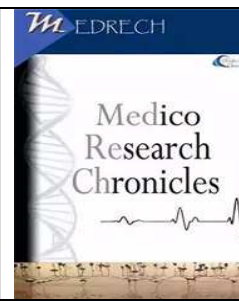




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INCIDENCE OF ANASTOMOTIC BLEEDING, ANASTOMOTIC LEAKAGE, SSI AND OPERATIVE TIME FOLLOWING LINEAR CUTTING STAPLING DEVICE GASTRO-JEJUNOSTOMY

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ABSTRACT

Background: The condition known as gastric cancer (GC) is complex and complicated. In both rich and developing nations, it poses a threat to people's physical and psychological well-being and places a heavy financial and health cost on society.

Objective: The aim of the study was to evaluate the Incidence and risk factors of anastomotic bleeding, anastomotic leakage, SSI and operative time following linear cutting stapling device gastro-jejunosotomy.

Methodology: The study was a Prospective observational study which was conducted in Department of Surgery, Dhaka Medical college & Hospital, over Six months' period after approval of protocol using a semi-structured questionnaire through face to face interview. Data were analyzed using a computer programme SPSS 23.0 version.

Results: Total 40 patients were enrolled in this study with the mean age of 57.45 ± 7.04 years and 65% were male. The overall mean BMI of the patients was 21.94 ± 1.61 kg/m². Among all the respondents 25% had comorbidity. among all the study participants 85% Tumor location was in middle and 47.5% had T1a stage followed by T1b (40%), T2 (7.5%) and T3 (5%) further 90% had N0 stage followed by N2 (5%) and N3 (5%). The mean operation time was 24.6 ± 2.9 minutes with the incidence of anastomotic hemorrhage was 5%, Anastomotic leak 5% and fortunately no SSI had occurred.

Conclusion: This study concluded that the ease and speed with which surgical staplers may be used make them the favored choice

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INTRODUCTION

The illness of gastric cancer (GC) is varied and complex. It poses a threat to the physical and psychological well-being of people, placing a heavy financial and health burden on both developed and developing nations [1]. With prevalence rates of 92%, 81%, 74%, and 75%, respectively, in developing Asian nations including Bangladesh, India, Thailand, and Vietnam [2]. According to estimates, a million new instances of GC are diagnosed each year, ranking it as the fourth most prevalent cancer in the globe. More than 70% of GC cases occur in poor nations, with Eastern Asia accounting for half of all cases worldwide [3]. Due to advancements in chemotherapy, the treatment approach for stomach cancer has undergone a significant transformation in recent years. The stage of the disease and the quality of surgery are the two most significant determinants of survival rates following corrective surgery, while survival rates can vary depending on a range of other factors [4]. There are now two procedures for anastomosis; the first one requires hand sewing, while the second one uses a surgical stapler called the EEA stapler. The width of the bowel ends, accessibility, edema at the anastomosis site, time and resources available, contamination, and underlying pathology all affect the anastomotic procedure choice [5]. The most crucial element in completing a certain anastomosis relies on the experience and preferences of the individual surgeon [6]. An alternative method of performing fast anastomosis has been made available by the more recent stapling equipment [7]. Surgical staplers are preferred because of how easy and quickly they can be applied. They reduce damage, necrosis, and edema and encourage blood flow over the anastomosis [8]. The

study aimed to evaluate the Incidence and risk factors of anastomotic bleeding, anastomotic leakage, SSI and operative time following linear cutting stapling device gastro-jejunostomy.

METHODOLOGY

The study was a Prospective observational study that was conducted in the Department of Surgery, Dhaka Medical College & Hospital, over Six months' period after approval of the protocol. Patients Age: >18 years of age, histologically diagnosed as gastric carcinoma, fit for surgery and willing to participate were included in the study and Patients having evidence of distant metastasis, severely ill patients not fit for surgery, and Patients having severe co-morbid conditions were excluded from the study. Maintaining all formalities face-to-face interview was taken by using a pre-tested questionnaire with a Purposive convenient sampling type of sampling technique. Total 40 patients were enrolled in this study and underwent Linear Cutting Stapling Device gastro-jejunostomy. The detail of the study was explained to each eligible respondent and consent was taken. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variables to detect errors and to maintain consistency, relevancy and quality control. Collected data were edited and analyzed according to the objectives and variables by IBM software- Statistical Package for Social Science (SPSS 23) version. Ethical clearance was taken from the IRB of the institution.

