Short Term Outcome of Gastrectomy for Gastric Cancer

*Rahman MM,[1] Islam MN,[2] Rahman AM,[3] Fatema NE,[4] Parvin R,[5] Rahman MA[6]

Surgery is the mainstay of treatment of gastric cancers. But due to versatile causes there are some common early complications that are observed. There are two types of commonly performed gastric resection surgery for gastric cancer depending upon the anatomical location of lesion. These are total gastrectomy and lower radical or subtotal gastrectomy. Early post operative outcomes, to some extent, differ between two procedures. This observational study was carried out on fifty patients with carcinoma stomach operated in Bangabandhu Sheikh Mujib Medical University from March, 2016 to February, 2017 for their post-operative outcomes. Out of 50 patient 14% were from less than 50 years age group and rest 86% were from >50 yrs group. Of them 14% of patients were female and 86% of patients were male. Ninety six percent of patients presented with weight loss, 90% experienced anorexia, 42% persistent epigastric pain and 48% had vomiting. Fifty two percent of tumours were located in antrum and 30% were located in antrum and lower body. 94% of stomach cancers were adenocarcinoma, whereas 6% were gastrointestinal stromal tumor. Out of 50 patients 80% underwent lower radical gastrectomy and 20% underwent total gastrectomy. As early complications of gstrectomy, haemorrhage 6%, anastomotic failure 6% duodenal stump blowout 4%, surgical site infection 16%, weight loss 6%, anaemia 6%, dumping syndrome 7.5% and diarrhoea 6%. Post operative mortality was 8%. Early post operative complications are to some extent differ between two procedures. But Haemorrhage, anastomotic failure, duodenal stump leakage, surgical site infection are commonly observed complications in both modalities of gastrectomy.

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Introduction

Carcinoma of stomach has been described as the fourth most common malignancy and the second leading cause of cancer related death worldwide.[1] Surgery is the only curative treatment for gastric cancer. It is also the best palliation, and provides the most accurate staging. The goal of curative surgical treatment is resection of all tumor (i.e., R0 resection). Thus all margins (proximal, distal and radial) should be negative and an adequate lymphadenectomy performed.[2]

1. **Dr. Md. Mofizur Rahman, OSD, DGHS, Mohakhali, Dhaka. Study deputation, BSMMU, Dhaka dr.mofizurrahman1978@gmail.com*
2. *Dr. Molla Nazrul Islam, Associate Professor and Head, Department of Surgery, Shaheed Syed Nazrul Islam Medical College, Kishoreganj.*
3. *Dr. Ahmed Mizanur Rahman, Assistant Professor (Surgery), OSD, NICRH, Mohakhali, Dhaka.*
4. *Dr. Noor- E- Fatema , Junior Consultant (Gynae), 50 Bed Tongi Hospital, Gajipur.*
5. *Dr. Roksana Parvin, OSD, DGHS, Mohakhali, Dhaka. Study deputation, BSMMU, Dhaka.*
6. *Dr. Mohammad Aminur Rahman, Assistant Professor (Gynae), Shaheed Syed Nazrul Islam Medical College, Kishoreganj.*

** For correspondence*

Surgical technique and postoperative care for gastric cancer have significantly improved in recent years but complication rate after surgery for gastric malignancy has virtually remained unchanged during the last two decades.[3] Short term results of surgery for gastric cancer vary remarkably between Japan and Europe.[4] Complication rates 20-40% and hospital mortality rates of 10-30% are commonly reported in western series, which contrast a mortality rate 2-3% reported from Japan. Factors assumed to predispose to complications include technical skill of surgeon, operating time, malnutrition and age, prophylactic antibiotics as well as operative procedure performed. There is no difference regarding complications and mortality related to the extent of gastrectomy with D1 or D2 lymph node dissection, emphasizing the role of an trained surgical team.[5,6]

