

Comparison of Single versus Double Layer Stoma Reversal in Patients with Intestinal Stoma

Dr Ahmed Hussain Pathan¹, Dr Ashfaqe Ahmed Bhurgri², Dr Ahmer Akbar Memon³

¹Associate Professor, Surgery 03, Liaquat University of Medical and Health sciences Jamshoro (LUMHS)

²Consultant Surgeon, Surgery 04, Liaquat University Hospital Hyderabad

³Assistant Professor, Surgery 04, LUMHS JAMSHORO

ABSTRACT

Background: Peritonitis with ileal perforation is a major acute emergency condition. Other surgery involves the development of intestinal stoma in small bowel disturbances. The usage of 1 or 2 layers of sutures for Anastomosis has remained a controversial technique for stoma reversal.

Methods: There were a total of 60 patients with an Ileostomy. The study was conducted in Surgery department of Liaquat University of Medical and Health Sciences. These patients had two classes, A and B, with 30 patients each. Assemble a single layer (n=30) & group B double layer (n=30) ileostomy closures were performed on these patients.

Results: A total of 60 ileostomy patients were surveyed, split evenly into two groups. Group A had a shorter intraoperative period than Group B, with no substantial changes in problem rates among the 2s groups.

Conclusion: In terms of post-operative leaks and other complications, two-layer ileostomosis does not have certain lead over single-layer Anastomosis. The single-layer closure method is protective to use, and simple to teach. Most surgeons can choose single-layer intestinal anastomosis because of the procedure's duration and medical costs.

Keywords

Acute Abdomen, Peritonitis, Stoma Reversal, Ileostomy Closure

Introduction

Surgical intrusion for illnesses related to Small bowel & pathology of Colorectal often involves intestinal stoma development. The major intestinal stomas are Ileostomies & Colostomies, moreover end or loop stoma. Understandably, Stoma patients want to return to their bowels as early as possible. The best time to do so is nine to twelve weeks after operation, giving time to settle the adhesions, time to recover from the previous procedure and time to fully solve any swelling in the abdomen & stoma location.(1)

Since 1887, when Halsted projected disrupted extra Mucosal Suturing, the question of single against double layer anastomosis (stoma reversal) has been a source of contention. By 1931, for anastomosis of G.I more than 52 methods had been identified.(2)

There are various anastomosis of intestinal techniques are:

1. Sutured single layer (continuous or interrupted), Conventional methods, & and double - layered, (ii) Stapled.
2. BAR (Biodegradable Anastomosis Ring) is a bio - degradable retention ring that can be used as an anastomosis ring (Valtrac) unusual techniques include I non-degradable (AKA2), (II) tissue glue, and (III) laser welding.

Travers, Lambert, and Halsted developed the main rules of suture of intestine more than a century ago. (3) Larry performed a two-layer anastomosis in the nineteenth century. (4) Most surgical circumstances have used for inner layer transmural a running absorbable suture & for outer sero-muscular layer interrupted silk sutures in two-layer anastomosis. A contemporary novelty first defined in 1976 by Hautefeuille is continuous single-layer anastomoses. (5) In the United States, Allen et al. first mentioned this technique (6).

Since single-layer suturing reduces ischemia, tissue necrosis, and lumen narrowing compared to two-layer suturing, more surgeons are likely to use it now. The goal of this research is to compare the operative and post-operative results of the single-layer linked to the closed Ileostomy of double layer with regard to the time required for the operation, the cost factor, the infection of wound, intra-abdominal abscess, the anastomosis and death in each community. The research would aid in determining the requirements for implementing the management modality as well as the results of these procedures. Accurate disease control will help to reduce treatment-related morbidity and mortality.

Methodology

In the department of surgery liaquat University of Medical and Health Sciences .This comparative study took place over the duration of 18 months. A total of 60 patients with an ileostomy were involved in the study. These patients were alienated into 2 Groups, A and B, with thirty members in each group. A comparative analysis was conducted between group A single layer (n-30) & group B double (n-30) ileostomy closure procedures. Skilled surgeons performed many of the procedures.. The interrupted method of ileostomy closure was used in the single layer community, and seromuscular non-absorbable silk 3-0 suture was used. The inner layer of a double layer ileostomy was closed with a 3-0 polyglactin 910 suture continuous absorbable, while the outer layer was closed with a 3-0 silk interrupted suture. Wound contagion, intra-abdominal boil, spot of stricture Anastomosis, anastomotic leak, inflammation of peritoneum septicemia, surgical time, injury inflammation, intra-abdominal ulcer, and death were all evaluated. The hand woven form was used for all ileostomy closures.

