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Evaluation of the Anastomotic Leakage Following Linear Cutting Stapling Device Gastro-Jejunostomy

Dr. Shifat Tanjila[1*], Dr. A M Fasiul Alam[2], Dr. Nurus Safa Mahdi[3], Dr. Mahbuba Hasanah[3]

[1]Assistant Professor, Department of General Surgery, Universal Medical College Hospital ltd., Dhaka, Bangladesh
[2]Assistant Professor, Department of Orthopaedic Surgery, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh
[3]Intern Doctor, Department of General Surgery, Universal Medical College Hospital ltd., Dhaka, Bangladesh

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***Corresponding author:** Dr. ShifatTanjila
Assistant Professor, Department of General Surgery, Universal Medical College Hospital ltd., Dhaka, Bangladesh. Email: verturevele@gmail.com

Abstract **Original Research Article**

Background*:** 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**.** ***Objective*:** The objective is to evaluate the anastomotic leakage following linear cutting stapling device gastro-jejunostomy. ***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 analysed using a computer programme SPSS 23.0 version.Result*:** Total 20 patients were enrolled in this study with mean age of 57.60±6.83 years. About 60% of the respondents were male. The mean BMI of the respondents was 22.07±2.72. About 85% of the respondents had normal BMI and about 5% had DM, 10% had HTN and 5% had liver disease. Regarding tumor characteristics80% tumor location was in middle Also 50% had T1a stage followed by T1b (40%), T2 (10%) and T3 (0%) further 90% had N0 stage followed by N2 (5%) and N3 (5%). About 5% of the respondents had Anastomotic hemorrhage, Anastomotic leakage and needed blood transfusion respectively. ***Conclusion***: As the overall rate of anastomotic leakage was 5% so it can be said that the rate is relatively low.

Keywords: Gastric cancer (GC), BMI, DM, HTN.

INTRODUCTION

Gastric cancer is currently one of the most prevalent neoplasms and the fourth leading cause of cancer-related death worldwide [1]. Environmental and genetic variables both play a role in the development of gastric cancer (GC) [2]. Geographical regions, socio-cultural groups, and economic sectors all have different incidence and fatality rates [3]. Prevalence rates have been quite high in developing Asian nations like Bangladesh, India, Thailand, and Vietnam, at 92%, 81%, 74%, and 75%, respectively [4]. At the time of diagnosis, the majority of cases of GC have distant metastasis, which is associated with a poor prognosis and a reported 5-year survival rate of less than 30% in most series [5]. The major and only curative therapy option for GC is surgery. The stage of the disease and the caliber of surgery are the two most significant determinants of survival rates following corrective surgery, while survival rates can vary depending on a number of other factors [7]. The primary tumor site determines the type of gastrectomy, with the resection margin set at a minimum of 5 cm from the palpable edge of the tumor. One of the most important elements in determining surgical outcome is the anastomotic technique [8]. 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, available time and equipment, contamination, and underlying pathology all affect the anastomotic procedure choice [9]. Circular ligators, clip appliers, endoscopic staplers, and other forms of staplers are among the several varieties utilized for anastomosis [10]. The availability of two staple heights for each size of stapler makes it simpler to join thick and thin tissues by anastomosis. Two double rows of titanium staples are placed into the linear cutting stapler, and tissue is simultaneously cut and divided between the two double rows [11].The aim

of the study is to evaluate the anastomotic leakage following linear cutting stapling device gastro-jejunostomy.

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.Patients Age: >18 years of age, histologically diagnosed as gastric carcinoma, fit for surgery and willing to participatewere included in the studyandPatients 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 pre-tested questionnaire with Purposive convenient sampling type of sampling technique. Total 20 patients were enrolled in this study 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 variable 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

The study was a Prospective observational study which was conducted in Department of Surgery, Dhaka Medical College& Hospital. Total 20 patients were enrolled in this study underwent Linear Cutting Stapling Device gastro-jejunostomy.

Table-1 shows that mean age of the respondents was 57.60±6.83 years. 75% of the respondents were >50 years.

Table 1: Distribution of the respondents by Age group (n=20)

Age group	n(%)
>50 years	15 (75)
≤50 years	5 (25)
Mean±SD	57.60±6.83
Total	**20(100)**