Many studies have shown that, in gastric cancer, the presence/absence of complications is an important factor that could influence the prognosis of patients following curative gastrectomy. In gastric surgery the most commonly reported complications were intra-abdomminal abscesses, wound infection, necrosis or dehiscence, diffuse peritonitis, sepsis, malnutrition, fluid and electrolytes disturbance, acute cholecystitis, pancreatitis,abdominal bleeding, and pneumonia. Less common ones are represented by: anastomotic leakage,fistula of duodenal stump, pancreatic fistula and chylous fistula.[7] In a study by Budisin N, et al., most frequent complications were anastomotic dehiscence(15.8%), post operative pyrexia 5.2%, pneumothorax 3.9%, hepatic necrosis 1.3%.[8] In this study we tried to find out the clinical outcomes of operations for gastric cancer. This can be used to compare the results of treatment and help to future refinement and may derive an improvement in healthcare in patients after gastrectomy.

Methods

This observational study was carried out on fifty patients with carcinoma stomach operated in Bangabandhu Sheikh Mujib Medical University from March, 2016 to February, 2017 for their post-operative outcomes. A checklist was prepared considering the variables such as age, sex, clinical findings, laboratory investigation including upper GIT endoscopy with biopsy, double contrast barium meal study in selected cases. Ultrasonogram of the whole abdomen and chest x-ray or contrast enhanced CT scan of abdomen and chest as staging investigations. After taking all preoperative preparation, including improvement of nutritional status, correction of anaemia (if present), fluid and electrolytes imbalance and assessment of anesthetic fitness patients were selected for operation. A plan for resection of the tumor, either curative or palliative, was based on the extent of the tumour and surgical procedure done accordingly. Any post operative complication was recorded and managed properly. All patients were followed up to one month of post operative period during hospital stay period and later in follow up clinic.

Result

Out of 50 patients 40% were from 51-60 years age group followed by 26% were from 41-50 and 61-70 years age group. The age range was from 35-81 years.

Table I: Distribution of patients according to age groups (n=50)

Age group (in years)	Frequency (%)
<40	1 (2%)
41 – 50	13 (26%)
51 – 60	20 (40%)
61 – 70	13 (26%)
>70	3 (6%)

Out of 50 patients 43 were male and 7 were female.

Table II**:** Distribution of patients according to sex groups (n=50)

Sex	No. (%)
Female	7(14)
Male	43(86)

Most of the patients presented with anorexia (90%) and weight loss (94%). Vomiting was present in 48%, persistent epigastric pain in 42% of patient, epigastric lumps in 2%.

Table III: Presenting complaints (n=50)

Clinical features	Frequency (%)
Weight loss	47 (94%)
Anorexia	45 (90%)
Vomiting	24 (52%)
Weakness	40 (80%)
Dehydration	20 (40%)
Dyspepsia	10 (20%)
Melaena	12 (24%)
Lump	11 (22%)
Haematemesis	9 (18%)

Out of 50 patients, the hypoalbuminemia in initial presentation were found in case of 78% patients. In the rest 22% cases the albumin level was within normal limit.

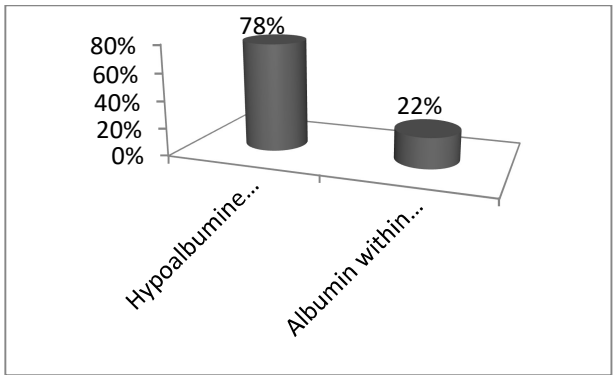

Figure 1. Hypoalbuminaemia at initial presentation (n=50)

Only 36% of patients had normal BMI at initial presentation and 62% people were underweight and 2% people were overweight at initial presentation. BMI range was 17.02-29.9.

