

EXPERIENCE WITH EARLY VERSUS ROUTINE ENTERIC STOMA CLOSURES: A COMPARATIVE STUDY

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ABSTRACT

Objectives: To compare the outcome of enteric stoma closure within two, four and eight weeks of its formation.

Methodology: A total of 283 patients with loop enteric stomas were considered for the study in the Department of Surgery, Lady Reading Hospital, Peshawar, from March 2000 to March 2005. They were divided into group A, B (intervention groups) and C (control group) in which stoma were closed at 2, 4 and 8 weeks of its formation respectively. Resection of stoma with end to end anastomosis of the gut was done in a single layer interrupted extra mucosal technique using 3/0 PDS. Results in term of successful healing or complication were recorded and analyzed. Follow up was arranged at 30th and 90th day of discharge from hospital.

Results: Healing of stoma was achieved in 84.38% of patients in group A, 93.18% in group B and 95.16% in group C. Commonest complication was anastomotic leak that responded to conservative management in 3.13% of patients in Group A, 6.81% in group B and 2.42% in group C. Anastomotic leak needing re-exteriorization was found in 6.25% of patients in group A, none in group B and 1.45% in group C. There was no mortality in any of the three groups.

Conclusion: Early stoma closure, preferably during the same admission is a safe, cost effective and an attractive technique.

Key Words: Enteric stoma, Ileo-colostomy, Colostomy, Early stoma closure, Anastomosis, Anastomotic leak

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INTRODUCTION

Temporary diverting stomas are made to protect distal gut repairs or injuries for different gut pathologies. However, it is associated with well-recognized morbidity, cost and unproven need for a delay in its closure¹. "When is the best time to close this stoma" is a debatable issue among surgeons. In the absence of major intra-abdominal sepsis, malnutrition or major wound problems, early stoma closure can be safely carried out^{2,3}. The concept of early stoma closure is attractive and is readily accepted by the patient⁴. Early closure is however more technically demanding and is associated with greater blood loss⁵. Ileostomy/colostomy is a high medical priority in this era of stringent financial budgeting and every attempt should be made to close it as early as possible. This is especially needed if complication like leak around the appliance, skin excoriation, prolapse and problems with its high output occurs⁶. In developing countries, poor nutrition and problems with the unreliable supply of stoma collecting appliances (i.e. colostomy bags) is a very tempting reason for its early

closure⁷. This study aims to find out the safety of early stoma closure.

METHODOLOGY

This study is conducted in the surgical wards of Lady Reading Hospital from march 2008 to march 2014. A total number of 293 patients (203 male and 90 female), who had exteriorization of enteric stomas for different reasons were considered for closure and the study. Their ages ranged from 13 years to 75 years with a mean age of 35 years.

They were divided into group A & B (intervention groups) and C (control group), in which the stomas were closed at 2, 4 and 8 weeks of its formation respectively. Only loop stomas were considered for the study. The randomization sequence was obtained by a three-card test in which the patient picked up one of three envelopes. Each envelope contained one card that had written either Group A, B or C. The three groups were similar with respect to pre-operative demographics. The commonest cause of stoma formation in all the three

groups was fire arm injuries. Results in term of success and complications were recorded and analyzed. Exclusion criteria included patients who needed a permanent stoma, patients with inflammatory bowel disease, major intra-abdominal sepsis or wound infection, poor nutritional state or patient with polytrauma and abdominal tuberculosis. 10 patients did not give consent to be included in the study and were excluded. The level of stoma were classified roughly as proximal (within the proximal 25cm of small gut), middle and distal (within the distal 25cm of small gut) including ileo-colic (comprising the distal ileum and any part of the colon) and colostomy.

Patients were fully hydrated and their Hemoglobin (Hb) and serum albumin levels were corrected before surgery. Distal loop study was done in all cases and then the distal gut was washed with 2-3 liters of anti-grade N/saline solution to clean it from remaining barium. Patients were kept on fluid diet for 48 hours and a laxative was added before 24 hours to clean the proximal gut in all patients. The stoma was mobilized, ends resected and end-to-end single layer, extra-mucosal, interrupted closure done using 3/0 PDS. The defect in abdominal wall at the stoma site was left open in group A and B for five days and closed after words if there were no complications. In control group C it was closed primarily.

All patient groups were continued on I/V plabolyte TDS, I/V ceftriaxone 1Gram BD, I/V metronidazole TDS and effective N/G suction for 72 hours. All patients were allowed sips orally if they have passed flatus and there were no abdominal distention, tachycardia or fever. They were discharged usually on 7th post-operative day if there were no complications. They were asked to come for follow up on 30th and 90th day of discharge. Data was collected on a standard proforma made for this study and was maintained for entries till 90 post-operative day for further data entry. Results were tabulated as shown in the results.

RESULTS

A total of 283 patients were considered for the study. The number of patients in group A was 32(11.31%),

group B 44(15.55%) and control group 207(73.14%). The level of stoma and its closure time are shown in table 1. The causes for stoma formation are shown in table 2.

In group A successful closure was achieved in 28 patients (84.38%), in group B in 40 patients (93.18%) and in control group it was in 197 patients (95.16%). The incidence of Anastomotic leak that responded to conservative management in group A was 1 patient (3.13%), in group B 3 patients (6.81%) and in control group 5 patients (2.42%). Anastomotic leak needing re exteriorization in group A was 2 patients (6.25%), none in group B and 3 patients (1.45%) in group C.

