IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 12 Ser.4 (December. 2020), PP 40-42
www.iosrjournals.org

Comparative Study of Handsewn Anastomosis And Stapler Anastomosis In Elective Gastrointestinal Surgery

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ABSTRACT: *Anastomosis in GI surgery is a routinely performed procedure. From the time of Sushruta various methods of intestinal anastomosis performed. A recent advancement is the use of stapler as a device for maintaining Gastrointestinal continuity , with the use of staplers technical failures are less common anastomosis is reliable and used at places of difficult location*

MATERIALS AND METHODS: *Total of 60 cases were included in this prospective study. The study population include all patients who underwent elective GI surgeries*

STUDY FACTORS: *The subjects allocated into two groups according to the type of anastomosis, either handsewn or stapler. Furthermore handsewn and stapled anastomosis are divided into sub-groups according to the site of anastomosis like esophageal, gastro-jejunal, and colorectal.*

RESULTS*: 60 patients with malignant or benign condition of bowel requiring anastomosis, 30 patients allocated in a study group of GI staplers and 30 patients of the control group of Hand sewn anastomosis. Out of 60 cases, there were 18esophageal anastomosis, 22gastrojejunostomies, and 20 colorectal anastomosis*

CONCLUSION:

In this study it was observed that stapling technique significantly decreased the time for the anastomotic procedure, decreased tissue trauma due to mimimal tissue handling, and early restoration of GI function, early start of oral feeding and decreased duration of hospital stay which helps in early return to work, mainly staplers can be used at places where handsewn anastomosis is technically challenging. Procedure related complications did not show significant differences which suggests that one can use staplers with the same safety and accuracy as sutures

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Date of Submission: 28-11-2020 Date of Acceptance: 13-12-2020

I. Introduction

GI Anastomosis dates back to 1000 B.C. Sushruta described the use of black ants for intestinal anastomosis. Lembert proposed seromuscular suture technique, which became the mainstay of GI anastomosis in the second half of the century. Currently, the single-layer extra- mucosal anastomosis is popular, as proposed by Matheson of Aberdeen, as it causes the mimimal tissue necrosis or luminal narrowing. Hültl first introduced surgical stapling devices in 1908;But they did not gain popularity because instruments were difficult to use and unreliable. The development of reliable and disposable tools over the last 30 years has changed surgical practice dramatically. With modern devices, technical failures are less common, the staple lines are of more consistent quality, and anastomosis under challenging locations is more comfortable to construct. The effect of minimizing operative trauma has undoubtedly been the main advantage in the use of staplers for anastmosis .This is the study to compare the outcome of Hand sewn and stapler anastomosis in elective gastrointestinal surgeries.

II. Materials And Methods

This study study is carried out in the Department of general surgery, Rangaraya medical college from April 2018 to April 2019. Total of 60 cases that met the inclusion and exclusion criteria included in this hospital-based comparative prospective study. The study population included all patients who undergone elective gastrointestinal surgeries.

INCLUSION CRITERIA:

INCLUSION CRITERIA: Patients Of Elective Gastrointestinal Surgeries Who Underwent Bowel Anastomosis.

EXCLUSION CRITERIA:

Children (< 12 years).

The GI anastomosis performed in an emergency setting.

Pancreatico-duodenectomies with a triple bypass.
Biliary-enteric anastomosis
. Patients not willing to join the study or left the hospital before the final results
Patients with prior chemotherapy or radiotherapy and patients unfit for anesthesia excluded

STUDY FACTORS: The subjects allocated into two groups based on the type of anastomosis, Hand sewn, or stapler. The groups assigned at random decided by the affordability of staplerby the patient and need to use. Both handsewn and stapled anastomosis further divided into three sub-groups according to the site of anastomosis viz esophageal, gastro-jejunal and colorectal anastomotic techniques
All Handsewn anastomosis was performed by an experienced surgeon with a single layer or double layer or interrupted or continuous technique of anastomosis using 3-0 or 2-0 vicryl. In the double-layered method, 3-0 silk used for the outer seromuscular suturing .Full standard exploration done as per the pathology under necessary anesthesia decided by the anesthesiologist. Staplers Used are Linear cutting staplers (TLC 75, 55), Linear anastomosing staplers (TCR 55, 75), Circular anastomosing staplers (CDH 25, 29).

OUTCOME FACTORS: Both Hand sewed and stapler anastomosis in all three groups compared on the following basis
1. **ANASTOMOTIC INTEGRITY:** Integrity of anastomosis was based on the presence or absence of an anastomotic leak. There are two types of Anastomotic Leaks (Clinical and Radiological). A clinical leak was defined as anastomotic dehiscence confirmed by re-operation,appearance of bowel contents from drain or systemic sepsis in association with peritonitis, development of an enterocutaneous fistula, In patients undergoing esophageal or colorectal anastomosis, anastomotic integrity was also assessed by contrast radiography in the period between 4 and 14 days after the operation. The radiological leak was defined as "any extravasation of contrast medium from the anastomosis in the absence of any criteria for the clinical leakage
2.DURATION OF OPERATION : Duration of surgery was counted from the time of starting of incision to closure.
3. Return of gastrointestinal motility: Assessed by the day of appearance of bowel sounds after operation

4. HOSPITAL STAY ; Postoperative hospital stay was taken into consideration

STATISTICAL METHODS: The parameters of two categories like gender, weight, age presence or absence of co-morbid conditions, hemoglobin, Serum proteins, malignant or benign diseases were compared to assess the the 2 groups (stapler and handsewn).The Outcome factors in two categories in all three groups are analyzed. For continuous variables, student` t -test was used. For categorical variables, the chi-square test isused. Prepared proforma was used for data collection

III. Result

A total of 60 patients with the malignant or benign condition of bowel and esophagus, requiring anastomosis, were allocated in the study group of GI staplers and control group of conventional Hand sewn technique. Out of 60 cases, there were 18 esophageal anastomosis, 22gastrojejunostomies, and 20 colorectal anastomosis.

IV. Conclusion

In this study we observed that stapling technique can significantly decrease the time for procedure. With reduced operating time and minimal trauma due to less tissue handling, there is early restoration of GI function, early start of oral feeding and decreased duration of hospital stay which helps ultimately in early return to work. Procedure related complications did not show considerable differences suggest that one can use staplers with same safety and accuracy as of sutures . Stapling techniques are quicker to perform, in situations where access is difficult like coloanal or low colorectal anastomosis thus stapling technique can be used safely and effectively as a part of modern Surgeon`s armamentarium and one should be equally expert with stapler gun and with needle holder and suture. This study shows that stapling or suturing are equally safe in large intestine surgery.It also shows a long term advantage of stapling in colorectal cancer patients in maintaining the normal continuity and preventing the permanent stoma. There is lack of evidence showing that the routine drainage after colorectal anastomosis prevents complications and anastomotic leak . Results suggest that with the use of stapler for low sphincter preserving anastomosis, more number of patients will be spared a permanent colostomy. These stapling instruments cannot be used on friable ,edematous , avascular bowel or very thick tissue. Operating Surgeon must be a master in surgical technique to tackle the situation in case the

machine fails or staple is contraindicated. Proper training and precision will prevent their misuse. The defect may be related to stapler design, can be avoided by using less than the full staple line on the initial firing of the stapler or by using alternative device. However, the study had weakness that it is not a randomized control trial and cost analysis is not included in the study.

Dr. Ch Venkatareddy, et. al. "Comparative Study of Handsewn Anastomosis And Stapler Anastomosis In Elective Gastrointestinal Surgery." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(12), 2020, pp. 40-42.