ORIGINAL RESEARCH

Histopathological examination of endoscopic biopsies of upper gastrointestinal tract At tertiary care center

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ABSTRACT
The clinic-histopathological profiles of upper GI lesions through endoscopic biopsies, focusing on their correlation with patient demographics. Conducted at the Dr.Shankarrao Chavan Government Medical College & Hospital, this cross-sectional analysis encompasses biopsies from adults presenting with symptoms indicative of upper GI tract pathologies, excluding previously diagnosed GI conditions and inadequate samples.
The methodology entailed collecting and processing 4-6 biopsy samples per patient, followed by Hematoxylin and Eosin staining, with Giemsa stain utilized for suspected gastritis or dysplasia cases to detect H. pylori. The neoplastic lesions were classified per WHO guidelines, and data were analysed using Microsoft Excel.
Results from 103 biopsies indicated a predominance of esophageal lesions (70.9%), with squamous cell carcinoma being the most frequent neoplastic finding (73.9%). Chronic gastritis was the common non-neoplastic condition, with a significant correlation observed between H. pylori presence and gastritis cases. Notably, the majority of neoplastic lesions were found in males, with dysphagia being the most associated symptom.
In conclusion, the study highlights the indispensable role of endoscopic biopsies in diagnosing upper GI tract lesions, underscoring the need for integrating advanced diagnostic techniques to enhance patient care. The findings echo the broader literature's emphasis on the diagnostic synergy between endoscopic and histopathological evaluations, despite variations due to geographical and demographic factors.
Keywords: Upper Gastrointestinal Pathologies, Endoscopic Biopsies, Histopathological Examination

INTRODUCTION
The upper gastrointestinal (GI) tract encompasses a complex array of conditions, from benign inflammatory diseases to malignanttumors, significantly impacting morbidity and mortality. The integration of clinical presentation with histopathological findings derived from endoscopic biopsies is crucial for accurate diagnosis and effective management of these conditions[1,2]. This approach not only enhances the understanding of the disease spectrum but also guides the therapeutic strategies tailored to individual patient needs.
Endoscopic biopsies of the upper GI tract, including the esophagus, stomach, and duodenum, are instrumental in correlating clinical symptoms with microscopic findings, facilitating a precise diagnosis[3]. The procedure's significance is underscored by its ability to detect a wide range of pathologies, from inflammatory conditions and infections like Helicobacter pylori to pre-malignant and malignant lesions, which may not be apparent through endoscopic examination alone[4].
The demographic distribution, particularly age and sex, plays a pivotal role in the prevalence and types of upper GI pathologies, necessitating a comprehensive diagnostic approach to address the diverse clinical scenarios encountered[1,5]. Furthermore, the meticulous correlation between endoscopic and histopathological findings is paramount for the accurate characterization of upper GI lesions, which is essential for devising appropriate management plans[2,4].
In conclusion, the clinicopathological study of endoscopic biopsies from the upper GI tract is indispensable for the comprehensive evaluation and management of GI diseases. This thesis aims to

advance the understanding of these complex interrelations, thereby improving patient care in gastroenterology[5].

AIM AND OBJECTIVES

To elucidate the clinic-histopathological correlation of upper gastrointestinal lesions through endoscopic biopsies, with an emphasis on age and sex distribution.

MATERIALS & METHODS

This investigation is a cross-sectional analysis conducted at the Pathology Department of a tertiary care institution, focusing on endoscopic biopsies from the upper gastrointestinal (GI) tract collected from patients attending the Surgery Department from January 1, 2017, to June 30, 2018.Included were adult individuals aged 18 years and older, presenting with upper GI tract symptoms indicative of ulcers, abnormal growths, or precancerous lesions. Exclusions applied to patients with previously diagnosed GI conditions, lesions within the oral cavity or oropharynx, and biopsies deemed inadequate due to lack of glandular structures or the presence of only fibro-collagenous tissue.Patient records provided brief clinical information, such as demographics, medical history, symptoms, findings from endoscopy, and initial clinical diagnoses, collected using a standardized form.Each patient underwent endoscopic biopsy, yielding 4-6 tissue samples from the upper GI tract, subsequently fixed in 10% formalin for 24 hours. These were then processed using standard histopathological techniques, embedded to orient the mucosal surface optimally, and sectioned into 5-micron slices. Hematoxylin and Eosin (H&E) staining was applied to all sections, with additional Giemsa staining for samples suggestive of gastritis or dysplasia for Helicobacter pylori detection.

