

## THE CLINICAL AND PEROPERATIVE FINDINGS OF CARCINOMA STOMACH : 61 OPERATED CASES

S M Shafiul Azam Chaudhury<sup>1</sup> Md Margub Hussain<sup>2</sup> Md Atiqul Islam<sup>3</sup>

### Abstract

Gastric cancer is the second most frequent malignant disease of the digestive system; right after colorectal cancer. It is multifactorial disease and symptoms of this disease are highly nonspecific. Surgical resection is the principal treatment for gastric cancer aimed at cure.

Total 61 operated cases were included in this study from 2002 to 2003 at Chittagong Medical College Hospital. Peak age incidence was 41-60 years. Most common presenting symptom was pain in abdomen. 52.46% cases were smokers. Anemia was present in 83.61%(51) cases and visible peristalsis present in 23 (37.70%) of cases. Accuracy of endoscopy was 95.08% whereas Ba-meal was 60.78%. 03 (04.92%) cases endoscopist failed to diagnosed ca-stomach. Histologically poorly differentiated carcinoma was present in 45% of cases. Antrum 48 (78.69%) was the commonest site of malignancy. More than half cases were T4 stage and 27.87% (17) cases had N1 status. Resection was not possible in 36.07% cases and distal partial gastrectomy done in 47.54% cases. Palliative gastrojejunostomy was done in 37.70% cases.

### Introduction

Gastric cancer is the second most frequent malignant disease of the digestive system; right after colorectal cancer<sup>1</sup>. The overall survival rate is 15-20%<sup>2</sup>. Two-thirds of the cases occur in developing countries. Incidence rates in men are twice those in women, in both low-risk and high risk areas<sup>3</sup>.

Gastric cancer is a multifactorial disease. Helicobacter seems to be principally associated with carcinoma of the body, stomach and distal stomach rather than proximal stomach. Carcinoma is associated with cigarette smoking and dust ingestion from a variety of industrial process<sup>4</sup>.

The early symptomatology of gastric cancer is highly nonspecific and, consequently, very hard to detect in the early stages, when the possibilities for treatment are the best. Among the pathological points considered of clinical and prognostic significance the most important is depth of penetration of stomach wall by the lesion. Others are histological type, lymph node involvement, and location of the primary site. When the lesion in the stomach is limited to the mucosa and submucosa without penetration of muscularis propria it is referred to as early gastric carcinoma<sup>5</sup>.

The prognosis of surgically resected gastric carcinoma is influenced significantly by the presence of lymph node metastases. Definitive staging is performed by pathological analysis of the resected specimen. The fifth edition of the Union International Contra la Cancram (UICC)/American Joint Committee on Cancer(AJCC) tumor node metastases (TNM) staging system for gastric cancer uses available clinical, radiological, endoscopic or surgical means to assess the extent of malignant disease across three main criteria: the size of the primary lesion and its invasion into tissues, the presence and extent of lymph node metastases, and the presence of distant or nonlymphoid tissue metastases<sup>6</sup>. Surgical resection is the principal treatment for gastric cancer aimed at cure. For western patients who cannot be cured, several studies have shown that resection may be beneficial in terms of survival<sup>7-10</sup>, although this is strongly influenced by the extent of the tumor and metastasis<sup>11</sup>. This survival advantage, however, may be at the cost of increased postoperative morbidity, prolonged hospital stay and high mortality rates, and the quality of life in these patients may be reduced rather than improved<sup>12, 13, 14</sup>.

The aim of this study is to pre and per-operative staging and respectability of the tumor during operative treatment. It also includes the symptom palliation either in the form of gastric resection or bypass operation.

### Materials and methods

The study was carried out in the Department of General Surgery, Chittagong Medical College

1. Resident Surgeon  
Comilla Medical College Hospital, Comilla.
2. Professor of Surgery  
Chittagong Medical College Hospital, Chittagong.
3. Assistant Professor of Surgery  
Sir Salimullah Medical College, Dhaka.

Correspondence : Dr S M Shafiul Azam Chaudhury

Hospital, Chittagong. The study was undertaken during May, 2002 to December 2003. Eligible subjects were those admitted with diagnosis of carcinoma stomach irrespective of any age and sex. Data were collected prospectively.

