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Original Research Article

Histopathologic Spectrum of Upper Gastrointestinal Tract Mucosal Biopsies: A Retrospective Study

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Abstract: The aim of present study was to determine the spectrum of oesophageal, gastric and duodenal lesions by endoscopic biopsy, make definite histopathological diagnosis of various neoplastic and non-neoplastic upper GI tract lesions and to know the incidence of lesions with reference to age and sex. A retrospective descriptive study of upper GI endoscopic biopsy was carried out at a tertiary care centre in wayanad, during 2015 to 2016. 200 endoscopic mucosal biopsies were analysed and evaluated. The biopsy samples were subjected to histopathological studies to determine the neoplastic and non – neoplastic incidence. From the results, it was concluded that endoscopy is incomplete without biopsy and so the combination of methods provides a powerful diagnostic tool for better patient management.
Keywords: Histopathologic Spectrum, Biopsy, Retrospective Study, Lesions and Neoplastic

INTRODUCTION

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 [1]. 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]. Biopsy and histological assessment provide a critical adjunct to endoscopic assessment of the gastrointestinal tract and, in diseases such as cancer, coeliac disease and chronic inflammatory bowel disease, pathological diagnosis remains the gold standard. Histological assessment of biopsy material is a major part of the workload of a histopathology laboratory [4].

Application of the recommendations of the first edition of the Working Group's deliberations has shown that endoscopic biopsy and histopathological workload can be considerably reduced by ensuring that only appropriate biopsies are undertaken [5,6,7]. A histological opinion is, like a radiological opinion, entirely dependent on information about the case and the questions being asked. To improve the information provided to pathologists, it is recommended that each unit develops, with pathology colleagues, simple guidance of what information should be provided on the request form. Despite, it would seem, some clinicians believing that a pathologist should be given no clinical or endoscopic details and should assess biopsies entirely blind, this is quite clearly inappropriate and misguided. It is also a truism that many clinicians believe that they should be in 'pathology mode' when completing pathology request forms. This is very much not the case. Pathologists prefer clinicians to stay in clinical mode and give accurate clinical details and, particularly, endoscopic details. It is extraordinary how often the latter is not given. If there are colonoscopic biopsies and the only clinical details given are 'chronic diarrhoea', is the pathologist to assume that the colonoscopy is normal? The pathologist can only make a diagnosis of 'microscopic colitis' when the colonoscopy is normal (or near normal, as we are learning) and, therefore, provision of the accurate endoscopic details is critical [4].

Endoscopic practice is undergoing a revolution with the development of much more accurate video endoscopy, magnifying endoscopy and techniques such as chromo endoscopy, auto fluorescence imaging and narrow band imaging. It is likely that these techniques will eventually make redundant random biopsy protocols for diseases such as Barrett's oesophagus and chronic inflammatory bowel disease. This will, eventually, create a much more appropriate directed biopsy practice for the detection of neoplasia complicating these diseases and reduce pathological workload. Furthermore, new developments may eventually abrogate the need for histological assessment in certain situations, perhaps especially for small colorectal polyps [8, 9, 10, 11, 12].

Upper gastrointestinal tract is one of the most common sites for neoplasms, especially malignant tumours. Worldwide, gastric adenocarcinoma is the second most common cancer and carcinoma oesophagus is the sixth leading cause of death [13, 14]. According to the National Cancer Registry, oesophageal and gastric cancers are the most common cancers found in men, while oesophageal cancer ranks third among women after the carcinoma of breast and cervix [15]. Early detection of malignancy greatly improves the survival rate of the patients (national cancer). Present study was undertaken to determine the spectrum of oesophageal, gastric and duodenal (upto II part) lesions by endoscopic biopsy, make definite histopathological diagnosis of various neoplastic and non-neoplastic upper GI tract lesions and to know the incidence of lesions with reference to age and sex.

MATERIALS AND METHODS

A retrospective descriptive study of upper GI endoscopic biopsy was carried out at a tertiary care centre in wayanad, kerala during 2015 to 2016, in which about 200 endoscopic mucosal biopsies were evaluated. The endoscopy was done by gastroenterologist and all the samples of upper GIT endoscopic biopsy received were included.

