



COMPARATIVE ANALYSIS BETWEEN DIFFERENT ASPECTS OF HANDSEWN AND STAPLED BOWEL ANASTOMOSIS

General Surgery

Dr. Brajamohan Mishra

Professor, Dept of Surgery, VIMSAR, Burla

Dr. Rabinarayan Guru*

Assistant Professor, Dept of Surgery, VIMSAR, Burla*Corresponding Author

Dr. Srimanta Sundar Padhi

Junior Resident, Dept of Surgery, VIMSAR, Burla

ABSTRACT

Aim: To compare incidence of anastomotic leak, mean duration of surgery, intra-op anastomotic site bleeding, day of appearance of bowel sound, duration of hospital stay, development of anastomotic stricture/stenosis, SSI between anastomoses done by handsewn and stapled technique. **Materials and methods:** This is a prospective study conducted in Dept. Of General Surgery, VIMSAR, Burla. 40 patients were studied with 20 patients in handsewn group and another 20 patients in stapled group in a time period of 23 months. Only those cases who have been diagnosed, treated and followed up here were included. Cases operated in emergency, having sepsis, poor general condition, having medical problems like bleeding disorder, anemia, hypoproteinemia, CKD were excluded. Age, sex, intraop anastomotic site bleeding, duration of surgery, post-op drain output, need for reoperation, day of return of bowel sounds, main wound infection, duration of hospital stay and development of anastomotic stricture/stenosis were noted. **Results:** Incidence of anastomotic leak was found to be reduced, duration of surgery was reduced to almost half, there was earlier appearance of bowel sound reducing the hospital stay duration in the stapled group. There was also reduced incidence of intra-op anastomotic site bleeding. SSI incidence remained equal in both groups. **Conclusion:** The use of staplers provided with certain definitive advantages over handsewn technique in elective g.i. surgery not having bowel wall edema, friability and not having local sepsis.

KEYWORDS

Anastomotic leak, Duration of surgery, Return of bowel sounds, Stapled anastomosis, Handsewn anastomosis

INTRODUCTION:

Bowel anastomosis may be done by handsewn or stapled technique [1]. The stapled technique was developed later. It is capable of cutting and stapling at the same time avoiding the need for clamping [2,3]. Except for technically problematic situations like bowel wall edema, friability and intra-abdominal sepsis it can be used in all other cases. It creates uniform cutting and sealing throughout the length and drastically reduces the operating time. Cost is no more a factor for its use in government hospitals now due to implementation of various recent government schemes. The only factor responsible for its less use is lack of familiarity among surgeons in this part of the country and doubts regarding anastomotic leak. Currently the use of sutures or staplers depends on the preferences of the operating surgeon. So it was thought prudent to proceed with comparing between these two techniques.

OBJECTIVES:

Primary Objective: To compare anastomotic leak between handsewn and stapled techniques

Secondary Objectives: Also to compare the following points between the 2 groups:

1. Duration of surgery 2. Intra-op anastomotic site bleeding 3. Day of return of bowel sounds 4. Main wound infection 5. Duration of hospital stay

METHODOLOGY:

Patients undergoing elective bowel anastomotic procedures in Dept of General Surgery, VIMSAR, Burla from January 2019 to November 2020 (23 months) were taken up for this study. The patients were randomly allocated to study and control groups.

Sample Size Estimation: As anastomotic leak is a qualitative variable,

$$\text{Sample Size} = \frac{Z^2_{1-\alpha} p(1-p)}{d^2}$$

Incidence of anastomotic leak following bowel anastomosis = 2.7% [4]. So the minimum required sample size = 40. The total sample size was equally distributed between study and control groups. So both groups contained 20 patients each.

