Original Research Article

Intestinal anastomosis a prospective analysis

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Abstract

Background: Anastomosis is a surgical procedure where in two hollow viscera are approximated together to establish the continuity. The present study was conducted to compare the single layer and double layer intestinal anastomosis. **Material and methods:** The study was conducted to compare the single layer and double layer gastrointestinal anastomosis. A total of 100 patients were included in the study. All patients are grouped into two categories. One group undergoing Single layer anastomosis (SL), other group undergoing Double layer anastomosis (DL). Data were analyzed using the appropriate tests of significance in SPSS R Version 3.02. A p-value of less than 0.05 was considered as statistically significant. **Results:** Out of total 100 patients, Male patients were 60% and female patients were 40%. The mean time of operation for SL was 22.2 min. and for DL was 30.24 min. Duration of hospital stay for SL was 8.23 days and for DL was 9.02 days. Anastomotic leakage was seen in 10% of Double layer group and 4% of Single layer group.**Conclusion:** The present study concluded that Single layer anastomosis (SL) was better than Double layer anastomosis (DL).

Keywords: Double layer anastomosis, Single layer anastomosis, gastrointestinal anastomosis

Introduction

Anastomosis is a surgical procedure where in two hollow viscera are approximated together to establish the continuity. Czerny in 1880 advised two layer sutures. The first was an inner through and through stitch, usually a continuous catgut to secure rough apposition of cut ends of bowel and good hemostasis. The second was an outer neuromuscular stitch with interrupted silk to produce inversion and bring the peritoneal coats together[1]. Two of the most commonly used anastomotic techniques include: (A) Hand-sewn anastomosis and (B) Stapled the anastomosis. The hand-sewn or suture anastomosis is the more commonly used choice because of the availability and cost-effectiveness of suture materials and familiarity with procedure. On the other hand, stapling devices provide the advantage of saving time especially in cases requiring multiple anastomosis, with the drawbacks of being expensive, dependence on technology as compared to the surgeons own skills and limited availability, decreasing its usage[2,3]. In double layer anastomosis in most of cases it fails to oppose clean serosal surfaces and it results in large amount of ischemic tissue within suture line which increases the chances of leakage. Further excessive inversion leads to narrowing of lumen[4]. In contrast single layer anastomosis causes least damage to submucosal vascular plexus, least chances of narrowing of lumen, incorporates strongest submucosal layer and accurate tissue apposition[5,6]. The present study was conducted to compare the single layer and double layer intestinal anastomosis.

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Material and methods

The study was conducted to in department of general surgery of SKMCH (Sri Krishna Medical College and Hospital), Muzaffarapur, Umanagar, Bihar to compare the single layer and double layer intestinal anastomosis. The study was carried out from October 2019 to July 2021. A total of 100 patients requiring small bowel and large bowel anastomosis, either in elective or emergency procedure were included in the study. Cases that required anastomosis to stomach, duodenum and anal canal were excluded and Stapled anastomosis was also not taken in to consideration. All patients are grouped into two categories. One group undergoing Single layer anastomosis (SL), other group undergoing Double layer anastomosis (DL). Single layer anastomosis was done by extramucosal interrupted suture with polyglactin curved round body 2-0 or Silk 2-0 curved round body or Prolene® 2-0 curved round body. The posterior layer was stitched first by passing the needle from serosa to submucosa without piercing the mucosa. Needle was then passed through the other end in the submucosa to come to the surface through the serosa and knots were tied over the serosal surface. In double layer intestinal anastomosis, first layer was continuous through and through with polyglactin round body 2-0 followed by outer Lembert suture with silk round body 2-0 or Polypropylene 2-0. The stitches were placed at interval of 4-6 mm and mucosal eversion was strictly avoided. Drainage of anastomotic site is provided in all cases. a. Anastomotic leak was defined as i. Established faecal fistula to the skin ii. Fever above 38°C or septicaemia in patients with radiological or endoscopic leak. iii. Presence of intraperitoneal abscess or symptoms and signs of peritonitis in the presence of an anastomotic leakage. b. Time Taken- begins with placement of first stitch and ends when excess suture from last stitch was cut. Data were analyzed using the appropriate tests of significance in SPSS R Version 3.02. A p-value of less than 0.05 was considered as statistically significant.

Results

Out of total 100 patients, Male patients were 60% and female patients were 40%. The mean time of operation for SL was 22.2 min. and for DL was 30.24 min. Duration of hospital stay for SL was 8.23 days and for DL was 9.02 days. Anastomotic leakage was seen in 10% of Double layer group and 4% of Single layer group.

Table 1: Comparison of single layer and double layer intestinal anastomosis.

Variables	Single layer anastomosis	double layer anastomosis
Mean time of operation	22.42 min	30.24 min
Duration of hospital stay.	8.23 days	9.02 days
Percentage of anastomotic leak.	4%	10%

Discussion

The two-layer interrupted anastomosis has its origins in the early 19th century through the experimental work of Travers[7] and of Lembert[8] who advocated careful approximation of the serosal surfaces of the bowel and devised a method of suturing to accomplish this. In 1836, Dieffenbach performed the fist successful anastomosis of the small intestine using Lembert's method[9]. In 1880, Czerny[10] advocated the addition of an inner layer to reduce the risk of leakage and to achieve a precise mucosal approximation. The single-layer continuous anastomosis is a contemporary innovation first described by Hautefeuille in 1976[11].

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Shah et al. and Kar et al. also had preponderance of males in their study[12,14].

Pathak et al. in 2014 found that mean time taken in single layer was 17.59 min. and 30 min. for double layer, with a p-value of 0. 001[13].

Kar et al. in 2017 found that mean time for anastomosis in min for single layer was 15.12 and 24. 38 for double layer, with a p-value of 0.001[14].

Kar et al., found that mean duration of hospital stay in single layer is 5.90 days and 7.29 days with a p-value of 0.001[14].

Bruch et al. found that the hospital stay was 7.9 and 9. 9 days in SL and DL respectively[15].

Researches published by Luján et al and Trencheva et al, they found that the incidence of leaks was 3.8% and 5.7%, respectively, and associated mortality was 13.3% and 5.7%[16,17].

Conclusion

The present study concluded that Single layer anastomosis (SL) was better than Double layer anastomosis (DL).

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