

Comparison, Outcome of Single Layer Interrupted Extramucosal Repair VS Double Layer Continuous Repair

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ABSTRACT

Objective: To conclude that Single layer interrupted extramucosal intestinal anastomosis is a safer technique with fewer complications than double layer continuous intestinal anastomosis.

Study Design: Prospective Analytical

Duration: Surgical Unit I, Sir Ganga Ram Hospital from March 2010 to March 2012.

Setting & Methodology: Total of 75 cases were included for this study and were divided in two groups. Group A, 40 cases in which gut anastomosis was performed with single layer extramucosal interrupted fashion. Polyglactin (Vicryl TM), (2/0) material was chosen over round body needle. Group B, 35 cases underwent conventional double layer anastomosis with Polyglactin (Vicryl TM), (2/0).

The outcome in terms of anastomotic leak was compared in the two groups.

Results: The two groups were randomized and evenly matched by age, sex and diagnosis. Postoperative complications were assessed. The main postoperative complications anastomotic leak was studied.

In the total 75 patients studied anastomotic leak was seen in 6 patients. Two from group A and Four from group B.

Conclusion: Single layer interrupted technique is a safe technique with fewer complication and marked advantages so can be should be used in preference to double layer technique for intestinal anastomosis.

INTRODUCTION

Intestinal anastomosis is a surgical procedure to establish communication between two formerly distant portions of the intestine which restores intestinal continuity after removal of a pathological condition affecting the bowel.

A disastrous complication of intestinal anastomosis is anastomotic leak resulting in peritonitis, which is associated with high morbidity and mortality. Proper surgical technique and adherence to fundamental principles is imperative to ensure successful outcome after intestinal anastomosis.

Intestinal anastomosis can be performed by a hand-sewn technique using absorbable or nonabsorbable sutures or stapling devices. The basic principles of intestinal suture were established more than 100 years ago by Travers, Lembert and Halsted, and have since undergone little modification¹. Sutured anastomosis (hand-sewn technique) is the commonly used option because of the availability and affordability of suture materials and familiarity with the procedure. The increased availability of stapling devices for intestinal anastomosis has provided an alternative option to perform a rapid anastomosis. Higher cost, limited availability, and less familiarity are the main drawbacks of stapling devices.

The traditional double layered anastomosis incorporates large amount of ischemic tissue in the suture line leading to increased tension at suture line and increased chances of the luminal narrowing². In contrast single layer anastomosis causes less damage to sub mucosal vascular plexus so less chances of luminal narrowing, incorporates strongest sub mucosal layer and accurate tissue apposition³. So the objective of the study is to conclude that Single layer interrupted extramucosal intestinal anastomosis is a safer technique with fewer complications than double layer continuous intestinal anastomosis.

METHODOLOGY

This prospective, randomized study was conducted in Surgical Unit I, Sir Ganga Ram Hospital from March 2010 to March 2012.

Patients of all ages and sex groups requiring intestinal anastomosis were included except those who needed anastomosis to stomach, duodenum and rectum. Randomization was done for the surgical technique applied. Total of 75 cases were included for this study and were divided in two groups. Group A, 40 cases in which gut anastomosis was performed with single layer extramucosal interrupted fashion. All the cases operated in emergency and electively were included. Polyglactin (Vicryl TM), (2/0) material

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was chosen over round body needle. Group B, 35 cases underwent conventional double layer anastomosis with Polyglactin (Vicryl TM), (2/0).

The outcome in terms of anastomotic leak was compared in the two groups.

Anastomotic leak was defined as the radiographic demonstration of contrast and or clinical evidence of leakage of gastrointestinal contents from the wound.

The data was processed on the SPSS version 10. Chi-square test was used to determine the statistical significance of categorical data. A p-value of less than 0.05 was considered significant

RESULTS

The two groups were randomized and evenly matched by age, sex and diagnosis (Table 1). Group A mean age 48.5(range 18-70) and Group B mean age 42.5(range 16-68). Sex distribution

was 24 males and 16 females in group A while 22 males and 13 females in group B.

Postoperative complications were assessed. The main postoperative complications anastomotic leak was studied.

In the total 75 patients studied anastomotic leak was seen in 6 patients. Two from group A and Four from group B.

The patients developed anastomotic leak were initially managed conservatively.

Both patients of group A responded well to the conservative management. But out of group B two of them were managed conservatively, the other two developed fecal fistula and clinical & biochemical deterioration, they were re-explored and diversion ileostomy was made. Still one re-explored patient died because of intra abdominal abscess, sepsis and multiorgan failure.

	GRPOUP A	GROUP B
No of repairs	40	35
Age(yrs)	48	42
Sex(M/F)	24/16	22/13
DIAGNOSIS		
1. Trauma/Gunshot	6	4
2. Inflammatory	2	3
3. Infections	18	16
4. Bowel gangrene	3	2
5. Benign lesions	2	2
6. Malignancy	9	8
COMPLICATION		
1. Anastomotic leak	2	4

DISSUSSION:

Intestinal anastomosis is one of the most commonly performed surgical procedures, especially in the emergency setting, and is also commonly performed in the elective setting when resections are carried out for benign or malignant lesions of the gastrointestinal tract.

Lembert described his seromuscular suture technique for bowel anastomosis in 1826. Senn advocated two layers whereas Halsted favored one layer extramucosal anastomosis. Connell used a single layer of interrupted sutures incorporating all layers of the bowel. Kocher's method, a two layer anastomosis, 1st a continuous all layer suture and then an inverting continuous (or interrupted) seromuscular layer became the gold standard⁴.

To minimize the risk of potential complications, it is imperative to adhere to several well

established principles. The main one relates to the creation of a tension free join with good apposition of the bowel edges in the presence of an excellent blood supply. The importance of surgical techniques is understood by the wide variation of anastomotic leakage rates among surgeons.

The present study assesses the efficacy and safety of single layer over double layer intestinal anastomosis. Double layer technique causes excessive mucosal inversion leading to luminal narrowing and ischemia of the anastomotic site⁵. In comparison to this extramucosal interrupted single layer technique has advantage of good apposition of serosal surfaces, no luminal narrowing and less damage to submucosal vascular plexus⁶.

In this study the rate of anastomotic leak in group A is 5% and group B is 11.5%. The rate of anastomotic leak in group B is quite high than the

rate described in the literature^{7,8,9}. Also the mortality in group A is 0% while in group B 5.7%. Consistent with the values described in literature¹⁰.

CONCLUSION

Single layer interrupted technique is a safe technique with fewer complications and marked advantages so can be used in preference to double layer technique for intestinal anastomosis.

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