RESULT

This was a prospective observational study conducted in the department of Surgery, Dhaka Medical College & Hospital. Total of 40 patients was enrolled in this study.

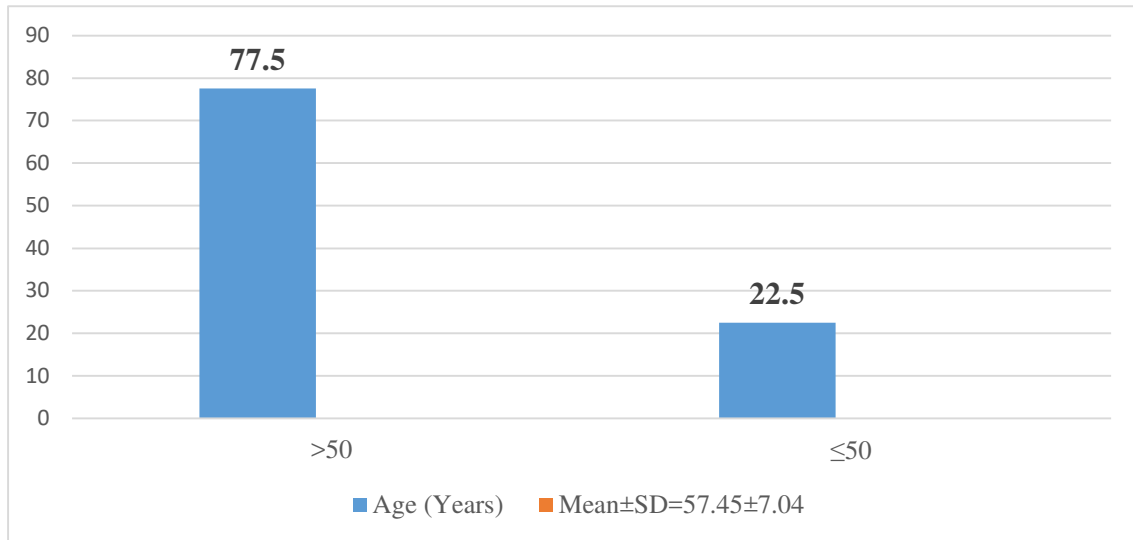


Figure 1: Distribution of the respondents by Age group (n=40)

Figure I shows that the mean age of the total participants was 57.45±7.04 years. Among all majority (77.5%) of the respondents were more than 50 years.

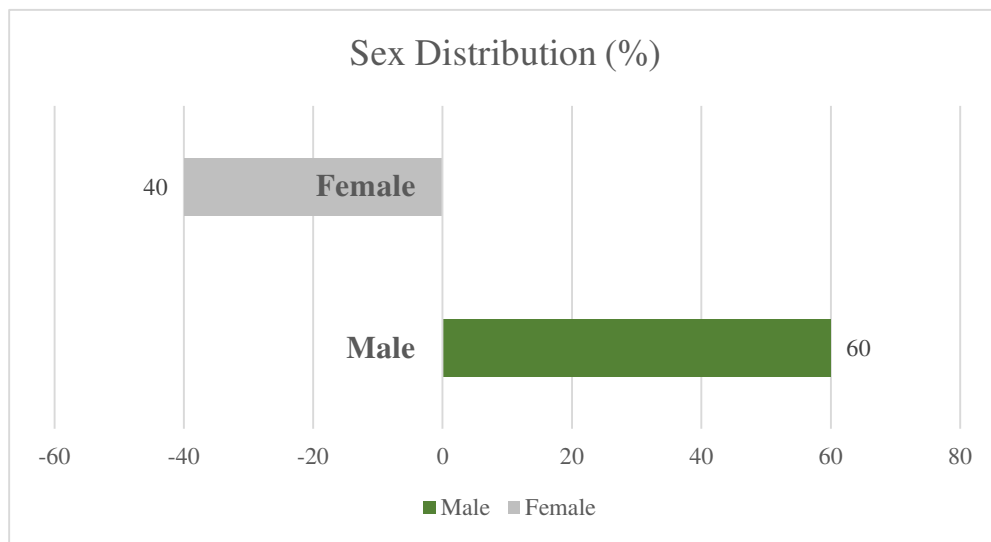


Figure 2: Distribution of the respondents by Sex (n=40)

Bar chart shows that the majority (65%) of the patients were male and 35% were female.

