
**A Retrospective Study of Clinicopathological Profiles of Proximal
Gastrectomy Vs Distal Gastrectomy in Carcinoma Stomach and Its Incidence
in our Population**

Dr Magesh kumar J¹, Dr V Naveen Kumar², Dr P Suresh babu³, Dr K S Ravishankar⁴

^{1,2,3,4} faculty in department of general surgery , sree balaji medical college nad hospital.

¹ Asst Professor, department of general surgery, sree balaji medical college and hospital

² Post Graduate, department of general surgery, sree balaji medical college and hospital

³ Asso Professor, department of general surgery, sree balaji medical college and hospital

⁴ Professor, department of general surgery, sree balaji medical college and hospital

Sree balaji medical college and hospital, chennai-44, Tamilnadu,India.

Abstract

Adenocarcinoma of stomach has been a leading cause of cancer death worldwide through most of the twentieth century. The incidence of this disease has decreased in many parts of the world, principally because of the change in diet, food preparation and other environmental factors. Due to lack of well defined risk factors and specific symptomatology have contributed to the late presentation of this disease in our country. In Japan, where gastric cancer is endemic, general population was screened as a whole and was diagnosed at an early stage, which is reflected in the excellent 50% five year survival rate.

Though the incidence of gastric carcinoma has decreased dramatically over the last century the decline has been limited to the cancers below the gastric cardia. The number of newly diagnosed patients with proximal gastric and gastroesophageal adenocarcinoma has markedly increased since the mid 1980's. In this study we have compared the clinicopathological profiles of patients with proximal and distal gastric adenocarcinoma. It is a retrospective observational study done on patients with gastric adenocarcinoma who were admitted at the Department of General Surgery of Sree Balaji Medical College And Hospital, Chennai during the period between May 2016 to April 2018.

We included all the patients with adenocarcinoma of stomach and excluded other malignancies of stomach. A total of 65 cases were taken up and factors like presenting illness, past history of ulcer treatment, gastric surgery and personal history along with Upper GI endoscopies , biopsies, CT abdomen and also USG of abdomen were obtained and studied. In our study we found that the incidence of distal gastric adenocarcinoma is more frequent in our population than the proximal lesions, which is of more incidence in Western Hemisphere.

We also found that the Males outnumbered the females, low socioeconomic strata were affected more, proximal lesions showed dysphagia than the distal ones and hepatomegaly were prominent in proximal than in distal. Proximal tumours have hepatic metastasis at presentation more frequently than the distal tumours; this was also statistically significant in our study. The diagnosed patients were advised to undergo a total or subtotal gastrectomy. CA stomach is a very well treatable disease when diagnosed earlier where the screening plays an important role and must be made aware of it in developing countries like India.

Keywords: carcinoma stomach, gastrectomy

INTRODUCTION

Adenocarcinoma of the stomach has been a leading cause of cancer death worldwide through most of the twentieth century. The incidence of this disease has gradually decreased in many parts of the world, principally because of changes in diet, food preparation, and other environmental factors.

With the exception of just a few countries in the world, the prognosis for this disease remains poor. The explanations for these poor results are multifactorial. The lack of well-defined risk factors and specific symptomatology, and the relatively low incidence have contributed to the late stage of onset seen in our country. In Japan, where gastric cancer is endemic, patients are diagnosed at early stage, which is reflected in the excellent 50% 5 year survival rate.

Although the incidence of gastric cancer has decreased grammatically over last century the decline has been limited to cancers below the gastric cardia. The number of newly – diagnosed patients with proximal gastric and gastroesophageal junction adenocarcinomas has increased markedly since the mid-1980s. The disturbing fact is that these are thought to be biologically more aggressive than distal tumors and more complex to treat.

AIM OF THE STUDY

Comparison of the clinicopathological profiles of patients with proximal and distal gastric adenocarcinomas.

MATERIALS AND METHODS

This is a retrospective study of patients with Gastric Adenocarcinomas who were admitted in the department of general surgery, Sree Balajimedical College & hospital, Chennai, during the period between May 20016 and April 2018.

The patient's history of presenting illness and the past history of ulcer treatment as well as gastric surgery was noted. Their personal history was also noted, which included their socioeconomic status, habit of smoking, alcohol consumption and diet. The weight and height of all patients was noted to calculate the body mass index (weight in kg / height squared in meters). The blood groups were noted.

All patients included in this study underwent upper gastrointestinal endoscopy and an imaging study in the form of a contrast CT scan of the abdomen. During the endoscopy a minimum of seven biopsies were taken from the lesion and if an ulcer was found, biopsies around the ulcer crater were taken. The biopsies were subjected to histopathological examination.