All the biopsy samples were counted for fragments of tissue and immediately put in 10% neutral formalin followed by conventional tissue processing and embedding. Five micron thick sections were cut and slides were prepared. Each section was stained with Haematoxylin and Eosin stain and studied. Additional sections were stained with Giemsa to observe H.Pylori, Alcian blue stain to observe intestinal metaplasia and Per-iodic Acid Schiff (PAS) stain were performed wherever necessary. Lesions were diagnosed as per WHO classification of gastrointestinal tumor and tumor like conditions.

RESULTS

The results of site distribution of upper GI biopsies shown in Figure 1. Among the 200 endoscopic biopsies- gastric biopsies were 102 (51%), duodenal biopsies were about 60(30%) and esophageal biopsies were 38 (19%). The commonest site of gastric biopsy was pylorus (62%) followed by fundus (29%) and body (09%).

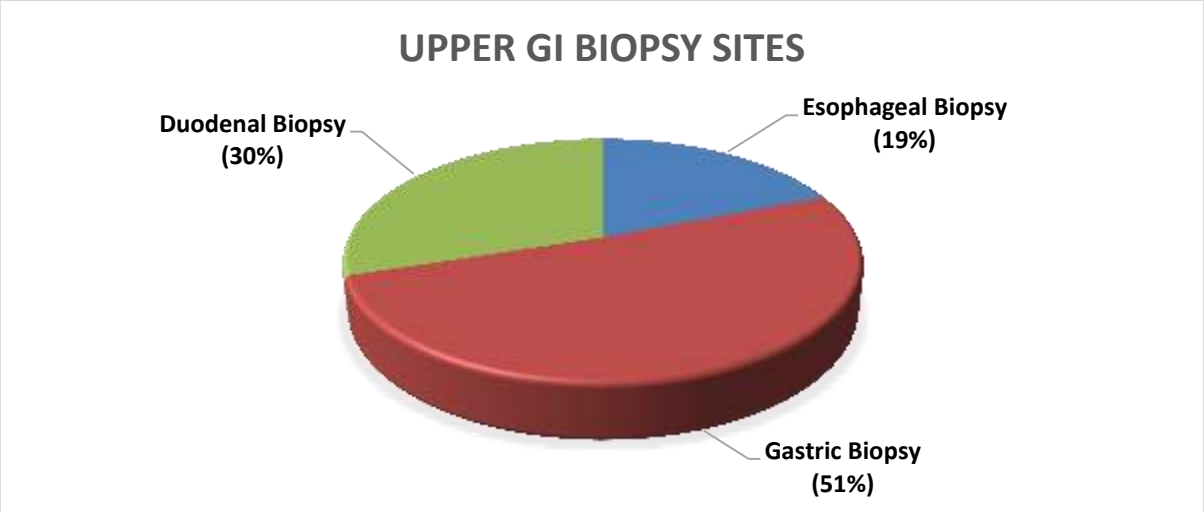

Fig 1: Site Distribution of upper GI biopsies

Out of 200 cases, 132 (66%) were males and 68 (34%) were females with a male to female ratio of 1.94:1. Age of the patients ranged between 10 – 87 years. The youngest patient was a 10 year male with nonspecific duodenitis and the oldest patient was 87 year female with peptic ulcer gastritis. The highest incidence was seen between 41 – 60 years of age (40%) followed by 61 – 80 years (34%), 21 – 40 years (19%) and the lowest incidences (3.5%) were seen in 10 – 20 years and more than 81 years. The histopathological

spectrums of upper GI lesions were shown on Figure 2. Biopsies comprised of 44 (22%) neoplastic cases and 156 (78%) non neoplastic cases. Among the 44 neoplastic cases 17 (8.5%) were from esophagus, 24 (12%) from stomach and 3 (1.5%) were from duodenum.