Cases were selected randomly following the inclusion and exclusion criteria. Evaluation of patients was based on history, physical examinations and investigations.

**A) Inclusion criteria :**

- 1) Patients of either sex admitted with histologically confirmed carcinoma stomach.
- 2) All operable cases of carcinoma stomach.

**B) Exclusion criteria:** All inoperable cases of carcinoma stomach.

Operability were judged on the basis of clinical and investigation findings. The operative procedure was total gastrectomy, proximal and distal partial gastrectomy, subtotal gastrectomy and gastrojejunostomy based on findings at laparotomy.

Ethical clearance of the study was obtained for ethical review committee of Chittagong Medical College. On ethical consideration the patients were first explained about the treatment procedures with their possible outcome. Informed written consent was taken from them. The study did not involve any additional investigations as well as any economic burden to the patients.

Data was collected in a form regarding clinical presentation, clinical examination, investigations, preoperative and postoperative evaluation and only those patients who gave consent were included in the study. Ultrasonography was done to detect secondary deposits in liver and presence of ascites. Radioisotope scan was scan of liver and bone was obtained in relevant cases. Results of all laboratory and imaging tests were recorded accordingly.

All patients were operated under general anesthesia. During laparotomy tumor size, serosal involvement, hepatic metastasis, lymph node involvement including group, size, and number, peritoneal metastasis and ascites were recorded in detail preoperatively. Specimen was obtained in every operated case for histopathological reconfirmation.

All post-operative patients were monitored very carefully and complications were recorded. All the patients got 1st cycle chemotherapy post-operatively as per advice oncologists. On discharge every

patient was requested to appear in follow up clinic for physical examination and further course of chemotherapy as determined by oncologist.

All relevant information's were recorded methodically and meticulously as far as possible in predesigned data sheet for each individual case.

Statistical analysis was done by manually and using computer statistical software package SPSS-12.0 for windows2000 (SPSS-Statistical Programme for Scientific Study). Unpaired 't' tests were done where applicable. P value less than 0.05 was considered as significant by setting the minimal level of statistical significance at 5%.

**Results**

About 61 cases were included in this study. More than 60% cases were age between 41 to 60 years. The results were 36.06% in 41- 50 years and 24.59% in 51- 60 years.

**Table I :** Age incidence in patients of carcinoma stomach.

Age (years)	Number of cases	Percentages	Mean age
21-30	03	4.92	52.066
31-40	08	13.11	
41-50	22	36.06	
51-60	15	24.59	
61-70	12	19.67	
71-80	01	1.00	

The commonest presentation of carcinoma stomach was pain in abdomen which was 45(73.77%) cases. Other remarkable presentations were vomiting, 44(72.13%) cases and anorexia in 43(70.49%) cases. Lump was present in 19(31.15%) cases.

**Table II :** Presentations of carcinoma stomach in patients of Ca-stomach.

Symptoms	Number of cases	Percentages	Significances
Anemia	23	37.70	0.055
Pain in abdomen	45	73.77	0.000
Vomiting	44	72.13	0.001
Lump	19	31.15	0.003
Anorexia	43	70.49	0.001
Generalized weakness	38	62.295	0.055
Others	16	26.23	0.000

Various risk factors were responsible for carcinoma stomach. Smoking had the commonest association

which was 52.46% (32) of cases. Another important risk factor was smoked & salted fish. It was about 24 (39.34%) of cases.

**Table III :** Risk factors in patients of Ca-stomach.

Factors	Number of cases	Percentages
Smoking	32	52.46
Meat & fish	11	18.03
Smoked & Salted fish	24	39.34
Vegetables	08	13.11

Here anemia was present in 51 (83.61%) cases. Palpable lump was present in 37 (60.66%) of cases. Other findings were visible peristalsis and enlarged liver which was 23 (37.70%) and 02 (03.28%) of cases.