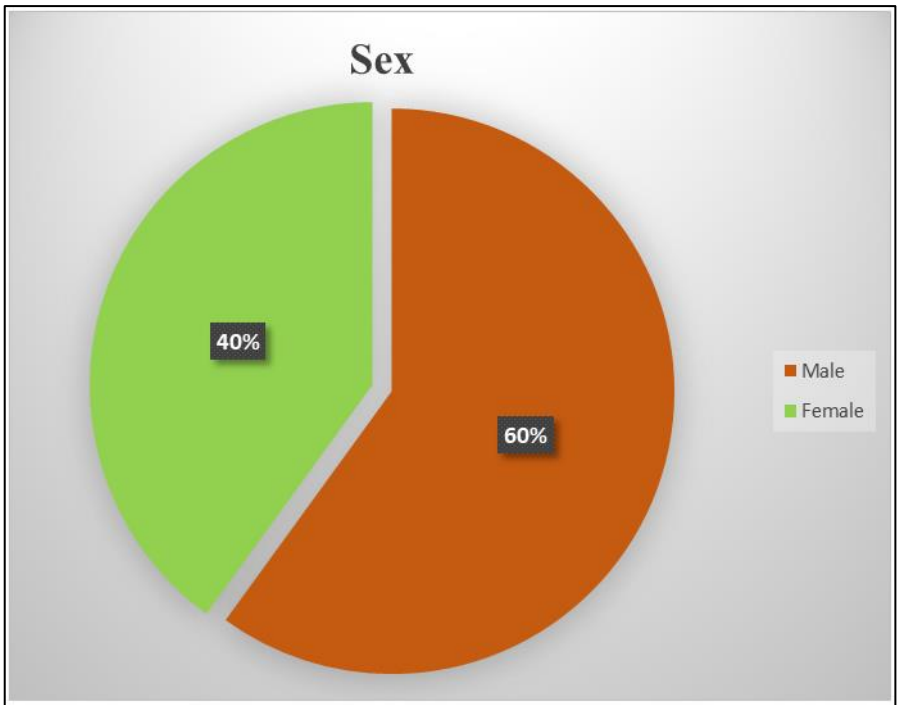

Figure 1: Distribution of the respondents by Sex (n=20)

Bar chart shows that 60% of the respondents were male and 40% were female.

Table-2 shows that the mean BMI of the respondents was 22.07±2.72. About 85% of the respondents had normal BMI,10% below normal and 5% had above normal.

Table 2: Distribution of the respondents by BMI (n=20)

BMI (kg/m^2)	n(%)
Below normal (>18.5 kg/m^2)	2 (10)
Normal (18.5 to 24.99 kg/m^2)	17 (85)
Above normal (≥25 kg/m^2)	1 (5)
Mean±SD	22.07±2.72
Total	**20 (100)**

Table-3 shows that about 5% had DM, 10% had HTN and 5% had liver disease.

Table 3: Distribution of the respondents by Comorbidities (n=20)

Comorbidities	n(%)
DM	2 (10)
HTN	17 (85)
Liver disease	1 (5)

Table-4 shows that among all the study participant's 80% tumor location was in middle where majority (45%) of the tumor was moderately differentiated followed by poorly differentiated (20%), well differentiated (25%) and signet ring cell (10%). Also 50% had T1a stage followed by T1b (40%), T2 (10%) and T3 (0%) further 90% had N0 stage followed by N2 (5%) and N3 (5%).

Table 4: Distribution of the study population by Tumor characteristics (n=20)

Tumor characteristics	n(%)
Tumor Location	
Lower	4 (20)
Middle	16 (80)
Histological type	
Well differentiated	5 (25)
Moderately differentiated	9 (45)
Poorly differentiated	4 (20)
Signet ring cell	2 (10)
T stage	
T1a	10 (50)
T1b	8 (40)
T2	2 (10)
T3	0 (0)
N stage	
N0	19 (90)
N1	0 (0)
N2	1 (5)
N3	1 (5)

Table-5 shows that the mean operating time was 15.8±2.4 minutes and mean time for anastomosis was 5.4±1.53 minutes. About 5% of the respondents had Anastomotic hemorrhage, Anastomotic leakage and needed blood transfusion respectively.

Table5: Distribution of the respondents according to operation related variables and anastomotic leakage (n=20)

	n(%)
Anastomotic hemorrhage	1 (5)
Anastomotic leakage	1 (5)
Needed blood transfusion	1 (5)
Operating time (min)mean±SD	15.8±2.4
Time for anastomosis (min)mean±SD	5.4±1.53

DISCUSSION

Present study was conducted to evaluate the anastomotic leakage following linear cutting stapling device gastro-jejunostomy. Total 20 patients were enrolled in this study underwent Linear Cutting Stapling Device gastro-jejunostomy.

In this study mean age of the respondents was 57.60±6.83 years. Among all majorities (75%) of the respondents were more than 50 years old. Male were predominant constituting 60% of the participants. Men are twice as likely as women to suffer stomach cancer, which most frequently affects elderly adults. Women are safeguarded from this form of inflammation by estrogen. There is a lower risk of stomach cancer in women who have a delayed menopause and increased fertility. Numerous earlier studies also noted that older persons, particularly men, made the majority of stomach cancer cases [13,14]. Similar findings also observed in a previous study by Seo*et al.*, where mean age of the patients was 60.4±12.0 years in stapler group and majority were male [13].In this study the mean BMI of the respondents was 22.07±2.72.About 85% of the respondents had normal BMI,10% below normal and 5% had above normal. According to a recent study, Asian adults' varying BMI classification for overweight and obesity may lead to significant heterogeneity, which may conceal a true link between BMI level and risk of stomach cancer in Asian adults [15]. The current study shows that about 5% had DM, 10% had HTN and 5% had liver disease. Previously other studies also found small number of comorbidities among the patients [13, 16, 17]. In this study among all the study participants 80% Tumor location was in middle where majority (45%) of the tumor was moderately differentiated followed by poorly differentiated (20%), well differentiated (25%) and signet ring cell (10%). Also 50% had T1a stage followed by T1b (40%), T2 (10%) and T3 (0%) 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 N0 stage was most commonly found [13].The current study revealed that the mean operating time was 15.8±2.4 minutes and mean time for anastomosis was 5.4±1.53 minutes. About 5% of the respondents had Anastomotic hemorrhage, Anastomotic leakage and needed blood transfusion respectively. As

the overall rate of anastomotic leakage was 5% so it can be said that the rate is relatively low.

CONCLUSION

The surgical staplers are preferred because of the easy and quickly they can be applied. They reduce damage, necrosis, and edema and encourage blood flow across anastomoses and the anastomotic leakage is relatively low. The main drawbacks of stapling devices are their higher cost and less widespread usage.

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