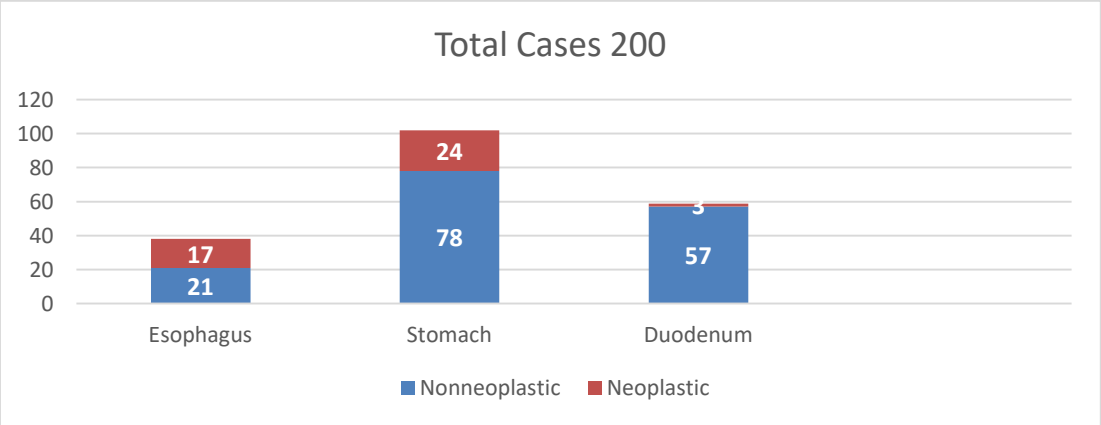

Fig 2: Histopathological Spectrum of upper GI lesions

Table 1: Histopathological findings in upper GI biopsies

LESIONS	NO OF CASES	PERCENTAGE (%)
ESOPHAGUS		
Chronic Non Specific Esophagitis	10	5
Barrets Esophagus	2	1
Reflux Esophagitis	4	2
Dysplasia	2	1
Leiomyoma	1	0.5
Squamous cell Carcinoma	16	8
No Specific Pathology	3	1.5
STOMACH		
Chronic Non Specific Gastritis	32	16
Chronic Non Specific Gastritis with H Pylori	4	2
Intestinal Metaplasia	11	5.5
Acute Non Specific Gastritis	7	3.5
Gastric Ulcer	10	5
Polyp	09	4.5
Eosinophilic Gastritis	1	0.5
Dysplasia	5	2.5
Adeno Carcinoma	15	7.5
No Specific Pathology	8	4
DUODENUM		
Non Specific Duodenitis	43	21.5
Duodenal Ulcer	6	3
Coeliac Sprue	1	0.5
Polyps	5	2.5
No specific Pathology	5	2.5
TOTAL	200	100

Table 1, presented with histopathological findings in upper GI biopsies. Among the 17 esophageal neoplastic lesions, one case was benign and 16 cases were malignant out of which males had 13 malignant lesions and I benign lesion, females had all 3 malignant lesions. The histology of esophageal lesions was showed on figure 3 and the histopathological grading esophageal squamous cell carcinoma was shown on table 2. The benign lesion observed was leiomyoma of esophagus. All the 16 esophageal malignancies were squamous cell carcinoma, out of these 6 (37.5%) cases were well differentiated squamous cell carcinoma and 10 (62.5%) cases were moderately differentiated squamous cell carcinoma.