STAINING TECHNIQUES

The classification of neoplastic lesions adhered to the WHO Classification of Tumors guidelines. The study also documented the occurrence of associated or predisposing factors like ulcers[6], Barrett's esophagus, and Helicobacter pylori infections, among others.The correlation between clinical presentations and histopathological findings was statistically analyzed using Microsoft Excel software.

OBSERVATIONS AND RESULTS
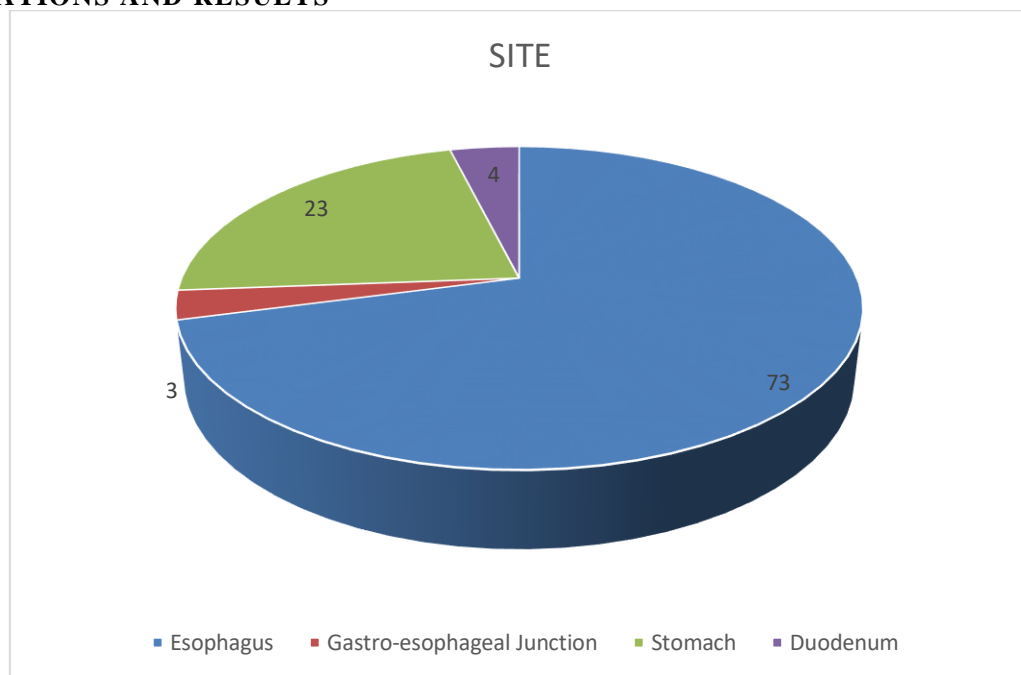
Graph 1: Distribution of upper gastrointestinal biopsies by Site.

The study included 103upper gastrointestinal biopsiesout of which 73 (70.9%) were esophageal, 23 (22.4%)were from the stomach, 4 (3.8%) were from duodenum&3(2.9%) were from GE junction. The endoscopic biopsies were divided as non-neoplastic which included 30 cases (29.2%) & neoplastic which included 73cases(70.8%).Among the non-neoplastic lesions, 11 cases (36.6%) were reported as 'negative for malignancy' which included a peak age group of 26-35 years. Dysplasia constituted 10 cases (33.3%) which is common in all age groups. Gastritis constituted 7 cases (23.3).The peak age group of gastritis was found to be 56-65 years. Polyps constituted 1 case(3.3%) and were common in 36 -45 age groups.

Among the neoplastic lesions, the most common was Squamous cell carcinoma constituting 54 cases (73.9%) followed by 15 cases of adenocarcinoma

(20.5%). The most common age group was again 56-65 years for both squamous cell & adenocarcinoma, the lowest age being 26 years & highest 86 years. The non-neoplastic lesions including gastritis, dysplasia, polyp&barrettesesophagus were commonly seen in malesaccounting for 18 cases (60%),with a male-female ratio of 1.5 :1.

Overall, the incidence of neoplastic lesions was higher in males with 50cases (68.5%), with a male-female ratio of 2.17:1. Squamous cell carcinomas showed a slight male preponderance of 64.8% while adenocarcinomas showed an 80% predilection for males.Adenosquamousis more common in males& signet ring carcinomas are more common in females.

In neoplastic lesions, dysphagia was most commonly associated with being negative for malignancy (42.8%) and dysplasia (42.8%), while pain in the abdomen was frequently linked to gastritis (50%). In neoplastic lesions, comprising 73 cases highlights that dysphagia was predominantly associated with squamous cell carcinoma (86.5%), and pain in the abdomen showed a diverse pathology with adenocarcinoma being the most common (50%). Other complaints like vomiting, anorexia, weight loss, hematemesis, and obstruction had fewer cases but showed a variety of underlying histopathologies, with squamous cell carcinoma being the most prevalent diagnosis across complaints.