Results

Ileal perforations were most common in the 3rd & 4th decades of life, contributing to the formation of a stoma, according to the 18-month report. Males are more likely than females to have an ileostomy closure, with a ratio of 6.5 (Male: Female: 6.5:1), and the average age for both operations was 36.12 years, with a range of 15 to 70 years (Table 1).

Table 1: Age distribution in the study				
Age group (in years)	Group A		Group B	
	No of cases	%age	No of cases	%age
10-20	3	10	4	13.33
21-30	7	23.34	8	26.67
31-40	10	33.33	9	30.00
41-50	4	13.33	5	16.67
51-60	4	13.33	4	13.33
61-70	2	6.67	0	0
Total	30	100	30	100
Range	15-70		15 - 60	
Mean \pm SD	37.07 \pm 13.21		35.16 \pm 11.95	

Table 1: Age distribution in the study				
Age group (in years)	Group A		Group B	
	No. of cases	%age	No. of cases	%age
10-20	3	10	4	13.33
21-30	7	23.34	8	26.67
31-40	10	33.33	9	30.00
41-50	4	13.33	5	16.67
51-60	4	13.33	4	13.33
61-70	2	6.67	0	0
Total	30	100	30	100
Range	15 - 70		15 - 60	
Mean \pm SD	37.07 \pm 13.21		35.16 \pm 11.95	

In a single layer group In Group A, the average time to close an ileostomy was 15.3 minutes, varying from 8 to 22 minutes, and in Group B, the average time to close an ileostomy was 24.2 minutes, varying from 16 to 36 minutes. (Table 2).

Table 2: The operative time in both the procedures in minutes				
Operative time in minutes	Group A		Group B	
	No. of cases	%age	No. of cases	%age
5-10	2	6.67	0	0
11-15	16	53.33	0	0
16-20	8	26.67	7	23.33
21-25	4	13.33	13	43.33
26-30	0	0	6	20
31-35	0	0	3	10
36-40	0	0	1	3.33
Total	30	100	30	100
Range	8 - 22		16 - 36	
Mean±SD	15.30±3.63		24.20±5.24	
't' and P value	7.64 and <0.0001			
Sig.	Highly significant			

Patients in Group A stayed an average of 12.8 days in the hospital, while those in Group B stayed an average of 11.7 days. Infection of wound was the major in groupA 5(16.67%), abdominal collection 3(10.00%), hemorrhage, and systemic problem 2 are the most common complications (6.67 percent).Wound injury was perhaps the most prevalent problem in Group B, accounting for 7(23.33%), wound dehiscence 3(10.00%), abdominal collection and systemic problem 2(6.67%), and intestinal obstruction 1 (6.67 percent).A 5 (16.67%), followed by abdominal collection 3 (10.00%), wound dehiscence, and systemic complication 2 (6.67%). The most common complication in Group B was wound infection, which accounted for 7 (23.33%), wound dehiscence 3 (10.00%), abdominal collection and systemic complication 2 (6.67%), and intestinal obstruction 1 (6.67%). (3.33 percent). In our sample, anastomotic leak occurred in two patients(6.67%) in each group, possibly requiring reoperation. (Figure 1)

