



*Original article*

## Interpretation of Upper GastroIntestinal Tract Endoscopic Mucosal Biopsies – A Study Conducted In Teaching Hospital In Puducherry, India

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### ABSTRACT

**Introduction:** Endoscopy of the gastro intestinal tract is a simple safe and well tolerated procedure, the visualisation of the site with biopsy leads to the early detection of the pathologic process and institution of appropriate therapy.

**Objective:** Retrospective study to find out the morphological pattern and frequencies of lesions reported in the upper Gastro intestinal (GI) tract endoscopic biopsy specimens.

**Materials and Methods:** Biopsy of 192 upper GI endoscopies during Jan 2008 - Dec 2010 were examined. Serial sections, 3 – 5  $\mu$  were stained with Haematoxylin & Eosin (H&E) stain.

**Results:** Analysis of 192 cases of upper GI biopsies was done. Male to female ratio of 1.74: 1 and age range 19 – 75 yrs was observed. 12(6.25%) cases were from oesophagus, 163(84.05%) stomach and 6(3.64%) duodenum. 10(5.62%) cases were histologically unremarkable and 01 case was reported as inadequate for opinion. Histopathological examination revealed gastritis(146)(76.04%) as the most frequently diagnosed inflammatory lesion. Other inflammatory lesions diagnosed were chronic non-specific oesophagitis 3(1.54%), Barrett oesophagus 3(1.54%), gastro-oesophageal reflux disease (GERD) 3(1.54%), gastric ulcer 7(3.59%) and duodenitis 6(3.13%). One case of oesophageal dysplasia was reported. Out of 192 biopsies, 12(6.25%) cases were malignant lesions - 9(4.69%) cases of adenocarcinoma stomach, 01 MALToma, 01 adenocarcinoma oesophagus and 01 adenosquamous carcinoma oesophagus.

**Conclusion:** There was correlation between symptomatology, endoscopic visualisation and histopathologic diagnosis. The upper GI endoscopy helps in early detection of mucosal lesions and diagnosis of the carcinomas at early stage leading to early clinical management.

**KEYWORDS:** Biopsy, Endoscopy, Histopathology, Upper GI lesions

## INTRODUCTION

Use of flexible endoscopy has led to a marked increase in diagnostic procedures involving visualisation and biopsy of the upper and lower GI tract. Diagnostic endoscopy is a simple, safe and well tolerated procedure[1]. The GI tract lesions have symptomatology which range from dyspepsia to altered bowel movements; dysphagia to bleed. Upper GI endoscopy in combination with biopsy plays an important role in the early diagnosis of GI neoplasms and provides an opportunity for a broad range of treatment options as well as potential for possible cure. The other indications for upper GI tract endoscopic biopsy includes – evaluation of dyspepsia, odynophagia, GERD, Barrett oesophagus, dysplasia, peptic ulcer disease and its complications, gastric and oesophageal carcinoma[2].

Endoscopic screening may detect gastric mucosal lesions at an early stage especially atrophy, intestinal metaplasia and dysplasia so as to prevent progress of lesions to invasive cancer[3,4].

Present study was undertaken to determine the spectrum of oesophageal, gastric and duodenal lesions by endoscopic biopsy.

## MATERIALS AND METHODS:

Present retrospective study was done to analyse the endoscopic biopsies from upper GI tract from patients attending the department of gastroenterology at Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry from Jan 2008 – Dec 2010.

Total 192 cases of endoscopic mucosal biopsies were evaluated. Majority of the biopsies were taken from the gastric antrum. Biopsy specimens were fixed in 10% buffered formal saline, followed by manual tissue processing[5] and embedded in paraffin with the mucosal surface facing the cut end of the block. Serial sections, 3-5  $\mu$  thick were prepared and then stained with routine H & E stain. Additional sections were stained with Giemsa to observe for the presence of H.pylori and Per-iodic Acid Schiff (PAS) stain were performed wherever necessary.

## RESULTS

Out of 192 GI endoscopic biopsies, 122(63.54%) were males and 70(36.46%) were females; male: female ratio being 1.74 : 1. Age of the patients ranged between 19 – 75 years. The youngest patient was 19 years old male with chronic gastritis while the oldest patient was 75 years old male with adenocarcinoma stomach.

The site-wise distribution of endoscopic biopsies was – oesophagus 12(6.25%), stomach 163(84.89%) and duodenum 6(3.13%) . 10(5.62%) cases were reported as normal gastric tissue on histology. One(0.52%) case of gastric mucosal biopsy was considered as inadequate for opinion.