Table 1: Distribution of the respondents by BMI (n=40)

BMI (kg/m ²)	n	%
underweight (>18.5 kg/m ²)	5	12.5
Normal (18.5 to 24.99 kg/m ²)	32	80
overweight (≥25 kg/m ²)	3	7.5
Mean±SD	21.94±2.61	
Total	40 (100)	

Table-2 shows the overall mean BMI of the patients was $21.94 \pm 1.61 \text{ kg/m}^2$. Where majority (80%) of the respondents had normal BMI followed by 12.5% had below the normal level and 7.5% had above the normal level of BMI.

Table 2: Distribution of the respondents by Comorbidities (n=40)

Comorbidities	n(%)
Absent	30 (75)
Present	10 (25)
DM	3 (7.5)
HTN	5 (12.5)
Liver disease	2 (5)

Table-3 shows among all the respondents 25% had comorbidity. Among them 12.5% had HTN. 7.5% had DM and 5% had liver disease.

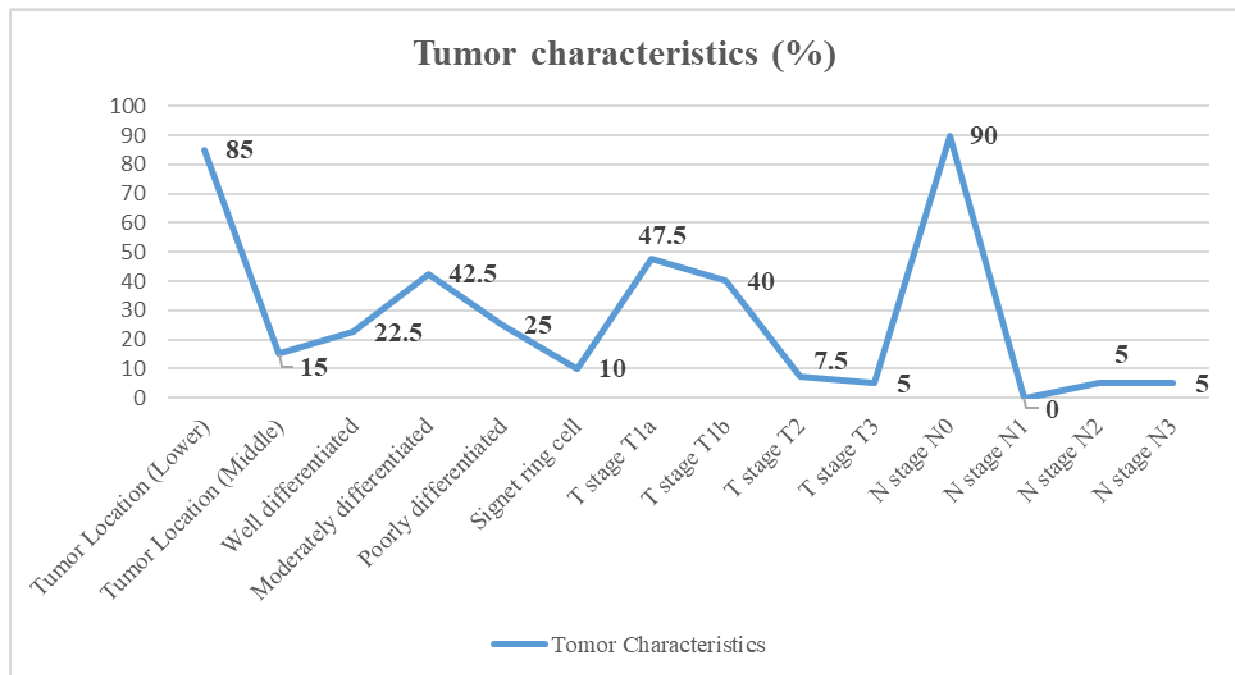


Table 3: Distribution of the study population by Tumor characteristics (n=40)

Table-4 shows among all the study participants 85% Tumor location was in middle where the majority (42.5%) of the tumor was moderately differentiated followed by poorly differentiated (25%), well-

differentiated (22.5%) and signet ring cell (10%). Also 47.5% had T1a stage followed by T1b (40%), T2 (7.5%) and T3 (5%) further 90% had N0 stage followed by N2 (5%) and N3 (5%).