Table 1: Correlation Between Endoscopic Findings and Histopathological Diagnoses in the Upper Gastrointestinal Tract

		Non-Neoplastic						Neoplastic						
		Histopathological Diagnosis						Histopathological Diagnosis						
Sr.No.	Endoscopic Finding's	Gastritis	Barrett's Esophagus	Dysplasia	Negative For Malignancy	Polyp	Total (%)	Squamous Cell Carcinoma	Adeno-carcinoma	Adenosquamous Carcinoma	Signet Ring Adeno-carcinoma	Brunner Gland adenoma	Non Hodgkin Lymphoma	Total (%)
1	Ulcerative	7	1	8	6	0	22	18	11	0	0	0	0	29
2	Proliferative	0	0	2	3	0	5	32	4	1	1	0	0	38
3	Polypoidal	0	0	0	1	1	2	2	0	0	0	1	1	4
4	Stricture	0	0	0	1	0	1	2	0	0	0	0	0	2
	Total	7	1	10	11	1	30	54	15	1	1	1	1	73(100%)

Table 2: Distribution of Histopathological Diagnoses Across Different Segments of the Upper Gastrointestinal Tract

Site	Histopathological Diagnosis										Total (%)
	Barrett's Esophagus	Dysplasia	Negative For Malignancy	Squamous cell Carcinoma			Adenocarcinoma			Adenosquamous carcinoma	
				WD	MD	PD	WD	MD	PD		
Upper Third	0	1	4	3	9	1	0	0	0	0	18
Middle Third	1	5	2	7	18	4		0	0	1	38
Lower Third	0	2	2	2	8	1	1	1	0	0	17
Gastroesophageal Junction	0	0	0	0	1	0	1	1	0	0	3
Total	1	8	8	12	36	6	2	2	0	1	76(100%)
Site	Histopathological diagnosis										Total (%)

	Gastritis	Negative for malignancy	Dysplasia	Polyp	Adenocarcinoma			Signet ring adenocarcinoma	Non hodgekin lymphoma	
					WD	MD	PD			
Cardia	0	0	0	0	0	0	0	0	0	**0**
Fundus	0	0	0	0	0	0	0	0	0	**0**
Body	1	2	0	1	0	0	0	0	0	**4**
Antrum	2	0	0	0	2	2	1	1	1	**9**
Pylorus	4	0	2	0	1	0	3	0	0	**10**
Total	**7**	**2**	**2**	**1**	**3**	**2**	**4**	**1**	**1**	**23(100%)**
WD- well differentiated, MD –Moderately differentiated, PD – poorly differentiated										

Table 3: Prevalence of Helicobacter pylori in Gastritis and Dysplasia Cases

Site	Histopathological Diagnosis					Total (%)
	Negative For Malignancy	Brunner Gland Adenoma	Adenocarcinoma			
			WD	MD	PD	
First Part	0	1(100%)	0	0	0	1(25%)
Second Part	0	0	0	0	0	0
Ampullary region	1(33.3%)	0	1(33.3%)	1(33.3%)	0	3(75%)
Total	1(25%)	1(25%)	1(25%)	1(25%)	0	4(100%)
WD- well differentiated, MD –Moderately differentiated, PD – poorly differentiated						

	H.pylori		
Histopathological Diagnosis	**Total**	**Present**	**Absent**
Gastritis	7(41.1%)	1(14.2%)	6(85.8%)
Dysplasia	10(58.8%)	2(20%)	8(80%)
Total	17(100%)	3(17.6%)	14(82.3%)

In the first table, ulcerative endoscopic findings were most prevalent, with 73.3% of cases showing non-neoplastic histopathological diagnoses and 39.7% associated with squamous cell carcinoma. Proliferative findings followed, with 52.4% linked to neoplastic conditions, predominantly squamous cell carcinoma.

The second table details the distribution of histopathological diagnoses across different sections of the esophagus and gastroesophageal junction. The middle third of the esophagus had the highest incidence of adenocarcinoma at 50%, followed by the upper third with squamous cell carcinoma at 23.7%.

The third table focuses on the stomach, showing the highest incidence of neoplastic findings in the pylorus (43.4%), with a notable presence of poorly differentiated adenocarcinoma.