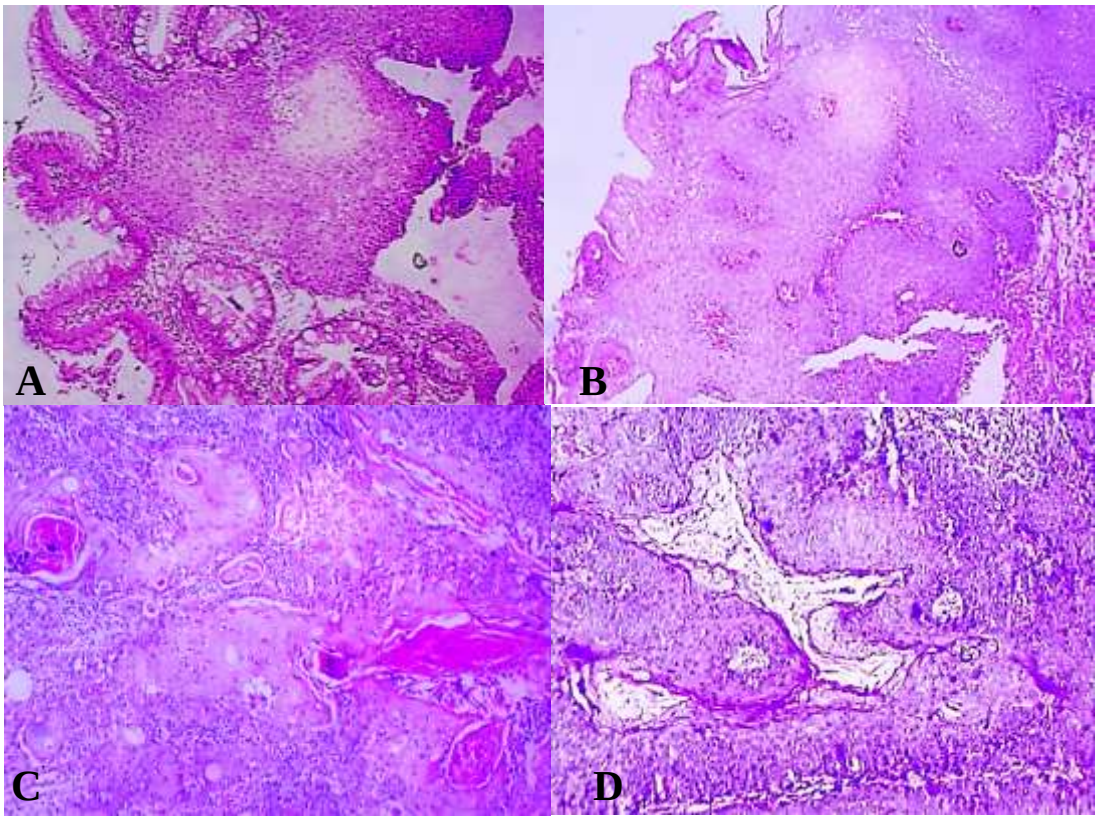

Fig3:Histology of Esophageal Lesions
A) Barrets Esophagus (H&E Stain- 10x).
B) Reflux Esophagitis (H&E Stain- 10x).
C) Well Differentiated Squamous cell Carcinoma Esophagus (H&E Stain- 10x).
D) Moderately Differentiated Squamous cell Carcinoma Esophagus (H&E Stain- 10x)

Table 2: Histopathological grading of esophageal squamous cell carcinoma

Type	No of Cases	(%)
Well differentiated	6	37.5
Moderately differentiated	10	62.5
Total	16	100

The histology of gastric lesions was showed on figure 4 and the histopathological grading of gastric adenocarcinoma was shown on table 2. Among the 24 neoplastic cases of stomach 15 cases were malignant and 9 cases were benign. Malignant lesions exceeded benign lesions in both the sexes with males had 11 malignant lesions and 6 benign lesions, females had 4 malignant lesions and 3 benign lesions. Of the 9 benign gastric lesions 4 cases showed fundic gland polyp, 1 case was an inflammatory polyp and 4 cases were hyperplastic polyp. All the15 malignant cases were histologically diagnosed as adenocarcinoma, out of these 8 cases (53.33%) were well differentiated adenocarcinoma, 4 cases (26.67%) were moderately differentiated adenocarcinoma and 3 cases (20%) were signet ring carcinomas (table 3). Endoscopic biopsies involving the upper two parts of duodenum showed tubular adenoma in 2 cases, inflammatory polyp in 2 cases and Brenner gland polyp in a single case.