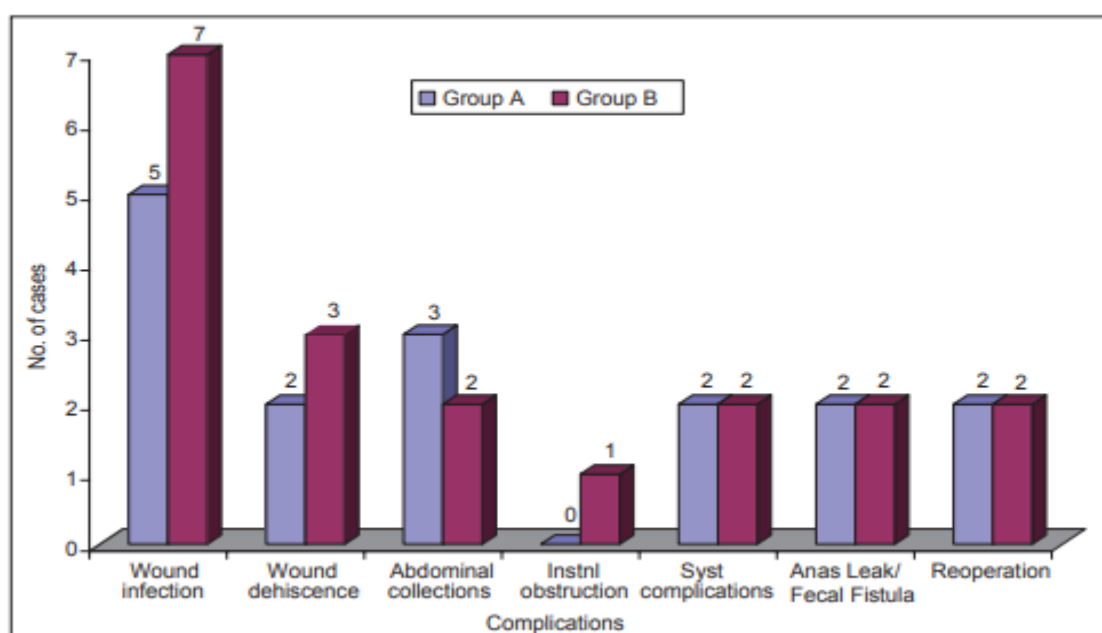


Figure 1: Complications in the study group.

Discussion

Anastomotic failure, which has a detrimental effect on the surgical outcome, has long been a matter of concern in patients receiving gastrointestinal anastomosis surgery. Age, diet, and coxistion illnesses like kidney disease, liver disease, and tumors, as well as local factors like vasculature, sepsis, and suture operation, all affect the recovery process..(7)

There are numerous anastomotic methods available, but none can be considered ideal since they all settlement Healing. The perfect intestinal anastomosis procedure would: • Promote primary repair by precisely allying the split bowel; • Cause minimum disturbance to local vasculature; • Include the minimum amount of foreign material; • Not inject cancerous cells at the anastomosis; and • Not raise the likelihood of Metachronous cancers..(8)

In this study, the operative as well as post-operative results of single layer and double layer

ileostomy closure were compared in each group. Single layer ileostomy completion(50%) and double layer ileostomy closure(50%) were the clinical procedures conducted in 60 patients in our sample, with an estimated ileostomy period of 101.75 days earlier to closure (3.39 month).The mean surgery time In a single layer group A the mean surgery time for closure of ileostomy was 15.3 minutes, ranging from 8-22 min, & in Group B double layer closure of ileostomy was 24.2 min ranging from 16- 36 minutes which was slightly less than the study done by Burch et al. (9) 20.8 min for single layer and 30.7 min in double layer.Ordorica et al. found that a single layer takes 26 minutes and a double layer takes 43 minutes.(10)Patients in Group I stayed an average of 12.8 days in the hospital, while those in Group II stayed an average of 11.7 days, compared to 10.4 days in both groups by Ordorica et al. Maurya et al. measured 10 and 11.4 days in single layer and 18.6 days in double layer.(11)

Both groups in our sample experienced complications after stoma reversal. Patients in Group A stayed an average of 12.8 days in the hospital, while those in Group B stayed an average of 11.7 days. Infection of wound was the major in group A 5 (16.67%), followed by abdominal collection 3 (10.00%), wound dehiscence, and systemic complication 2 (6.67%). The most common complication in Group B was wound infection, which accounted for 7 (23.33%), wound dehiscence 3 (10.00%), abdominal collection and systemic complication 2 (6.67%), and intestinal obstruction 1 (6.67%). (3.33 percent). Anastomotic leak occurred in two patients (6.67 percent) in each group in our study, necessitating reoperation Irvin et al (12) show leak in 5/29 patients in single layer and 5/31 in double layer. Six by forty leak in single layer and 13/52 in double layer shown by Everett et al,(13)Golinger et al,(14)Maurya et al, Ordorica et al, and Burch et al found leaks in single layer ileostomy closures of 31/69, 4/60, 2/42, 2/59, and double layer ileostomy closures of 17/66, 20/112, 3/44, 1/66, respectively.