**Table IV :** Physical Examination findings in patients Ca-stomach.

Findings	Number of cases	Percentages	Significances
Anemia	51	83.61	0.000
Jaundice	02	03.28	0.000
Dehydration	15	24.59	0.000
Palpable lump	37	60.66	0.096
Visible peristalsis	23	37.70	0.055
Ascites	09	14.75	0.000
Liver	02	03.28	0.000

31 (60.78%) cases could be diagnosed by Ba-meal investigation. The negative results was 20 (39.22%) of cases. Endoscopic findings were positive in 58 (95.08%) of cases and negative in only 03 (04.92%) cases.

**Table V :** Investigation findings in patients with Ca-stomach

Investigation		Number of cases	Percentages	Significance
Ba-meal	Positive	31	60.78	0.123
	Negative	20	39.22	
	Total	51	100	
Endoscopy	Positive	58	95.08	0.000
	Negative	03	04.92	
	Total	61	100	

Endoscopic biopsy reports showed that majority 27 (45%) cases were poorly differentiated and 13 (21.67%) cases were moderately differentiated. 10 (16.67%) cases had inconclusive findings.

**Table VI :** Biopsy reports in the stomach in 61 cases of Ca-stomach.

	Number of cases	Percentages
Well differentiated	08	13.33
Moderately differentiated	13	21.67
Poorly differentiated	27	45
Diffuse	02	03.33
Inconclusive	10	16.67
Total	60	100

The most common site of carcinoma stomach was at the antrum which was about 48 (78.69%) of cases. 04 (6.56%) cases were found at cardia.

**Table VII :** Site of growth in the stomach in 61 cases of Ca-stomach.

Site	Number of cases	Percentages	Significance
Cardia	04	06.56	0.000
Body	09	14.75	
Antrum	48	78.69	
Total	61	100	

Tumor status, T4 found in 32 (52.46%) of cases. No cases were present in T1 status. T2 & T3 status were 10 (16.39%) & 19 (31.15%) of cases respectively.

**Table VIII :** Tumor status (TNM classification of lesion in 61 patients of Ca-stomach.

Tumor	Number of cases	Percentages	Significance
T1	00	00	0.002
T2	10	16.39	
T3	19	31.15	
T4	32	52.46	
Total	61	100	

17 (27.87%) cases were in N1 Stage. N4 status was in 16 (26.23%) cases. 08 (13.11%) cases had N0 stage.

**Table IX :** Nodal status as per-operative findings.

Node	Number of cases	Percentages	Significance
N0	08	13.11	0.052
N1	17	27.87	
N2	15	24.59	
N3	05	08.19	
N4	16	26.23	
Total	61	100	

Resection was possible in 39 (63.93%) of cases and 22 (36.07%) cases were not.

**Table X** : Resectibility of stomach lesion.

Resection	Number of cases	Percentages	Significance
Possible	39	63.93	0.030
Not possible	22	36.07	
Total	61	100	

The commonest operation was gastrojejunostomy which was 23(37.70%) of cases. Total gastrectomy was done in 03(04.92%) and proximal partial gastrectomy in 04(06.56%) of cases.

**Table XI** : Types of operation performed in 61 cases of Ca-stomach.

Operation	Number of cases	Percentages	Significance
Total	03	04.92	0.000
Proximal partial	04	06.56	
Distal partial	29	47.54	
Distal subtotal	02	03.28	
Gastrojejunostomy	23	37.70	
Total	61	100	

### Discussion

Total 61 cases were included in this study. All were operated and peroperative staging done. The study was done in Chittagong Medical College Hospital. It is the fourth most common cancer in Chittagong, which was about 6.96%<sup>15</sup>.

The age distribution revealed peaks in three age groups: 41-50, 51-60, and 61-70 years. The incidences were 36.06%, 24.59% and 19.67% of cases. Another study showed that the peak incidences in 50-59, 60-69 and 70-79 years age group<sup>16</sup>.

The most common presentation was pain in abdomen, which was about 45(73.77%) of cases. The next presentation was vomiting. Vomiting was present in 72.13% of cases. Anorexia and generalized weakness were presenting 70.49% and 62.29% of cases respectively. Other study found pain in abdomen was 95% of cases and others were not similar to this study<sup>1</sup>.