Table 3: Histopathological grading of Gastric Adenocarcinoma

Type	No of Cases	(%)
Well differentiated	8	53.33
Moderately differentiated	4	26.67
Signet Ring Carcinoma	3	20
Total	15	100

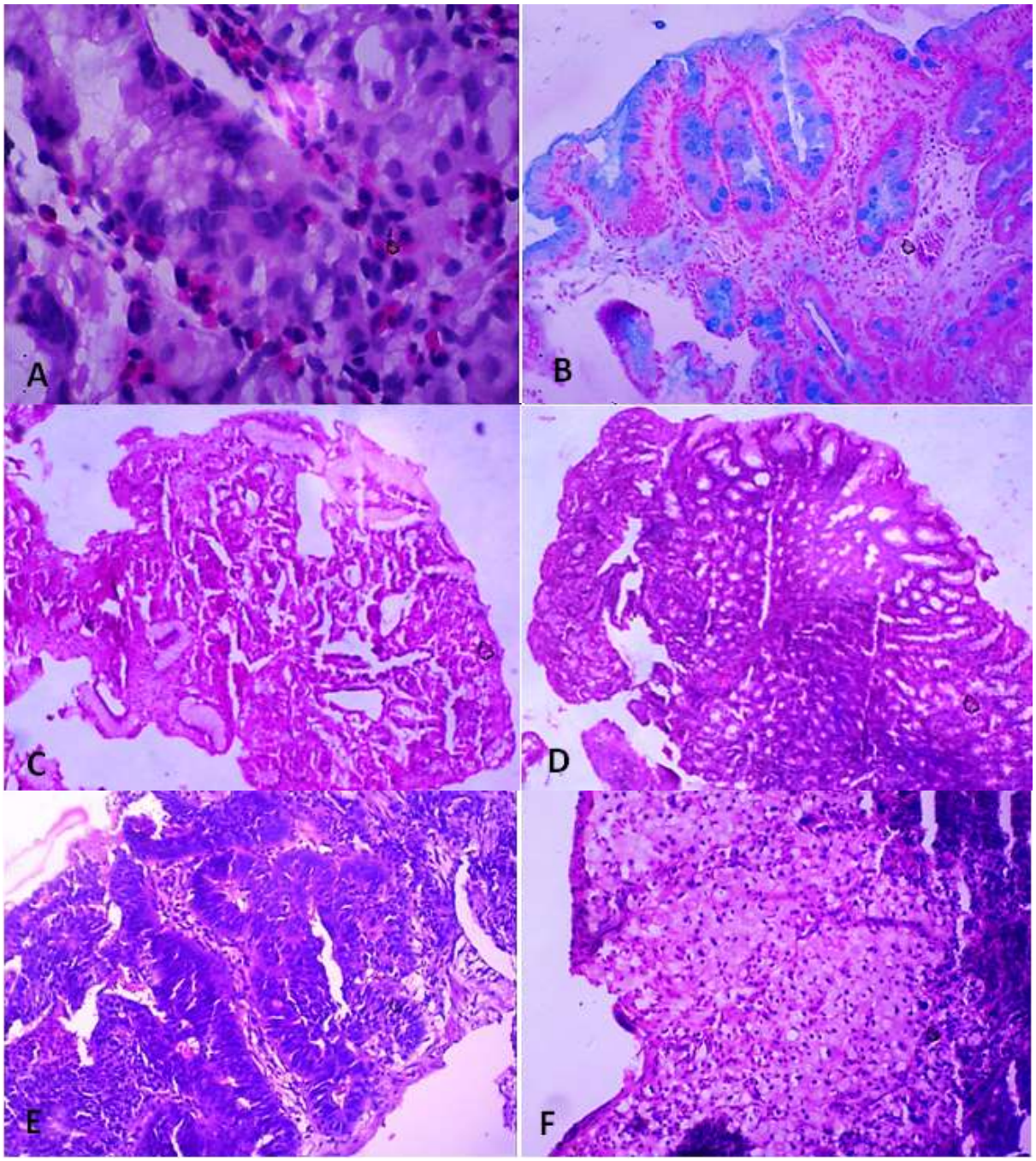

Fig 4: **Histopathology of Gatric Lesions**
A) Eosinophilic Gastritis; H&E stain -40X.
B) Intestinal Metaplasia; Alcian Blue stain -10X.
C) Fundic Gland polyp; H&E stain -4X.
D) Hyperplastic Polyp; H&E stain -4X.
E) Moderately Differentiated adenocarcinoma; H&E stain -10X.
F) Signet Ring carcinoma; H&E stain -10X