The fourth table examines the presence of H. pylori in relation to gastritis and dysplasia. Gastritis cases had an 85.8% absence of H. pylori, while dysplasia had an 80% absence rate, indicating a less significant role of H. pylori in these conditions within the sampled population.
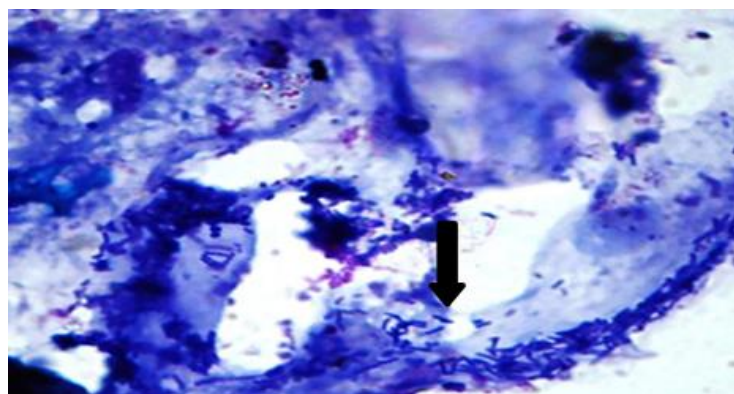

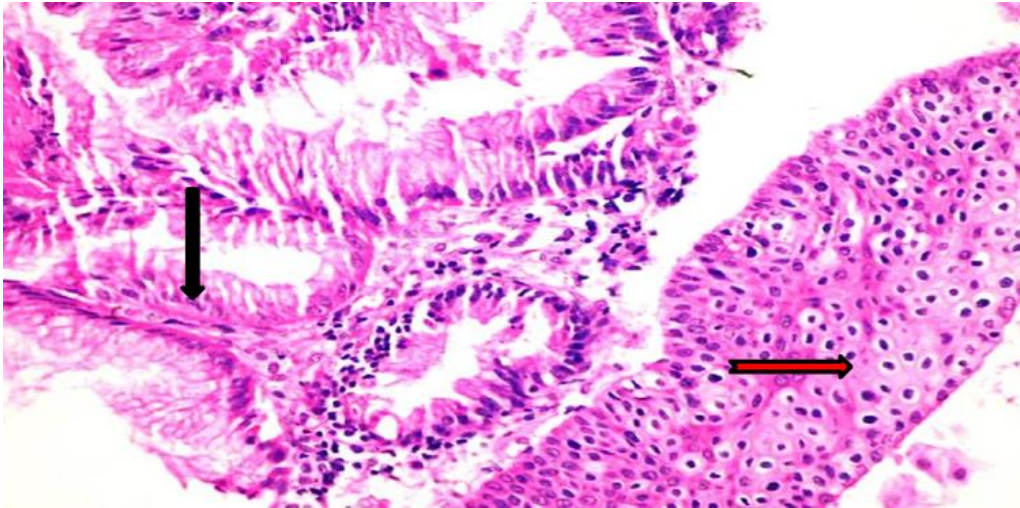**Figure: 1Spiral shaped Helicobacterpyloriinthegastricpit.(100xGiemsastain)**

Figure: 2Barrett'sesophagus shown in esophageal-squamous epithelium(red arrow) is replaced by columnar epithelium of intestinal type with goblet cells (black arrow)..(H&EX40)
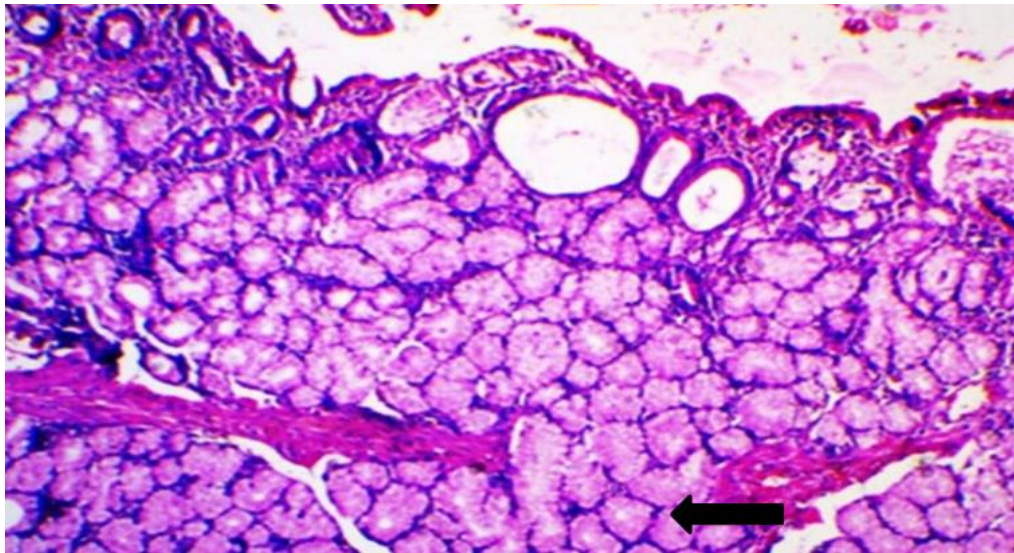

