of comparable incidence to national and international studies.

REFERENCE

1. Haq AU, Ahmad A. A study of complications related with colostomy closure. *Ann KE Med Coll* 2006;12:261-6.
2. Mackeigen JM, Cataldo PA. Ostomy take down. In: Mackeigen JM, Cataldo PA, eds. *Intestinal stomas: principles, techniques, and management*. 2nd ed. New York: Informa Health Care, 2004:211-3.
3. Alves A, Panis Y, Lelong B, Donsset B, Benoist S, Vicaud E. Randomized clinical trial of early VS delayed temporary stoma closure after proctocolectomy. *Br J Surg* 2008;95:693-8.
4. Renzulli P, Candinas D. Intestinal stomas-indications, stoma types, surgical technique. *Ther Umsch* 2007;64:517-27.
5. Rajput A, Samad A, Khanzada TW. Temporary loop ileostomy: prospective study of indications and complications. *Rawal Med J* 2007;32:159-62.
6. Pokorny H, Herkner H, Jakesz R, Herbst F. Mortality and complications after stoma closure. *Arch Surg* 2005;140:956-60.
7. Anadol A, Topgöl, Koray, Santulli enterostomy revisited: indications in adults. *World J Surg* 2006;30:1935-8.
8. Sutton CD, Williams N, Marshall LJ, Lloyd G, Thomas WM. A technique for wound closure that minimizes sepsis after stoma closure. *ANZ J Surg* 2002;72:766-7.
9. Iqbal P, Saddique M, Baloch TA. Closure of ileostomy - a study of 74 cases *Pak J Surg* 2008;24:98-101.
10. Kaiser AM, Israelit S, Klaristenfeld D, Selvindoss P, Vukasin P, Ault G, et al. Morbidity of ostomy take-down. *J Gastrointest Surg* 2008;12:437-41.
11. Siddiqui K, Khan AAF. Comparison of frequency of wound infection: Open Vs laparoscopic cholecystectomy. *J Ayub Med Coll Abbottabad* 2006;18:21-4.
12. Parker MC, Wilson MS, Menzies D, Sunderland G, Clark DN, Knight AD, et al. Surgical and clinical adhesions research (SCAR) Group. "The SCAR-3 study: 5-year adhesion-related readmission risk following lower abdominal surgical procedures." *Colorectal Dis*. 2005;7:551-8
13. Sangrasi AK, Leghari AA, Memon A, Talpur AK, Qureshi GA, Memon JM. Surgical site infection rate and associated risk factors in elective general surgery at a public sector medical university in Pakistan. *Intern Wound J* 2008;5:74-8.
14. Maqsood L, Mumtaz F, Wahla MZ. Role of ileostomy in advanced cases of typhoid perforations. *Ann Ke Med Coll* 2005;11:543-4.
15. Garcia-Botello SA, Garcia-Armengol J, Garcia-Grano E, Espi A, Juan C, Lopez-Mozos F, et al. A prospective audit of the complications of loop ileostomy construction and takedown. *Dig Surg* 2004;21:440-6.
16. Lertsithichai P, Rattanapichart P. Temporary ileostomy versus temporary colostomy: a meta-analysis of complications. *Asian J Surg* 2004;27:202-9.

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