Carcinomas of the gastric cardia were defined as lesions having the center located within 1 cm proximal and 2 cm distal to the esophagogastric junction. According to Siewert: type II was "real" gastric cardia carcinoma and type III was carcinoma located more than 2 cm below the esophagogastric junction (up to a maximum of 5 cm).

Proximal gastric adenocarcinomas included type II tumors, type III tumors, and other tumors up to the distal delimitation of the proximal third of stomach. The tumors located distal to the delimitation of the proximal third and up to the pylorus were included as distal gastric adenocarcinomas.

All tumors were classified (based on intra-operative information or pathology report) into different types. The TNM categories were defined based on the 1977 classification, and the residual tumor status (R category) was determined intra-operatively and histopathologically.

The standard treatment for proximal gastric carcinoma was total gastrectomy with D2 Lymphadenectomy, omentectomy, and splenectomy. The standard treatment for distal gastric adenocarcinoma was subtotal gastrectomy with D2 lymphadenectomy, omentectomy.

Demographic variable and clinical variables that are qualitative are given in frequencies with their percentage. Clinical variables that are quantitative are given in mean and standard deviation. Qualitative variables are analyzed using Pearson chi-square test, and Yates corrected Chi-square test as appropriate. Quantitative variables are analyzed using student independent t-test. P value less than 0.05 was taken as significant.

OBSERVATIONS AND ANALYSIS

PATIENT DEMOGRAPHICS AND HISTORY

AGE - In our study the average age of the patients was 57.03 years, with a range of 36 to 72 years. The average age for proximal gastric adenocarcinomas was 53.93 years and for distal gastric adenocarcinomas was 57.98 years; P Value was 0.39, which was not significant.

MALE: FEMALE Ratio

In our study the male to female ratio was 1.95:1 overall, whereas for proximal tumours it was 1.5:1 and for distal tumors it was 2.12:1.

BODY MASS INDEX (BMI) - The body mass index was 20.57 overall, whereas it was 20.70 and 20.53 for proximal and distal adenoma carcinomas, respectively. The P value was 0.93, which was not significant.

Our findings differed from those of other studies where proximal tumors were associate with a higher BMI. This is probably because of the small number of patients in our study.

BLOOD GROUP

Blood group	overall	proximal	distal	Chi-square	P value
A	14	6	8	4.44	0.21
B	14	2	12		
AB	10	1	9		
O	27	7			

Socioeconomic Status	overall	Proximal	Distal	Chi-square	P value
Low	49	9	40	2.52	0.02
Middle	14	4	10		
High	2	2	0		

In our study 49 patients (75.38%) were from the lower socioeconomic strata. The P value was 0.02, which was significant. This is due to the difficult access to healthcare, bad hygiene, more

H. Pylori infections, lack of knowledge about symptoms, and also because our hospital generally attracts and provides healthcare facilities to the poor.

DIET - In our study there were a higher number of patients (42; 64.61%) who consumed a non-vegetarian diet was taken by a smaller percentage (23, 35.38%) of patients. But the difference was not significant, as reflected in P value of 0.77.

SMOKING AND ALCOHOL CONSUMPTION - In our study, 32(49.23%) patients gave a history of chronic smoking, and 16 (24.61%) patients gave a history of regular alcohol consumption. The P values were 0.71 and 0.89 respectively, which was not significant.

PREVIOUS ULCER TREATMENT - In our study there were 22 (33.84%) patients who underwent treatment for ulcer before being diagnosed with gastric adenocarcinomas. out of these 6 (27.27%) patients had proximal lesions and 16(72.72%) had distal lesions. The P value was 0.79, which was not significant.

PREVIOUS GASTRIC SURGERY - In our study only 6 (9.2%) patients out of 65 had undergone a gastric surgery previously. The surgery was truncal vagotomy and gastrojejunostomy in all the 6 cases. All the 6 patients had distal adenocarcinomas. None of the patients in the present study had a family history of gastric cancer.

CLINICAL PRESENTATION

SYMPTOMS

	overall	proximal	distal	Chi-square	P value
Dyspepsia	60	14	46	0.15	0.70
Anorexia	63	14	49	0.40	0.52
Weight loss	47	13	34	1.18	0.28
Dysphagia	12	12	0	43.8	0.001
Vomiting	9	0	9	1.81	0.18

Maleana	31	4	27	2.45	0.12
Jaundice	2	1	1	0	1.00

In our study 60 (92.30%) patients had dyspepsia; out of this 14 (23.33%) were patients with proximal lesions and (76.66%) had distal lesions. The P value was 0.70, which was not significant.

Out of the 63 (96.92%) patients who had anorexia, 14 (22.22%) had proximal lesions and 49(77.77%) had distal lesions. The P value was 0.52, which was insignificant. In our study weight loss documented in 47 (72.30%) patients overall, 13 (27.65%) of these patients had proximal lesions, and 34 (72.34%) had distal lesions. The P value was 0.28, which was not significant.