Table 3: Distribution of the study population by post-operative outcome n=40

Post-operative outcome	n(%) mean \pm SD
Operating time (min)	24.6 \pm 2.9
Time for anastomosis (min)	6.5 \pm 2.01
Hospital stay (days)	8 \pm 1.48
Blood loss (ml)	680.50 \pm 121.90

Table 5 shows that the mean operation time was 24.6 ± 2.9 minutes, mean time for anastomosis was 6.5 ± 2.01 , mean hospital stay was 8 ± 1.48 days and the mean blood loss was 680.50 ± 121.90 ml.

Table 4: Incidence of postoperative complications for both groups of patients (n=40)

Postoperative complications	(n%)
Anastomotic hemorrhage	2(5)
Anastomotic leak	2 (5)
SSI	0 (0)
Intra-abdominal abscess	1 (2.5)
Bowel obstruction	1 (2.5)
Needed blood transfusion	2 (5)

Table 6 shows that 5% had Anastomotic hemorrhage, 5% had Anastomotic leak, 2.5% had Intra-abdominal abscess and 2.5% had a bowel obstruction and fortunately, no SSI had occurred.

DISCUSSION

The Incidence and risk factors of anastomotic bleeding, anastomotic leakage, SSI and operative time following linear cutting stapling device gastro-jejunostomy. Total number of patients was 40 and they underwent Linear Cutting Stapling Device gastro-jejunostomy. In this study mean age of the total participants was 57.45 ± 7.04 years.

Among all majority (77.5%) of the respondents were more than 50 years. About 65% of the patients were male and 35% were female. The risk of stomach cancer is lower in women who delay menopause and have more children. Numerous other earlier studies likewise noted that the majority of stomach cancer patients were older adults, with men making up the majority of the study's male participants [7, 9]. Similar findings also observed in a previous study by Seo et al. where the mean age of the patients was 60.4 ± 12.0 years [6]. shows the overall mean BMI of the patients was 21.94 ± 1.61 kg/m². Where majority (80%) of the respondents had normal BMI followed by 12.5% had below the normal level and 7.5% had above the normal level of BMI. According to a prior study, Asian people' varying BMI classifications for overweight and obesity can result in

significant heterogeneity [10]. But in this current study, BMI was found normal as a whole. The lower number of enrolled patients can be the reason for different findings. The current study shows that among all the respondents 25% had comorbidity. Among them 12.5% had HTN. 7.5% had DM and 5% had liver disease. According to this study among the enrolled patients, 85% Tumor location was in middle where majority (42.5%) of the tumor was moderately differentiated followed by poorly differentiated (25%), well-differentiated (22.5%) and signet ring cell (10%). Also 47.5% had T1a stage followed by T1b (40%), T2 (7.5%) and T3 (5%) further 90% had N0 stage followed by N2 (5%) and N3 (5%). In a previous study by Seo et al. also observed majority of the tumor was located in the middle and was moderately differentiated. Further T1a and T1b stage with the N0 stage was most commonly found [6]. This study revealed that mean operation time was 24.6 ± 2.9 minutes, meantime for anastomosis was 6.5 ± 2.01 , mean hospital stay was 8 ± 1.48 days and the mean blood loss was 680.50 ± 121.90 ml. When using the stapled suturing approach, Shahzad et al. found that the suturing time was greatly reduced when compared to the traditional suturing method (P 0.0002) [11]. Singha et al. additionally noted that the "time required" for stapled documents was statistically significantly (p=.000) decreased (mean-18.17 min) [12]. In this study

the incidence of anastomotic hemorrhage was 5%, Anastomotic leak 5%, 2.5% had Intra-abdominal abscess and 2.5% had bowel obstruction and fortunately no SSI had occurred. Previous another study also observed Almost similar findings [7, 12]. German inventor Dr. H. Friedrich created the first stapling tool with a removable, preloaded staple cartridge in 1934. The first fully disposable, single-patient-use mechanical stapler was introduced by Ethicon in 1976, and titanium eventually replaced stainless steel as the primary staple component in 1989 [13]. Stomach cancer is one of the five most common cancers in Bangladesh. All age groups had a 9139 percent 5-year prevalence of stomach cancer. In 2018, stomach cancer saw 7245 new cases and 6806 fatalities [14]. Geographical regions, socio-cultural groups, and economic sectors all have different incidence and fatality rates [15]. The risk for anastomotic leak, which is estimated to be 2.7%, does not seem to rise with the use of double staples [16]. German inventor Dr. H. Friedrich created the first stapling tool with a removable, preloaded staple cartridge in 1934. The first fully disposable, single-patient-use mechanical stapler was introduced by Ethicon in 1976, and titanium eventually replaced stainless steel as the primary staple component in 1989 [13]. Stomach cancer is one of the five most common cancers in Bangladesh. All age groups had a 9139 percent 5-year prevalence of stomach cancer. In 2018, stomach cancer saw 7245 new cases and 6806 fatalities [14]. Geographical regions, socio-cultural groups, and economic sectors all have different incidence and fatality rates [15]. The risk for an anastomotic leak, which is estimated to be 2.7%, does not seem to rise with the use of double staples [16].