The etiology of gastric cancer is multifactorial. The important risk factors of carcinoma stomach were smoking and smoked & salted fish. The findings were 52.46% and 39.34% of cases. Smokers had a twofold increased risk of gastric cancer compared with nonsmokers. The consumption of dry fish once every 2 weeks was found to increased risk 12 fold<sup>17</sup>. The low prevalence of H.pylori infection in

this population of gastric cancer patients could indicate that other risk factors such as smoking, excessive alcohol consumption and diet high in salted, smoked or preserved foods in patients of low socioeconomic status may play a dominant role in the Jamaican population<sup>18,19</sup>.

All patients were examined carefully. The important findings were anemia, palpable lump. The findings were 83.61% (51), 60.66 % (37) of cases. Visible peristalsis was present in 37.70 % (23) of cases. It indicates that the patients presents with gastric outlet obstruction. Anemia present in 40% of cases<sup>20</sup>. Jaundice and palpable liver presents in only 02 cases. It indicates that the disease metastasis to the liver. Ascites jaundice and palpable mass indicated the extensive and non-resectable lesion<sup>21</sup>.

Ba-meal is the important investigation for diagnosis of carcinoma stomach. Ba-meal done in 51 cases where 31(60.78%) cases could be diagnosed by this method. 20 (39.22%) cases failed to diagnose this malignancy. It may be as much as 80% in meticulously done barium x-ray series, <sup>20</sup> and other series showed 70-80%<sup>22</sup>. If the lesion size between 5-10 mm. the accuracy rate was 75%<sup>23</sup>. Incontrast endoscopy can diagnosed 58 (95.08%) of cases. Numerous reports had demonstrated that its accuracy of diagnosis was greater than 95%<sup>21, 23, 24,25,26,27</sup>. Endoscopic biopsy report was available in 60cases out of 61 cases. Histopathology report of one patient was lost. Poorly differentiated adenocarcinoma was present in 45 % (27) of cases. Well differentiated, moderately differentiated and diffuse carcinoma were present in 08 (13.33%), 13(21.67%) and 02 (3.33%) of cases respectively. 10 (16.67%) cases histopathologist failed to grading the malignancy. Another study showed that well differentiated, moderately differentiated, poorly differentiated adenocarcinoma and others were 20.2%, 42.2%, 10.6% and 5.6% of cases<sup>28</sup>.

The commonest site of carcinoma stomach was antrum. It was about 78.69 % (48) cases. 04 (6.56%) and 09(14.75%) of cases were presented in the cardia and body. Another study showed that antrum was the commonest (56%) and these were followed by body tumors (17.6%) and cardia (7.9%)<sup>16</sup>.

No patients were in T1 stage. About half 32(52.46%) of the cases were in T4 stage. The T3 was in 31.15 % (19) cases. Zhang et al. found the depth of cancer invasion 7.3%, 17.6%, 49.5% and 25.6% in T1, T2, T3 and T4 stages. They analyzed 1498 cases<sup>28</sup>.

13.11 % ( 08) were in N0 stage. Nodal positivity was 86.23 % ( 53) of cases. N3 and N4 stage disease were in 05(8.19%) and 16(26.23%) of cases. Lymphatic spread has an important implication in management of gastric cancer <sup>29,30</sup>. Other study findings were 10.5% in N0 stage, 17.4% in N1 stage, 47.4% in N2 stage and 24.7% in N3 stage disease<sup>28</sup>. Here N4 stage disease was absent.

Resection was possible in 63.93 % ( 39) of cases where resection was not possible in 36.07 % ( 22) cases. About 85% of patients are operable and in 50% is amenable to resection; of the resectable lesions, half are potentially curable. Palliative resection is usually indicated if the stomach is still movable and life expectancy is estimated to be more than 1-2 months. Palliative gastrectomy is usually performed to remove antral lesion and prevents obstruction and bleeding <sup>4, 20</sup>.

Total gastrectomy was done in 03(4.92%) of cases. Other form of surgery was proximal partial gastrectomy, distal partial, distal subtotal gastrectomy and gastrojejunostomy. The findings were 06.56% (04), 47.54 % (29), 03.28 % (02) and 37.70 (23) cases respectively.

#### Conclusion

61 operated cases were included in this study and peroperative staging done in all cases. The peak age incidence was 41 - 50 years. The next incidence was 51 - 60 years.