Biopsies comprised of 168 inflammatory lesions: 3(1.54%) cases of chronic non-specific oesophagitis , Barrett oesophagus 3(1.54%) , GERD 3(1.54%), all types of gastritis comprising 146(76.04%) cases, gastric ulcer 7(3.59%) and duodenitis 6(3.13%); one case(0.51%) of premalignant lesion(oesophageal dysplasia) and 12 cases(6.25%) of malignant lesions of oesophagus and stomach. 10(5.62%) cases had normal histology whereas one case was inadequate for opinion.

Table:1 shows lesions in the oesophagus : inflammatory(oesophagitis, GERD)6(3.08%) , metaplastic lesions(barrett oesophagus) 3(1.02%) ; together these lesions predominate over the premalignant(dysplasia) and malignant lesions 2(1.03%).

Table: 2 shows the lesions of the GI tract: Most common diagnosis gastritis 146(76.04%) with chronic non specific gastritis with intestinal metaplasia as the most frequently reported types of gastritis 67(34.36%) ; the other types reported were chronic non specific gastritis, erosive gastritis and H.pylori positive gastritis 7(3.59%) followed by gastric adenocarcinomas 10(4.69%).

The lesions reported to be positive for H.pylori was one case(0.52%) of Barrett oesophagus, one case of duodenitis(0.52%) and 7(3.59%) cases of chronic gastritis.

Dysplastic changes were observed in only one case (0.52%)(oesophageal dysplasia).

Table: 3 shows malignant lesions in endoscopic biopsies comprised of 6.25%(12) of total cases with adenocarcinoma of the stomach as the commonest entity. The other malignancies reported were MALToma stomach 1(0.52%),

adenocarcinoma and adeno-squamous carcinoma of oesophagus 2(1.04%).

**Table:1 Lesions in oesophagus on endoscopic biopsy**

<i>Lesion</i>	<i>No of cases</i>	<i>Percentage(%)</i>
Oesophageal dysplasia	1	0.51
Chronic non specific oesophagitis	3	1.54
H.pylori positive Barret oesophagus	1	0.51
GERD	3	1.54
Barret oesophagus	2	1.03
Carcinoma oesophagus	2	1.03
<b>Total</b>	<b>12</b>	<b>6.16</b>

**Table:2 Percentage of gastric lesions on endoscopic biopsy**

<b>Lesion</b>	<b>No of cases</b>	<b>Percentage(%)</b>
<b>Gastritis</b>		
- Chronic non specific gastritis	47	24.48
- Chronic superficial gastritis	2	1.03
- Erosive gastritis	23	11.79
- Chronic non specific gastritis with intestinal metaplasia	67	34.36
- H.pylori positive gastritis	7	3.59
<b>Gastric ulcer</b>	7	3.59
<b>Gastric adenocarcinoma</b>	9	4.69
<b>Maltoma</b>	1	0.52
<b>Total</b>	<b>163</b>	<b>84.05</b>

**Table:3 Pattern of Malignant lesions on Endoscopic Biopsies of Upper GIT**

Type of malignancy	No of cases	Percentage(%)
Adenocarcinoma stomach	9	4.69
Maltoma stomach	1	0.52
Adenocarcinoma oesophagus	1	0.52
Adenosquamous carcinoma oesophagus	1	0.52
<b>Total cases</b>	<b>12</b>	<b>6.25</b>

## DISCUSSION

Biopsy sampling of gastric mucosa at endoscopy provides useful information that helps in the diagnosis of various lesions[6,7]. Good clinical and endoscopic information is a fundamental part of adequacy and this strongly affects how a biopsy should be interpreted. Endoscopy along with biopsy was done on patients presenting with symptoms as reflux, heart burn, epigastric pain, dysphagia, vomiting, hematemesis, weight loss, melena, constipation, bleeding per rectum. Biopsy was also done as follow up for post resection cases.

Despite careful selection of the patients having strong indications for biopsy, 10(5.62%) cases had normal histology and one case was found inadequate for histopathological diagnosis. This may be in part due to improper sampling wherein site and depth may not be representative of the clinically suspicious lesion.