DISCUSSION

The common site for upper gastrointestinal endoscopic biopsy is from the stomach, followed by duodenum and esophagus. Most of the patients presented were males (66%) and were in the fourth to sixth decade of life accounting for 40%. Our results show consensus with study done by [16]. This gender ratio favouring males could be reflective of the fact that males are exposed to more risk factors than females and gastrointestinal malignancies are more common in

males according to JC Paymaster *et al.* [17]. The age related difference could be due to variation in the risk factors among the different age groups

Distribution of Esophageal Lesions

Among the esophageal biopsies 52.26% revealed non-neoplastic pathologies and 47.74% showed neoplastic lesions. Majority of the lesions were identified as inflammatory or benign in nature and chronic nonspecific esophagitis was the commonest diagnosis. These results are comparable with the study done by Shennak MM *et al.;* [16]. 94% of the patients with oesophageal carcinoma were presented between 5th – 6th decades of life. These observations are similar with the studies of Qureshi *et al.;* and Bazaz-Malik G [18, 19]. The site distribution of esophageal carcinoma revealed middle third esophagus to be the commonest affected sub site with 12 cases (75%) followed by lower third and upper third esophagus constituting 12.5% each. These findings correlated with the studies of Rao *et al.;* and Rumana *et al.;* [20, 21].

Distribution of Gastric Lesions

Gastric biopsies constituted the majority (51%) of the cases. Of the 102 cases, fifteen cases of gastric malignancies were diagnosed on histopathology as gastric adenocarcinoma in line with other studies [22, 23, 24]. Although the incidence of gastric carcinoma is comparatively lower in India than in other countries, a high incidence has been noted in Southern India [25]. Antrum was the commonest site of gastric carcinoma followed by the body of stomach as similar with other studies [26, 27, 28]. With respect to differentiation of adenocarcinoma, moderately differentiated adenocarcinoma was slightly more than well differentiated adenocarcinoma which correlated with the studies of Kato Y *et al.;* [29]. Among the non-neoplastic gastric chronic nonspecific gastritis was the commonest (16%) which is comparable to the study conducted by Shreesha Khandige [30].

Duodenal Lesions in Upper Gastrointestinal Tract Biopsies

Duodenum has a rich rapidly regenerating epithelial lining which can easily be affected by any inflammatory insult byMemon *et al.;* [31]. In our study 43 patients showed nonspecific duodenitis which is comparable to the previous study done by Neil A Shepherd *et al.;* [4] followed by 6 cases of duodenal ulcer, 5 cases of polyp and one case of celiac disease.

CONCLUSION

Biopsy sampling of upper gastrointestinal mucosa at diagnostic endoscopy provides useful information. A variety of non - neoplastic and neoplastic lesions were reported in the present study across a wide range of age and site distribution. In our study, the commonest site for upper endoscopic biopsy was from the stomach (51%) and common neoplasm of the stomach was adenocarcinoma. The second commonest site was duodenum and commonest lesion was duodenitis.Limitations in diagnostic interpretation are encountered at times due to tiny biopsy material, handling and processing artefacts. However, multiple bits of endoscopic biopsies from abnormal looking mucosa are recommended to establish a definitive diagnosis. Whenever there was a disagreement, the histopathological appearances served to correct a mistaken endoscopic finding. Endoscopic biopsies can detect changing patterns in the spectrum of lesions besides detecting upper GI mucosal lesions at an early stage especially atrophy intestinal metaplasia and dysplasia so as to prevent progress of these lesions to invasive cancer. We therefore conclude that endoscopy is incomplete without biopsy and so the combination of methods provides a powerful diagnostic tool for better patient management

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