Carcinoma stomach presented with pain in abdomen, vomiting and anorexia. Dyspepsia was present in 37.70% of cases. The symptoms were so much prominent which carried the patient to hospital. Other presentations were not so prominent.

Smoking and smoked & salted fish were the recognized risk factors for carcinoma. The findings were 52.46% and 39.34%. The percentage will be more because males are only smoker in our country but females are not. Smoked and salted fish were more popular food in sea belt areas in our country. They used to take this food almost everyday. Here the percentage was less because they thought that this was not remarkable diet for mention.

Anemia was present in 83.61% of cases and palpable lump was present in 60.66% of cases. It indicates that patients came to hospital at late when the symptoms became prominent. Visible peristalsis was present in 37.70% of cases. It indicates that the growth causing outlet obstruction.

Endoscopy is superior to Ba-meal study for diagnosis of carcinoma stomach. The accuracy rate of endoscopy was more than 95% where in Ba-meal was only 60%. Endoscopic biopsy revealed that poorly differentiated adenocarcinoma was present in 45% cases. 10 cases were inconclusive where histopathologist failed to grading the disease. Moderately and well differentiated adenocarcinoma was 21.67% and 13.33% cases respectively.

The commonest site of carcinoma stomach was antrum, about 78.69%. 04 cases present at the cardia and body presents 09(14.75%) of cases. No cases were present in early stage. All patients of gastric malignancy came to hospital with advanced stage. The T2, T3 & T4 tumor status were in 16.39%, 31.15% and 52.46%. More than 85% had lymph node positive. Only 13.11% had no lymph node involvement. More than 26% had N4 disease.

Resectability of carcinoma stomach assessed pre and per-operatively. Only 63.93% disease had resectability where 36.07% had not. Distal partial gastrectomy done in 47.54% of cases where gastrectomy done in 4.92% cases total. Proximal partial gastrectomy was done in 04 cases and gastrojejunostomy done in 23 (37.70%) cases.

#### Recommendation

Large scale study was required for further evaluation of this malignancy.

#### References:

1. Zlatic AV, Radojvic M , Ignjatovic N, Stojanovic M, Jeremic L. The role of pre-operative staging of Gastric Cancer in Planning radical surgical treatment, Facta Universitatis, Series: Medicine & Biology 2006; 13(1): 19-24.
2. Khan FA, Shukla AN. Pathogenesis and treatment of Gastric Carcinoma: "An update with brief review". Res Ther 2006; 2: 196-199.
3. Parvithran K, Doval DC, Pandey KK. Gastric cancer in India; International and Japanese Gastric Cancer Association , Gastric Cancer 2002 ; 5 : 240-243.
4. Primrose JN, Stomach and duodenum. In: Russell RCG, Williams NS, Bulstrode CJK, editor. Bailey and Love's short practice of surgery , 24th ed. London: International student edition, Arnold 2004; 1049-1051.