Data related to age and sex in our study showed similar trends to other reported studies[8,9]. Gastritis (chronic superficial gastritis, chronic non-specific gastritis, erosive gastritis, gastritis with intestinal metaplasia, H.pylori positive gastritis) was seen in 146(75.25%) cases. H. pylori negative chronic gastritis could be due to therapy for H.Pylori eradication or failure to see H.pylori in the tissue specimens[10]. H.pylori positive gastritis was seen in 3.59% cases. This is

in contrast with the studies of Navivadekar et al[11], Singh et al[12], Habibullah et al[13], Arora et al[14], Pruthi et al[15] with frequencies of 30%, 34.70%, 52%, 58% and 44.4% respectively. Intestinal metaplasia was present in 34.36% of cases showing gastritis. This figure is similar to 20% reported by Satarkar et al[16] and is in contrast with the 7.99% reported by Qureshi et al in 2007[17].

Patients with oesophageal carcinoma presented between 5<sup>th</sup> – 6<sup>th</sup> decades of life. The observations were similar in studies carried out by Qureshi et al[17] and Bazaz-Malik G.[18]. Studies on oesophageal carcinoma claimed that >80% cases in industrialized countries can be attributed to exposure to tobacco, alcohol and chewing betel leaf[19]. 2 cases of oesophageal carcinoma in our study, diagnosed as adenocarcinoma and adeno-squamous carcinoma, were present in the lower one third of the oesophagus which is in accordance with Galandiuk et al and Wang et al[20,21]. Histologically adenocarcinoma was moderately differentiated tumour with PAS stain positivity. Adeno-squamous carcinoma has been reported to have a better prognosis as compared to conventional squamous cell carcinoma and adenocarcinoma[22].

Among the lesions of the stomach there were 9(6.58%) cases of malignant lesions. Smoking,

alcohol consumption, dietary factors and social habits have been proposed as risk factors for gastric cancer[23]. Although the incidence of gastric carcinoma is comparatively lower in India than in other countries, a high incidence has been noted in Southern India, particularly in Chennai[23]. Female patients with gastric cancer were in the age range of 30-51 years and for males it was 50-75 years. The youngest patient was 30 years female with well differentiated, PAS positive adenocarcinoma. The oldest patient was 75 years male with poorly differentiated adenocarcinoma (Fig: 1 & Fig: 2) present in proximal one third of stomach.

Fig:1 Poorly differentiated adenocarcinoma stomach(10X view)

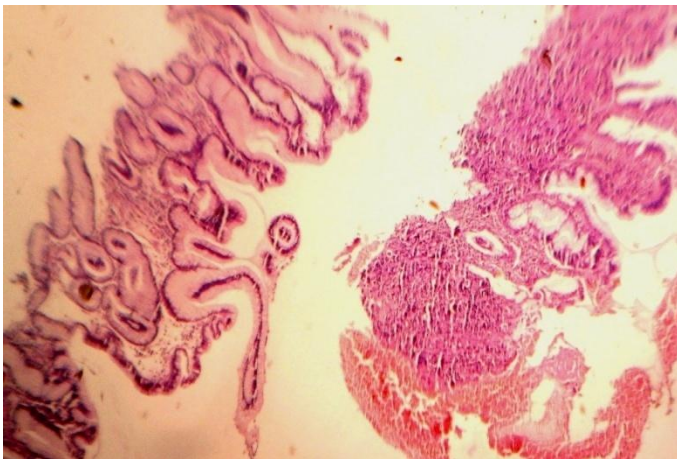
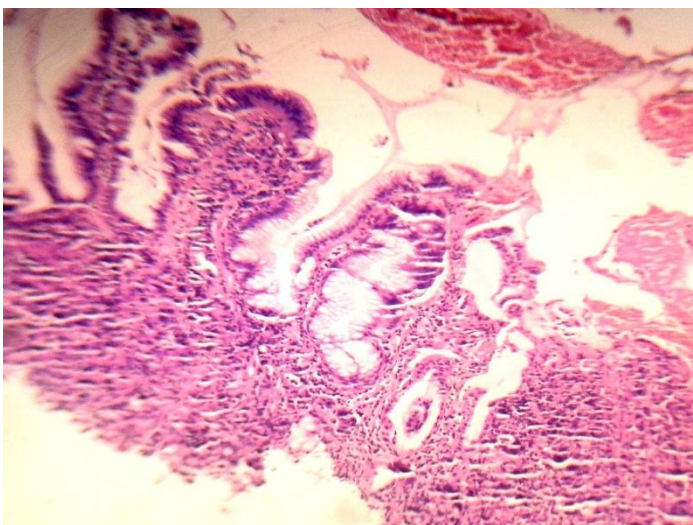


Fig:2 Poorly differentiated adenocarcinoma stomach(40X view)



The correlation between the age and gastric cancer was not found to be significant which is in accordance with Qureshi et al[17]. The common histologic variant in our study was adenocarcinoma with similar results in other studies[24,25,26]. The common site of involvement was antrum and the body of stomach as in the other studies[17,27,28]. The adenocarcinoma were graded mostly as moderately to poorly differentiated tumours which is in accordance with the figures noted by National cancer centre hospital in Tokyo[29] and Choi Y et al[30]. According to Lauren classification, the tumours were further classified as intestinal and diffuse variants out of which intestinal type was more common in our study as are the results of the study done by Pavithran K et al[31].