The downside of double layering is that it lacks the fundamental belief of precisely contrasting the clean cut boundaries, as well as a considerable extent of ischemic tissue inside the suture line, which can raise leaks and narrow the lumen. In contrast, the single layer strategy, which integrates the gut's Sturdiest layer (Submucosa) and causes limited harm to the Sub mucosal Vascular plexus & lumen disorder, allows for specific opposition and integrates the gut's strongest layer (submucosa). (15)(16)

Conclusion

Although different endpoints can be used for evaluating the effectiveness and safety of intestinal anastomosis, surgeons are most aware of the risk of leakage after operation. As two complication techniques in our study do not differ in the main outcome, choices should be made when clinical practice takes into interpretation consequences from other results such as death duration, TPN duration of stay at a hospital, risk of infection with a wound & cost of sutures. Arithmetical source for these endpoints suggest that the method with one layer has nearly the similar or improved consequences than the method with 2 layers. Finally, a 2-layer Anastomosis for Ileostomy closure has no certain benefit in postoperative leaks and other complications compared to one-layer anastomosis. Single layer closure is protective , simple to implement & easy to teach. The choice of process for most surgeons may prove due to the period of the Anastomosis method & to remedial costs of Single layer Intestinal Anastomosis.

References

1. Gooszen A, Geelkerken R, Hermans J, Lagaay M, Gooszen HJDotC, Rectum. Quality of life with a temporary stoma. 2000;43(5):650-5
2. Khan N, Rehman A, Sadiq MJJMS. Single layer interrupted serosubmucosal (extra mucosal) intestinal anastomosis. 2006;14(1):10-3.
3. Mucha Jr PJSCoNA. Small intestinal obstruction. 1987;67(3):597-620.
4. Cohen Z, Sullivan BJWD, ACS Surgery, Principles, Practice. New York W. Intestinal anastomosis. 2002:803-5
5. AhChong A, Chiu K, Law I, Chu M, Yip AJA, surgery NZjo. Single-layer continuous anastomosis in gastrointestinal surgery: a prospective audit. 1996;66(1):34-6.
6. Sarin S, Lightwood RJBjos. Continuous single-layer gastrointestinal anastomosis: a prospective audit. 1989;76(5):493-5
7. Orr NJBJoS. A single-layer intestinal anastomosis. 1969;56(10):771-4.
8. Hamilton JEJAos. Reappraisal of open intestinal anastomoses. 1967;165(6):917.
9. Burch JM, Franciose RJ, Moore EE, Biffl WL, Offner PJJAs. Single-layer continuous versus two-layer interrupted intestinal anastomosis: a prospective randomized trial. 2000;231(6):832.
10. Ordorica-Flores RM, Bracho-Blanchet E, Nieto-Zermeño J, Reyes-Retana R, Tovilla-Mercado JM, Leon-Villanueva V, et al. Intestinal anastomosis in children: a comparative study between two different techniques. 1998;33(12):1757-9.
11. Maurya S, Gupta H, Tewari A, Khan S, Sharma BJIs. Double layer versus single layer intestinal anastomosis: a clinical trial. 1984;69(4):339-40.
12. Irvin T, Goligher J, Johnston DJBJoS. A randomized prospective clinical trial of single-layer and two-layer inverting intestinal anastomoses. 1973;60(6):457-60.
13. Everett WJBJoS. A comparison of one layer and two layer techniques for colorectal anastomosis. 1975;62(2):135-40.
14. Goligher J, Lee P, Simpkins K, Lintott DJBJoS. A controlled comparison of one-and two-layer techniques of suture for high and low colorectal anastomoses. 1977;64(9):609-14.
15. Subhan A, Anis N, Baloch AMJJSPJ. One Layer Interrupted Intestinal Anastomosis. 2001;6(2):9-10.
16. Leslie A, Steele RJCD. The interrupted serosubmucosal anastomosis—still the gold standard. 2003;5(4):362-6.