Table IV: BMI of patients (n=50)

BMI	Frequency (%)
≤18 (underweight)	31 (62%)
18.1 – 24.9 (normal)	18 (36%)
25 – 29.9 (overweight)	1 (2%)

Among 50 patients 52% of the tumors were in gastric antrum, 30% were in lower body and antrum, 6% were in body, 6% were in cardia and body, 4% were in cardia and 2% were in cardia body and antrum. 62% tumour were moderately differentiated, 18% well differentiated and 20% were poorly differentiated. Out of 50 patients 94% of tumor was adenocarcinoma and 6% tumor was gastrointestinal stromal tumor (GIST). Regarding morphology of growth out of 50 patients 68% was ulcerative, 18% were ulceroproliferative and 14% growth was polypoid.

Table V: Tumour morphology and histopathological types (n=50)

Tumor morphology	Frequency (%)
Location	
Cardia	1 (2%)
Cardia and body	3 (6%)
Gastric antrum	40(80%)
Antrum and body	2 (4%)
Body	3 (6%)
Cardia, body and antrum	1 (2%)
Macroscopic features	
Ulcerative	34 (68%)
Ulceroproliferative	9 (18%)
Polypoid	7 (14%)
Grading	
Well differentiated	9 (18%)
Moderately differentiated	31 (62%)
Poorly differentiated	10 (20%)
Histopathological type	
Adenocarcinoma	47 (94%)
GIST	3 (6%)

Out of 50 patients 80% of patient underwent lower radical gastrectomy and total gastrectomy done remaining 20% of patients.

Table VI: Distribution of patients according to surgical procedure (n=50)

Name of operation	Frequency (%)
Total gastrectomy	10 (20%)
Lower radical gastrectomy	40 (80%)

Early post operative complications (irrespective of type of gastrectomy) were haemorrhage (6%), anastomotic failure (6%), duodenal stump leakage (4%), surgical site infection (16%). Moreover nutritional and functional sequelae include weight loss, anaemia, dumping syndrome and diarrhoea were 6%, 6%, 7.5% and 6%, respectively. Overall post operative mortality was 8%.

Table VII: Perioperative short term outcome of gastrectomy (n=50)

Short term outcomes	Total gastrectomy(n=10)	Lower radical gastrectomy (n=40)	Total (n=50)
Early complications			
Haemorrhage	-	3 (7.5%)	3 (6%)
Anastomotic failure	1 (10%)	2 (5%)	3 (6%)
Duodenal stamp leakage	-	2 (5%)	2 (4%)
Surgical site infection	1 (10%)	7 (17.5%)	8 (16%)
Nutritional and functional Sequelae			
Weight loss	1 (10%)	2 (5%)	3 (6%)
Anaemia	1 (10%)	2 (5%)	3 (6%)
Dumping syndrome	-	3 (7.5%)	3(7.5%)
Diarrhoea	1 (10%)	2 (5%)	3 (6%)
Post-operative death	1 (10%)	3 (7.5%)	4 (8%)

Discussion

Gastric cancer is generally a disease of the elderly, with average age of presentation being 70 years and a 2 to 1 male to female predominance.[9] In our study the incidence was 72% in > 50 years age group. Incidence in < 50 years age group was 28%; the peak incidence was in 51-60 years age group. In our study male to female ratio was 6:1.

The symptoms gastric cancers are non-specific and vague. When symptomatic patients experience epigastric pain and

discomfort and definitive symptoms such as weight loss or obstructive symptoms and metastases that often impede curative radical resection. In a review of 18,365 patients performed by the American College of Surgeons the common presentation of carcinoma stomach were weight loss in 66.6%, abdominal pain in51.6%, nausea/vomiting in 34.3%, anorexia in 32%, dysphagia in 26.1%, melaena in 20.2% and early satiety in 17.5% patients. Qurieshi MA et al., showed 35% patients reported weight loss, 76.5% had dyspepsia, 35.8% had anorexia and vomiting. On physical examination anaemia was found in 26%, ascites in 3% and epigastric mass in 4 % cases.[10] In our study, common presentations, irrespectiveof age and sex, were anorexia and weight loss.

