

# CAN PRE-OPERATIVE TUMOUR THICKNESS ON CT SCAN PREDICT REGIONAL LYMPH NODE METASTASIS IN GASTRIC ADENOCARCINOMA: A SHORT TERM RETROSPECTIVE STUDY

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## ABSTRACT

### BACKGROUND

Gastric cancers are among the commonest cancers in developing countries including India. Majority of the patients present in late stages of disease with dismal outcomes.

### METHODS

Medical records of patients undergoing surgery for gastric cancer during 2018 were retrospectively analysed. Clinical and pathological parameters were recorded and analysed.

### RESULTS

Total of 49 patients were retrospectively analysed. Most of the patients had advanced disease at presentation with anaemia in 40/49 (81%) and Gastric outlet obstruction in 27/49 (55%). 70% of patients undergoing gastrectomy had node positive disease. There was a trend towards association between node positive disease and tumour thickness >15 mm (p=0.024).

### CONCLUSIONS

Majority of gastric cancer patients in North East India present in advanced stage with anaemia and gastric outlet obstruction. Tumour thickness >15 mm can possibly predict regional lymph node metastasis in gastric cancer patients.

### KEYWORDS

Gastric Cancers, Retrospective Analysis, Gastrectomy, Anaemia, Gastric Outlet Obstruction, Regional Lymph Node Metastasis, Tumour Thickness.

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### BACKGROUND

In India it is the fifth most common cancer among males and the seventh most common cancer among females.<sup>1</sup> The symptoms and sign of stomach cancer are often reported late when the disease is already in advanced stages and 5-year survival is less than 30% in developed countries and around 20% in developing countries.<sup>1,2,3,4,5</sup> Henceforth, detection of malignancy is of utmost priority to facilitate early intervention in form of surgery and/or chemotherapy. Clinical examination, endoscopy, and histopathological examination have been the cornerstone of investigation of gastric malignancy.<sup>3</sup> Lymph node status is an important prognostic factor of overall survival in gastric adenocarcinoma. Regional lymph node involvement guides

the stage of disease and management decisions.<sup>6,7,8</sup> We did a retrospective analysis to see if there is any association of pre-operative tumour thickness on CT scan with regional lymph node metastasis.

### Aims and Objectives

Primary objective was to evaluate the possibility of any association between pre-operative tumour thickness on CT scan with regional lymph node metastasis in gastric adenocarcinoma patients. Secondary objectives were to study the clinical and pathological profile of gastric cancer patients presenting at our institute.

### METHODS

All gastric adenocarcinoma patients undergoing surgery at State Cancer Institute, Gauhati Medical College, Guwahati were retrospectively analysed.

### Inclusion Criteria

All patients with biopsy proven gastric adenocarcinoma undergoing surgery during 2018 at our institute were included.

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### Exclusion Criteria

1) Patients with biopsy other than carcinoma (Lymphoma, sarcoma, GIST) 2) Patients with incomplete medical records 3) Patients presenting after surgery at other institute were not included.

All the clinical and pathological parameters were separately recorded for each patient. Pre-operative tumour thickness on CT scan was recorded separately and correlated with regional lymph node positivity status on post-operative histopathology report. Student t test, Pearson chi square test and Fischer's exact test were used for univariate analysis. p Value<0.05 was considered as statistically significant.

## RESULTS

### Demographic Profile

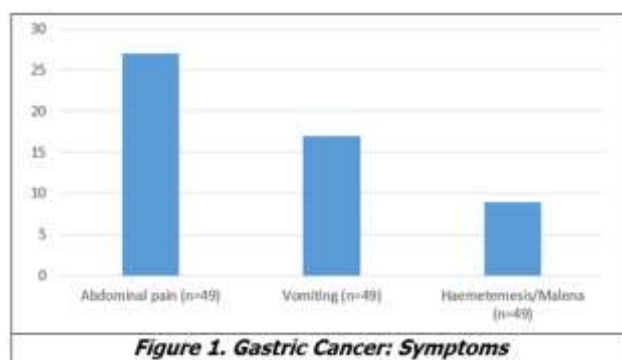
Mean age was 54.73±11.64 yrs. (33-85 yrs.). M:F ratio was 1.9:1. MC symptom was abdominal pain in 27/49 (55%) patients. 32/49 (65%) patients were addicted to tobacco in some form.

Age (Yrs.) (n=49)	54.73±11.64 yrs. (33-85 yrs.)
Gender (n=49)	M:F::1.9:1
Tobacco addiction (n=49)	Addicted n=32 (65%) Not Addicted n=17 (35%)

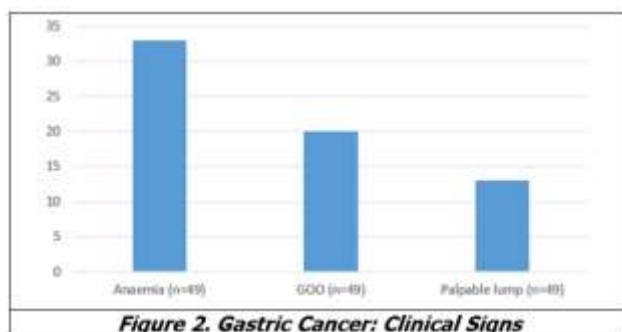
**Table 1. Demographic Profile**

### Clinical Presentation

Mean duration of symptoms was 3.68±2.77 months (1-12 Months). Most common symptoms were abdominal pain in 27/49 (55%), vomiting 17/49 (35%) and GI bleed (Haemetemesis/Malena) in 9/49 (15%) patients respectively. Most common signs were anaemia 33/49 (67%), gastric outlet obstruction in 20/49 (41%) and palpable lump in 13/49 (18%) patients respectively.