Inclusion Criteria: Only those cases who were diagnosed, treated and followed up here

Exclusion Criteria: Patients having any medical disorders like anemia, hypoproteinemia, CKD, poor general condition and sepsis

RESULTS:

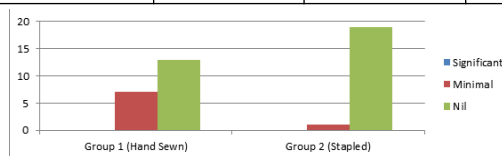
Age & Sex: The study included subjects from a wide range of age starting from 11 years to 70 years with a mean age of 46.75 years. Thus we conclude that the study results are applicable to patients of all age groups. There were also equal numbers of males and females in both the groups.

Anastomotic Leak: The handsewn group had a greater detected leak rate, which was statistically significant ($p=0.044$). The leak was mild and was detected through drain output and resolved after conservative management except for the need of reoperation in one case of extended right hemicolectomy done for hepatic flexure growth through handsewn technique.

The use of sutures or stapler to create a colorectal anastomosis has not been shown to significantly alter the anastomotic leak rate in the study done by Lustosa et al. [5], Docherty et al. [6] and Nasirkhan et al. [7].

Table-1

		Anastomotic Leak		Total
		mild	Nil	
Group	1	7	13	20
	2	1	19	20
Total		8	32	40

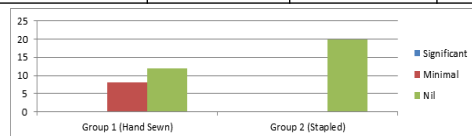


Intra-op Anastomotic Site Bleeding: The handsewn group had a greater detected rate of intra-op anastomotic site bleeding, which was statistically significant ($p=0.003$). The bleeding could be controlled by putting extra sutures over the bleeding site.

Table-2

		Anastomotic site Bleeding		Total
		Minimal	Nil	

Group	1	8	12	20
	2	0	20	20
Total		8	32	40



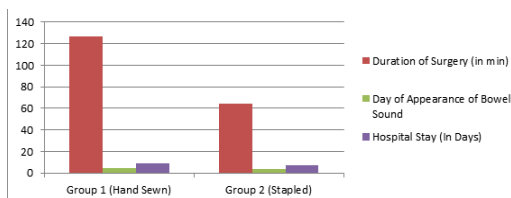
Main Wound Infection: It had equal incidence in both the groups.

The difference in SSI rates was statistically insignificant in the studies done by Lustosa et al. [5], Khan AQ et al. [8] and Mitra AS et al. [9].

Duration of Surgery, Day of Return of Bowel Sounds & Duration of Hospital Stay:

By using the stapled technique the duration of surgery was reduced to almost half ($p=0.000$), return of bowel sounds was almost 1 day earlier ($p=0.000$) and duration of hospital stay was almost 2 days less ($p=0.002$). All were statistically significant.

	Group	N	Mean	Std. Deviation	Std. Error Mean
Duration of Surgery (in min)	1	20	126.75	22.727	5.082
	2	20	64.00	20.686	4.625
Day of Appearance of Bowel Sound	1	20	4.90	.553	.124
	2	20	4.00	.649	.145
Hospital Stay (In Days)	1	20	9.15	1.694	.379
	2	20	7.35	1.755	.393



The operating time was lesser in stapled group in the studies done by Damesha et al. [10], George et al. [11] and Hollender et al. [12]. In the studies done by Damesha et al. [10], George et al. [11], Scher et al. [13] and Reiling et al. [14] there was no statistically significant difference in the day of return of bowel sounds and duration of hospital stay.

CONCLUSION:

From the above study we can see that stapled bowel anastomosis is having lesser rate of anastomotic leak as compared to handsewn technique. Stapled technique is having lesser intra-op anastomotic site bleeding rate and same main wound infection rate as compared to handsewn technique. Also by using stapled technique the duration of surgery is being reduced to almost half, day of return of bowel sounds and duration of hospital stay is also being reduced probably due to lesser handling of bowel. So in government hospitals where it is being made available free of cost stapled technique should be the preferred technique for bowel anastomosis in elective cases except when the bowel wall is edematous and friable.

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