The incidence of intestinal obstruction and peritonitis needing laparotomy in group A was 1 patient (3.13%), group B none and control group C 1 patient (0.48%). There was no mortality in any of the three groups. Complications are shown in table 3.

DISCUSSION

The idea of early closure of enteric stoma sparked from a decision to close an unmanageable jejunostomy at 2 weeks of its formation. The first to question the timing of stoma closure was Boyden who in 1995 objected the closure of colostomy for diverticulitis related stomas at 3 to 9 month of its formation⁸. The reported overall complication rate of stoma closure at conventional timing of 2-3 months is between 12 to 20% with a 30 day mortality of 7%⁹⁻¹¹.

Early closure reduces stoma related morbidity, improves quality of life and still protects the purpose for which it is served⁹⁻¹². However when a complicated stoma, i.e. the one with gangrene, stenosis, prolapse or skin excoriation were closed, its post-operative course was not smooth¹³.

An uncomplicated stoma can be closed as early as at 11th day of its formation with no morbidity and mortality⁹⁻¹⁴.

The results of various studies comparing early vs. late closure show no difference in complication rate²⁻⁶. On the other hand some finds that the complication rate

Table 1: Distribution of patients in various groups

Site of stoma	Group A	Group B	Group C	Total
Proximal	10(31.25%)	6(13.63%)	10(4.83%)	26(9.19%)
Middle	2(6.25%)	16(36.36%)	40(19.32%)	58(20.5%)
Distal	10(31.25%)	10(22.72%)	112(54.11%)	132(46.64%)
Colostomy	10(31.25%)	12(27.27%)	45(21.74%)	67(23.67%)
Total	32	44	207	283

Table 2: Reasons for stoma formation in various groups

Reasons for stoma formation	Group A	Group B	Group C	Total
Fire arm injuries	17(6.01%)	19(6.71%)	149(52.65%)	185
Covering stoma for distal repairs	8(2.83%)	12(4.24%)	22(7.77%)	42
Resection-exteriorization of gut gangrene/volvulus	5(1.77%)	10(0.35%)	30(10.6%)	45
Exteriorized other gut perforations	2(0.71%)	3(1.06%)	6(2.12%)	11
Total	32	44	207	283

Table 3: Outcome of surgery in all the groups

Complications	Group A	Group B	Group C
Successful Cases	27(84.38%)	41(93.18%)	197(95.16%)
Anastomotic Leak Managed Conservatively	1(3.13)	3(6.81%)	5(2.42%)
Anastomotic Leak that needed Re-exteriorization	2(6.25%)	0	3(1.45%)
Intestinal Obstruction that needed Laparotomy	1(3.13%)	0	1(0.48%)
Peritonitis that needed Laparotomy	1(3.13%)	0	1(0.48%)

of colic and ileocolic stoma closure is not related to the timing of closure¹⁵. Loop ileostomies should in particular be closed early if adjuvant chemotherapy is being planned for a distal disease process¹⁶. However some authors advocate that the cutoff value for increased risk of developing post-operative complications is 8 weeks, below which the risk of such occurrence is significantly higher with sensitivity rate of 88%^{17,18}.

Closure of colic or ileo-colic stoma can be associated with a significant complication rate and even mortality and should not be considered a minor procedure¹⁰. According to some authors the results of closure is considered to be dependent on timing and technique of closure¹⁰.

Generally speaking a delay of at least 2-3 months between stoma formation and closure is recommended if the risk factors for a complicated stoma are present such as advance age, Diabetes, hypo-albuminemia, steroid dependence, tuberculosis, peritonitis or complications following primary intervention as well as high injury severity score. Otherwise, stoma closure earlier than 3 months carries no additional morbidity or mortality²⁰.

In our study successful healing of anastomosis was achieved in 27(84.38%), 41(93.18%) and 197(95.16%) of patients in group A, B and C respectively.

The commonest complication in all the three groups was anastomotic leak found in 3(9.37%), 3(6.81%) and 8(3.86%) respectively. The reported incidence of fecal fistula in literature for early and late closure is far higher than what we have found²³. This is probably because of our technique of excising the edematous and infected end of stoma before end to end anastomosis is carried out. Other complications like intestinal obstruction and peritonitis were negligible.

We had no mortality in this series and this is very encouraging if compared to work done by others²¹⁻²³. The concept of so called same admission small/large gut stoma closure is not a new one and has been reported in the literature since long²²⁻²⁴.

Early stoma closure is based on sound principles of collagen synthesis at the margins of gut and wound, which is in proliferative phase at seven to eleven days²⁴. This ensures better anastomotic and wound healing.

The rationale behind routine closure of small and large gut stoma at 2-3 months is to achieve an optimal nutritional state, allow healing of distal repairs and subsidence of infection and inflammation²⁴. In our experience if the distal loop studies are normal and patient is otherwise fit and in good health, early closure of stoma is an attractive option that is welcomed by the patient and his attendants. This not only saves patient from the demoralizing effects of a stoma but also reduce the financial burden on him that he sustains in term of purchasing the collecting appliances, readmissions for complications of stoma and its closure and loss of an early return to his job. Further multicenter trials are needed to confirm our results.

CONCLUSION

Early stoma closure, preferably during the same admission is a safe, cost effective and an attractive technique.

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CONTRIBUTORS

NAS conceived the idea, planned the study, and drafted the manuscript. MH, MK, TM, IS and JA helped acquisition of data. AH did statistical analysis and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.