CONCLUSION

This study concluded that the ease and speed with which surgical staplers may be used make them the favored choice. They promote blood flow through anastomoses,

lessen injury, necrosis, and edema, and the amount of anastomotic leakage is often modest.

REFERENCE

1. Sitarz R, Skierucha M, Mielko J, Offerhaus GJA, Maciejewski R, Polkowsk WP. Gastric cancer: epidemiology, prevention, classification, and treatment. *Cancer Manag Res.* 2018;10(1):239–48.
2. Rahman R, Asombang AW, Ibdah JA, Rahman R, Asombang AW, Ibdah JA. Characteristics of gastric cancer in Asia. *World J Gastroenterol.* 2014;20(16):4483–90.
3. Pourhoseingholi MA, Vahedi M, Baghestani AR. Burden of gastrointestinal cancer in Asia; an overview. *Gastroenterol Hepatol from Bed to Bench.* 2020;8(3):19–27.
4. Weledji EP. The principles of the surgical management of gastric cancer. *Int J Surg Oncol.* 2017;2(7):e11.
5. Bausys R, Bausys A, Vysniauskaite I, Maneikis K, Stratilatovas E, Strupas K. Surgical treatment outcomes of patients with T1-T2 gastric cancer: does the age matter when excellent treatment results are expected? *World J Surg Oncol.* 2018;18(1):1–9.
6. Seo SH, Kim KH, Kim MC, Choi HJ, Jung GJ. Comparative Study of Hand-Sutured versus Circular Stapled Anastomosis for Gastrojejunostomy in Laparoscopy Assisted Distal Gastrectomy. *J Gastric Cancer.* 2012;12(2):120–5.
7. Murata Y, Tanemura A, Kato H, Kuriyama N. Superiority of stapled side-to-side gastrojejunostomy over conventional hand-sewn end-to-side gastrojejunostomy for reducing the risk of primary delayed gastric emptying after subtotal stomach-preserving pancreaticoduodenectomy. *Surg Today.* 2017;47(8):1007–17.

8. Shahzad HK, Khan MA, Bokhari SG, Durrani AZ, Asif M, Khan IU, et al. Comparative Evaluation Of Conventional Method And Stapled Suture Technique For Intestinal Anastomosis In Dogs. *J Anim Plant Sci.* 2016;26(6):1614–9.
9. Maatooq AM, Ssam M. Comparative Study Between Stapler and Hand Sewing in Gastrointestinal Anastomosis. *Basrah J Surg.* 2017;23(2):21–5
10. Bae JM. Body mass index and risk of gastric cancer in asian adults: A meta-epidemiological meta-analysis of population-based cohort studies. *Cancer Res Treat.* 2020;52(2):369–73.
11. Shahzad HK, Khan MA, Bokhari SG, Durrani AZ, Asif M, Khan IU, et al. Comparative evaluation of conventional method and stapled suture technique for intestinal anastomosis in dogs. *J Anim Plant Sci.* 2016;26(6):1614–9.
12. Singha JL, Haq Z, Majid M, Taher MA. Stapled Versus Hand-Sewn Anastomosis in Colorectal Cancer Surgery: A Comparative Study. *J Surg Sci.* 2019;19(1):8–16.
13. Kuthe A, Haemmerle A, Ludwig K, Falck S, Hiller W, Mainik F, et al. Multicenter prospective evaluation of a new articulating 5-mm endoscopic linear stapler. *Surg Endosc.* 2016;30(5):1883–93.
14. Globocan. The Global Cancer Observatory: Bangladesh. Vol. 906. 2018.
15. Maconi G, Manes G, Porro GB, Maconi G, Manes G, Porro GB. Role of symptoms in diagnosis and outcome of gastric cancer. *World J Gastroenterol.* 2008;14(8):1149–55.
16. Griffen FD, Knight CD Sr, Whitaker JM, Knight CD Jr. The double stapling technique for low anterior resection. Results, modifications, and observations. *Ann Surg.* 1990; 211:745–751; discussion 751-752.