5. Antonioli DA. Current concept of carcinoma of the stomach. In: Appleman HD ( edition ). Contemporary issue in surgical pathology, vol.IV. Newyork: Churchill Livingstone. 1984;121.
6. Roder JD, Bottcher K, Busch R, Wittekind C, Hermanek P, Siewert JR. Classification of regional lymph node metastasis from gastric carcinoma. *Cancer* 1998; 82:621-631.
7. Bonzzetti F, Bonfranti G, Audisis RA, Doci R, Dossena G, Gennari L et al. Prognosis of patients after palliative surgical procedures for carcinoma of the stomach. *Surg Gynecol Obstet.* 1987;164: 151-154.
8. Hangstvedt T, Viste A, Eide GE, Soreide O. The benefit of resection in patients with advanced stomach cancer ; the Norwegian multicenter experience. *Norwegian stomach cancer trial. World J surg.* 1989;23:77-80.
9. Meijer S, Bakker OJ, Hoistma HFW, palliative resection in gastric cancer. *F Surg Oncol* 1983; 23: 77-80.
10. Monson JR, Donohue JH, Mellrath DC, Farnell MB, Ilstrup DM. Total gastrectomy for advanced cancer. A worthwhile palliative procedure. *Cancer* 1991; 68: 1863-1868.
11. Bonenkamp JJ, Sasako M, Hermans J, van de Velde CJH, Tumor load and surgical palliation in gastric cancer, *Hepatogastroenterology* 2001; 48: 1219-12 21.
12. Ouchi K, Sugawara T, Ono H, Fujiya T, Kamiyama Y, Kakugawa Y et al. Therapeutic significance of palliative operations for gastric cancer for survival and quality of life. *F Surg Oncol*, 1998; 69: 41-44.
13. Isosaki H, Okajima K, Kawashima Y, Yamada S, Nakata E, Nishimura J et al. Relative non-curative resection of gastric cancer: a review of 106 cases. *Fpn F cancer clin* 1993; 39: 657-662.
14. Maekawa S, Saku M, Machara Y, Sadanaga N, Ikejiri K, Anai H, et al. Surgical treatment for advanced gastric cancer. *Hepatogastroenterology* 1996; 43: 178-186.
15. Alam AMMS, Chowdhury T, Anwar S, Jaigirder MSU, Hossen MMH. Cancer in Chittagong: A cancer based study, *Journal of Chittagong medical college teacher's association*; 1994; 5(S2): 1-25.
16. Plummer JM, Gibson TN, McFarlane MEC, Hanchard B, Martin A, MacDonald AH. Clinicopathologic profile of gastric carcinomas at the university hospital of the west indies, west Indian med. J. V. Mona dez. 2005 ; 54 : 6.
17. Rao DN, Ganesh B, Dinshaw KA, Mohanhas KM. A case control study of stomach cancer in Mumbai, India. *Int.J cancer* 2002; 99:727 - 731.
18. Blot WJ, Devesa SS, Knudler RW, Fraumeni JZ Jr. rising incidence of adenocarcinoma of the oesophagus and gastric cardia. *JMMA* 1991; 265: 1287 - 1289.
19. Baker DJ, Coggon D, Osmand C, Wickham C. poor housing in childhood and high rates of stomach cancer in England and Wales. *BJ cancer* 1990; 61: 575 - 578.
20. Doherty GM, Way LW. Stomach and duodenum, Doherty editor in current surgical diagnosis and treatment ; Internationaledition; a lange medical book, 12th edition; 2006; 533-534.
21. Alexander HR. D Kelsen DG. Teeper JC. Cancer of the stomach, cancer principles & practice of Oncology 5th edition. Lippincott-Raven Publishers 3: 1021-1049.
22. Bomford CK; Sherriff. SB; Kaunkler IH; Miller. H Walter and Miller's Textbook of Radio therapy, Radiation physics, therapy and oncology, 5th ed. 366-367.
23. Kurihara M, Shirakabe H, Yarita T, Ijumi T, Miyasaka K, Maruyama T, Kobayasi S. Diagnosis of small early gastric cancer by X-ray, endoscopy and biopsy; *cancer detect prev.* 1981; 4: 377.
24. Kumar CR . Robbins VL. editor, Pathological Basis of Diseases, 6th ed. Philadelphia: WB Saunders Company, 1999: 798-802.
25. Townsend CM. Gastric editor , Sabiston Textbook of surgery, The biological basis of modern surgical practice 16th ed WB Saunders & Company. 2001; 855-872.
26. Hatfield Are, Stavin G, Segal AW , Levi AJ, Importace of the site of endoscopic gastric biopsy in ulcerating lesions of the stomach. *Gut* 1975; 16: 884.

27. Dekker W, Tytgat Gn, Diagnostic accuracy of fibroendoscopy in the detection of upper intestinal malignancy; a follow up analysis, *gastroenterology* 1997;73:710.
28. Zhang XF, Huang CM, Lu HS, Wu XY, Wang C, Guang GX, Zhang JZ, Zhang CH. Surgical treatment and prognosis of gastric cancer in 2613 patients, *World J Gastroenterol* 2004;10(23): 3405 - 3408.
29. Murakami K, Early cancer of the stomach. *World J. sug* 1979;3:685 - 692.
30. Hoki K. Nakame Y.Yamamoto M, Surgical strategy for early gastric cancer ,*British J. surgery* . 1990;77:1330-1334.