Hypoalbuminaemia was present in 78 % cases in our study. According to Liu N. et al hypoalbuminaemia is associated with worse survival in patients with cancer in the lower stomach and adjuvant therapy should be considered patients with a low albumin level were associated with a higher postoperative recurrence rate.[11]

In our study higher BMI (>25 kg/m^2) was present only in 2 % of cases. BMI <18 kg/m^2 was present in 62% cases. With regard to comorbidities present prior to surgery, higher BMI patients are more likely to have heart disease, type 2 diabetes, and hypertension than lower BMI patients. Compared with BMI< 25 kg/m2, higher BMI patients had longer operative time and more surgery-related mordbidity.[12] We found a single case of carcinoma of stomach with chronic obstructive pulmonary disorder (COPD) and extreme medical precaution was taken for this particular case but the outcome was uneventful in short term span.

Distal stomach was the most common site of the lesion (52%) and the proximal stomach was the least common site of involvement. Incidence of proximal gastric cancer is increasing (presently 50%) andthat in distal stomach is decreasing (presently 41%) in Western countries.[13]Afridi SP et al., reported that the growth was found at the cardiac end in 33%, at pylorus and antrum in 40%, linitis plastica in 13.3% patients, only body and body and pylorus were involved in 6.7% each.[14] The commonest histological type was adenocarcinoma (94%). Remaining 6% of cases were gastrointestinal stromal tumour (GIST).

In our study complications rate are more in the total gastrectomy group compared to the lower radical gastrectomy group. Even the mortality is 10% in total gastrectomy group while mortality is 7.5% in lower radical gastrectomy group.Mortality rate is 8%. Three (7.5% out of 40 patients) of them died as sequelae of duodenal stump blow out following lower radical gastrectomy and one patient (10% out of 10 patients) died as a consequence of anastomotic leakage following total gastrectomy during the hospital stay period.

Complications of total gastrectomy in gastric cancer reported among the authorsin the literature are very similar, varying due to the technique used or the conditionsof patients. The immediate most common postoperative complications arerespiratory illnesses, including atelectasis, between 12 and 20%, pneumonia by about 9%, respiratory failure 3% and pulmonary embolism 0.05%. Among the local complications abscess and wound infection 4% and 3% respectively. Other less frequent complications are venous thrombosis of lower limbs in 2%, 1% in subphrenic abscess and acute pancreatitis in 1% of cases.[15]Fistulas of the esophagus-jejunal anastomosis are the most concern to the

surgeon, since its incidence is quite high in literature, ranging from 10 to 22%, significantly increasing the length of hospitalization time and causing considerable morbidity and mortality. The others-duodenal, jejuno-jejunal and pancreatic fistulas range from 2% to 5%, are easier to handle and have lower morbidity. The most common complication is surgical site infection which was more frequent in the lower radical gastrectomy group. Other complications we observed are, haemorrhage (suture line) 6%, anastomotic failure 6%, duodenal stump blowout 4%. Besides, weight loss 6%, anaemia 6%, dumping syndrome 7.5%, diarrhoea 6%. The frequency of duodenal stump leakage was more in the lower radical gastrectomy group (Five percent out of 40 patients).

All of the gastrectomies in our study were performed by open approach. Laparoscopic and robotic gastrectomies have been adopted rapidly despite lack of evidence concerning technical safety and controversy regarding additional benefits. Laparoscopic and robotic gastrectomy have overall complication and mortality rates similar to those of open surgery, but anastomotic leaks are more common with the minimally invasive techniques.[16] It was an observational study in a short duration and sample size was small. So the study does not proclaim the scenario of whole country.

Conclusion

Haemorrhage, anastomotic failure, duodenal stump leakage, surgical site infection are commonly observed complications in both modalities of gastrectomy. Mortality and morbidity of gastrectomy in this study are comparable to that of other Western studies. A multicentered double blinded study including the divisional/ tertiary hospitals of whole Bangladesh can reveal the real picture.

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