Dysphagia was seen in 12 (18.46%) patients overall; all these patients had proximal lesions. This was a very significant finding with a P value of 0.001. This finding suggests that proximal lesions present with Dysphagia much more often than the distal tumors.

In our study, persistent vomiting was found in 9 (13.8%) patients overall; all these patients had distal lesions. Despite this the P value was 0.18, which was not significant. 31 (47.69%) of the patients presented with maleana as a symptom of their disease. Out of these 4 (12.9%) had proximal lesions, and 27 (87.09%) had distal lesions. This was not significant statistically (P value-0.12). Jaundice was seen in two patients overall, one each from either group being compared.

SIGNS

	overall	proximal	distal	Chi-square	P value
Anemia	44	10	34	0.05	0.92
Mass abdomen	26	7	19	0.36	0.54
Hepatomegaly	10	5	5	4.83	0.03
Ascites	7	2	5	0.01	0.91

Supraclavicularnode	6	0	6	0.18	0.36
---------------------	---	---	---	------	------

In our study, 44(67.69%) patients had anemia; out of these 10 (22.72%) were those having proximal lesions, whereas 34 (72.27%) were those having distal; lesions. P value was insignificant at 0.92. Mass abdomen was found in 26 (40%) of the patients in total; out of these 7 (26.92%) had proximal tumors and 19 (73.07%) had distal tumors. P value was 0.54, which was insignificant.

In our study, Hepatomegaly was found in 10 (15.38%) patients; 5 (50%) of these had proximal adenocarcinomas whereas 5 (50%) had distal tumors. P value was found to be 0.03, which was significant. This implies that proximal tumors have Hepatomegaly more often than the distal tumors.

In our study, ascites and supraclavicular nodes were found less often; overall in 7 and 6 patients respectively. The difference in the incidence of these signs between proximal and distal tumors was not statistically significant.

UPPER GASTRO INTESTINAL ENDOSCOPY

	Total	Proximal	Distal
Size (in cm)	3.67	3.70	3.67
Location	65	15	50

In our study, we found that the average size of the tumor was 3.67 cm overall, with a range of 2.5 cm to 6.0 cm. in proximal tumors, the average size was 3.70 cm, whereas in distal tumors it was 3.67 cm.

Out of the 65 patients studied, 15 (23.07%) patients had proximal tumors; whereas 50 (76.92%) patients had distal tumors. This finding implies that the incidence of proximal gastric adenocarcinomas is not increasing in our population, whereas in the Western hemisphere there is an alarming rise in proximal tumors to an extent that these tumors form about 45% of the total gastric adenocarcinomas.

	overall	proximal	distal	Chi-square	P value

Ulcerating	21	2	19	6.67	0.03
Polypoid	33	12	21		
Superficial	11	1	10		
Decreased distensibility of stomach	18	2	16	1.18	0.27
Abnormal pyloric function	11	0	11	3.97	0.05

The morphology of the tumor on upper GI endoscopy was described as ulcerating, polypoid or superficial. Overall 21 (32.30%) were ulcerating growths; out of which 2 (9.5%) were located proximally and 19 (90.47%) were located distally. 33 (50.76%) were polypoid growths, out of which 12 (36.36%) were located proximally, whereas 21 (63.63%) were located distally. Out of the 11 (16.92%) superficial growths 1 (9.09%) was proximal and 10 (90.90%) were distal growths. The P value was significant at 0.03.

Distensibility of the stomach was decreased in total of 18 (27.69%) of patients studied. Out of these 2 (11.11%) were due to proximal lesions, and 16 (88.88%) were due to distal tumors. The difference was not statistically significant (P value of 0.27). Abnormal pyloric function was found in 11 (16.92%) of the patients overall and all these patients were those with distal lesions. P value was significant at 0.05.

Differentiation	overall	proximal	distal	Chi-square	P value
Well	17	4	13	0.04	0.95
Moderate	26	7	19	0.36	0.55
Poor	22	4	18	0.13	0.72

On histopathological examination the tumors were classified into well, moderately, and poorly differentiated. Out of the 17 (26.15%) well-differentiated tumors, 4 (23.52%) were located proximally and 13 (76.47%) were located distally. Moderate differentiation was seen in 26 (40%) of the total lesions; out of these 7 (26.92%) were proximal and 19 (73.07%) were distal. Poorly differentiated tumors constituted 22 (33.84%) of the total; out of these 4 (18.18%) were proximal tumors and 18 (81.81%) were distal tumors. The P value was not significant for the above parameters.