Sixty five years old male presented with abdominal pain and history of dyspepsia, endoscopy revealed ulcerative mucosal growth in the lesser curvature, histopathology showed diffuse infiltration of lamina propria and partial destruction of gastric glands and crypts with groups of malignant lymphocytes, formation of lympho-epithelial lesions and occasional mitosis (Fig: 3 & Fig: 4). Biopsy was reported as MALToma, H. pylori was negative, however. The symptomatology and age of the patient correlate well with the other case reports[32]. Relationship of H.pylori to MALToma and its regression after the treatment of the former is well documented[32]. Our case reported here was H.pylori negative which may be due to sampling error or due to anti H.pylori treatment received by the patient.

Fig :3 Maltoma stomach(10X view)

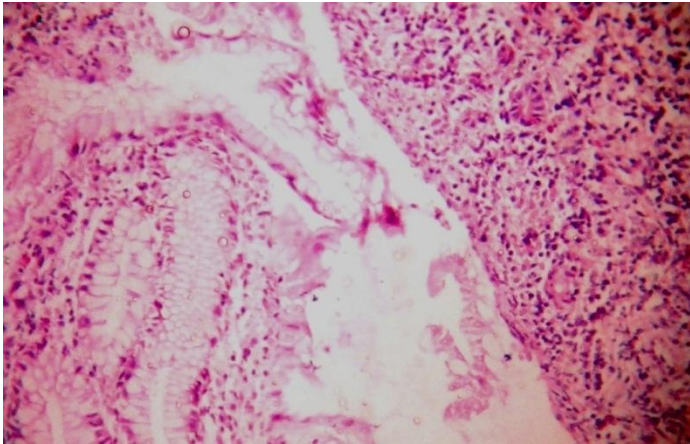
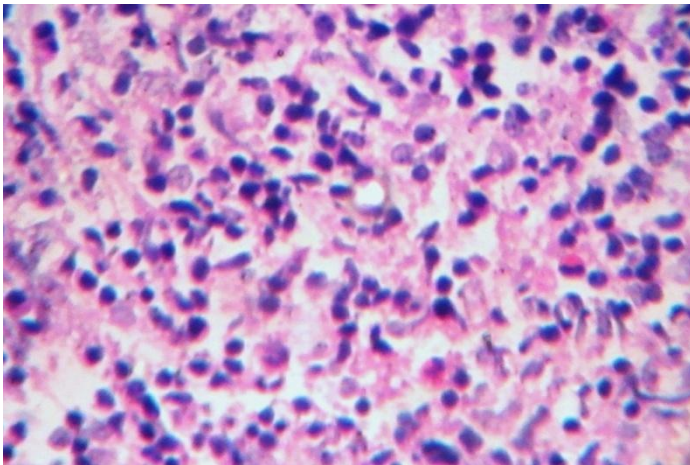


Fig:4 Maltoma stomach(40X view)



Out of the total 12 cases of malignancy reported in our study, 4 cases of carcinoma stomach were operated for partial gastrectomy with anterior gastro-jejunoscopy. All the cases were confirmed as adenocarcinoma of stomach on histopathology. Hence there was a concordance of endoscopic biopsy findings with post biopsy resected specimens.

#### CONCLUSION:

Diagnostic interpretation limitations are encountered at times due to tiny biopsy material, handling and processing artefacts. Frequently diagnosed inflammatory pattern was gastritis in 146(76.04%) cases and 12(6.25%) cases were

diagnosed as malignant lesions. The common site of gastric carcinoma was the antrum. No significant correlation of age and gastric carcinoma was found in this study; study involving larger number of endoscopic biopsies shall be more conclusive, however. Multiple bits of endoscopic biopsies in abnormal looking mucosa is recommended to be obtained to establish a definite/ conclusive diagnosis.

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**Abbreviations:**

1. GI tract Gastrointestinal tract
2. H&E Haematoxylin & Eosin
3. GERD- Gastro-oesophageal-reflux disease
4. H.pylori Helicobacter pylori
5. PAS - Periodic acid Schiff
6. MALT- Mucosa associated lymphoid tissue

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