**Figure 1. Gastric Cancer: Symptoms**



**Figure 2. Gastric Cancer: Clinical Signs**

Out of all patients undergoing exploratory laparotomy, 30/49 (62%) underwent Radical D2 gastrectomy whereas 19/49 (38%) had palliative bypass. MC site was antropylic region of stomach in 45/49 (91%) patients. Out of 30 patients undergoing Radical gastrectomy, 15/30 (50%) had node positive disease.

### Pathological Profile

Majority of patients has poorly differentiated adenocarcinoma 20/38 (52%). Most common WHO type was tubular in 31/38 (81%) and poorly cohesive (signet ring) in 5/38 (13%) patients respectively. MC macroscopic type was ulcerative in 31/38 (81%) patients. Mean Tumour thickness was TT 18.66±6.94 mm (8-35 mm). Out of 20 patients undergoing Radical D2 gastrectomy, 16 (80%) were found to have regional lymph node involvement.

HPE grade (n=49)	Well Diff n=13 (28%) Mod diff n=10 (18%) PDC n=26 (52%)
WHO type (n=49)	Tubular n=40 (82%) Poorly cohesive (Signet ring) n=7 (14%) Papillary n=1 (2%) Mucinous n=1 (2%)
Macroscopic appearance (n=49)	Ulcerative n= 40 (82%) Fungating n=4 (7%) Infiltrative n=4 (7%) Polypoidal n=2 (3%)
Tumour thickness (in mm)	16.4±5 mm
Nodal status (n=30)	Node positive n=15 (50%)

**Table 2. Pathological Profile**

### Univariate Analysis

On applying Fischer's exact test, a significant association was found between Tumour thickness> 15mm with regional lymph node metastasis (p=0.024).

Tumour Thickness	Nodal Status
Tumour Thickness <15 mm	Node positive n=1/30 Node negative n=11/30
Tumour thickness ≥ 15 mm	Node positive n=14/30 Node negative n=4/30
	p=0.024 (Fischer's exact test)

**Table 3. Association of Tumour Thickness with Regional Lymph Node Metastasis**

## DISCUSSION

Mean age of patients in our study was 54.73 years and M:F ratio 1.9:1 which were comparable to studies done by Sumanary, Nandi and Barad et al.<sup>2,3,4</sup> 65% of patients in our study addicted to tobacco. Throughout the world there is a male preponderance of the disease.<sup>6,9,10</sup> This male preponderance of gastric cancer may be attributed to the high incidence of smoking among males as compared to female. Most common site was antropylic region of stomach (91%) and was comparable to other studies.<sup>1,2,3,4,5</sup> Most common symptoms were abdominal pain and vomiting in 55% and 35% patients respectively. In study done by Kasim et al, epigastric pain was the most common symptom (87%) followed by weight loss and indigestion 72.5% and

69.6% respectively.<sup>1</sup> Study done by Barad et al found abdominal pain in 61.4% and vomiting in 20.9% patients as common symptoms.<sup>4</sup> Higher incidence of anaemia and GOO in developing countries can be explained by delayed presentation of patients in advanced stage of disease.

Majority of patients had poorly differentiated carcinoma (52%). Ulcerative variety was found on grossing in 81% cases. Kassim et al and Samantaray et al found ulcerative variety in 73.9% and 73.1% patients respectively.<sup>1,2</sup> Mean tumour thickness was 16.4±5 mm. 50% of patients had metastasis to regional lymph nodes on final histopathology specimens.

We also found a significant association between tumour thickness ≥15 mm and incidence of regional lymph node metastasis ( $p=0.024$ ). Sasagama et al found male gender, age (>40 yrs), the depth of invasion, LVI, and tumour located in corpora or angle as independent risk factors for regional lymph node metastasis.<sup>9</sup> In particular, lymph node status has been established as one of the most important criteria for proper treatment strategy and prognosis of gastric cancer preoperatively.<sup>7,8</sup> Lymph node (LN) status is the important prognostic factor regarding long-term survival in gastric cancer.<sup>11</sup> Pre-treatment knowledge of LN status may help in selecting patients who might benefit most from neoadjuvant chemotherapy.<sup>12</sup> This is especially important as tumour thickness can be easily evaluated using imaging modalities like CT scan and MRI. It can help the surgeon by remaining more vigilant while performing regional lymphadenectomy. Also, difficult cases requiring thorough clearance can be sent to referral centers and operated by surgeons with more experience with such cases.

## CONCLUSIONS

Pre-operative tumour thickness on CT scan can be used as a reliable predictor of regional lymph node metastasis in gastric cancer patients. However, studies with larger sample size are needed.

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