HISTOPATHOLOGY

Lauren classification	overall	proximal	distal	Chi-square	P value
Intestinal	42	13	29	4.15	0.04
Diffuse	23	2	21	4.15	0.04

The tumors were classified as either intestinal type or diffuse type according to Lauren classification. The intestinal type were 42 (64.61%) overall; out of which 13 (30.95%) were proximal adenocarcinomas and 29 (69.04%) were distal adenocarcinomas. 13 out of the 15 proximal lesions, that is 86.66%, were of the intestinal type. The P value was significant at 0.04.

The diffuse type constituted 23 (35.38%) overall; out of which 2 (8.6%) were proximal tumors and 21 (91.30%) were distal tumors. The P value was 0.04, which was significant.

STAGING

	Overall	Proximal	Distal
I A	0	0	0
I B	6	0	6
II	13	3	10

III	17	1	16
III B	6	3	3
IV	23	8	15

When all the stages were considered together there was no significant difference between the proximal and distal gastric adenocarcinomas, the chi-square being 3.99 and p value being 0.26. But when stage III and IV was considered alone it was found that more number of proximal tumors presented at a later stage than the distal tumors.

PERITONEAL METASTASIS (P)

	overall	proximal	distal	Chi-square	P value
P	9	4	5	1.47	0.22

In our study, peritoneal metastases were found in 9 (13.84%) of the patients. Out of these 4 (44.4%) were due to proximal lesions, and 5 (55.55%) were due to distal lesions. The Pvalue was 0.22, which was not significant.

SUMMARY AND CONCLUSIONS

In our study we found that the incidence of proximal gastric adenocarcinomas is not increasing in our population when compared to the rising incidence of such tumours in the Western Hemisphere. In our study distal gastric adenocarcinomas were a more frequent finding than the proximal lesions.

The average age of the patients in our study was 57 years. Males outnumbered the females in a ratio of 1.95:1, which is in accordance to findings in other studies. Most of our patients were from the lower socioeconomic strata. There was no difference in body mass index between the patients with proximal and distal lesions; this differed from findings of other studies, which showed a higher body mass index with proximal tumors.

There was no predilection for any specific blood group in our study, whereas according to literature persons with blood group A have a higher risk of getting a gastric carcinoma. Even though a large proportion of the studied patients consumed non-vegetarian diet, smoked tobacco, and consumed alcohol, the figures did not reach a number high enough to cause a statistically significant difference.

In our study the common symptoms were anorexia, dyspepsia and weight loss, and these were common for both the proximal and distal lesions. Dysphagia was the symptoms that indicated proximal lesions. Among the signs, the most common were anemia and mass per abdomen. Hepatomegaly was found more often with proximal than with distal tumors. On upper gastrointestinal endoscopy, ulcerating and polypoid growths were more frequently found than superficial growths. Decreased distensibility and abnormal pyloric function was found more commonly with distal lesions.

In our study, there was no difference in the degree of differentiation between the proximal and distal lesions. The proximal tumors were more often of the intestinal type when compared to the distal tumors; this was also statistically significant. This was in accordance with the findings in other studies. Proximal tumor tends to present at a higher stage than the distal tumor. But this was not statistically significant. Proximal tumors have hepatic metastasis at presentation more frequently than do the distal tumors. This was a statistically significant finding in our study.

Refernces

[Stomach Cancer Estimated Incidence, Mortality and Prevalence Worldwide in 2012;](#) International Agency for Research on Cancer, World Health Organization

[Stomach cancer incidence statistics;](#) Cancer Research UK

[Brenner H, Rothenbacher D, Arndt V;](#) Epidemiology of stomach cancer. *Methods Mol Biol.* 2009;472:467-77. doi: 10.1007/978-1-60327-492-0_23.

[Guidelines for the management of oesophageal and gastric cancer;](#) British Society of Gastroenterology (June 2011)

[Axon A;](#) Symptoms and diagnosis of gastric cancer at early curable stage. *Best Pract Res Clin Gastroenterol.* 2006;20(4):697-708.

[Panter SJ, O'Flanagan H, Bramble MG, et al;](#) Empirical use of antisecretory drug therapy delays diagnosis of upper Aliment *Pharmacol Ther.* 2004 May 119(9):981-8.

[Referral for suspected cancer;](#) NICE Clinical Guideline (2005)

[Mackay S, Hayes T, Yeo A;](#) Management of gastric cancer. *Aust Fam Physician.* 2006 Apr;35(4):208-11.

[Lepage C, Sant M, Verdecchia A, et al](#); Operative mortality after gastric cancer resection and long-term survival Br J Surg. 2010 Feb97(2):235-9.

[Gastric cancer \(advanced\) - capecitabine](#); NICE Technology Appraisal Guideline, July 2010

[Trastuzumab for the treatment of HER2-positive metastatic gastric cancer](#); NICE Technology Appraisal Guideline, November 2010

[Anorexia and Cachexia](#); International Network for Cancer Treatment and Research, 2009