Figure:3 Brunner gland adenoma showing branched acinotubular glands (Blackarrow)in submucosa.Glands are lined by cells which stain strongly for mucin.(H&E X40).
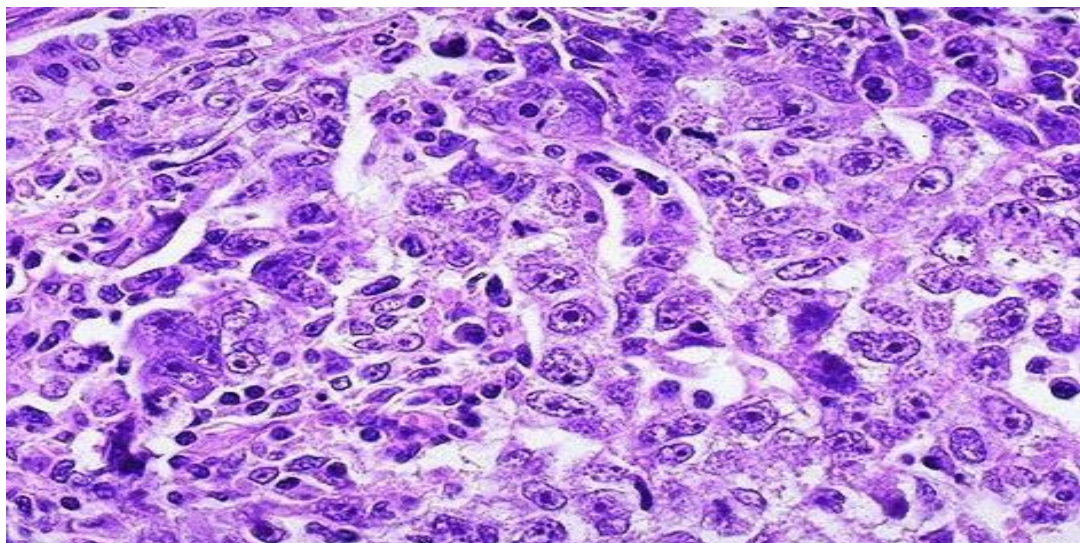

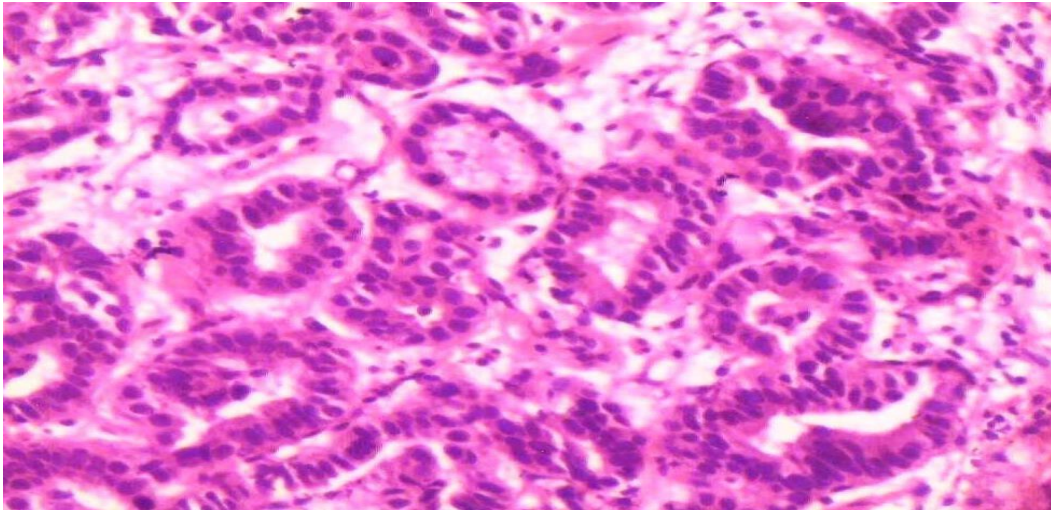**Figure: 4 Poorly differentiated squamous cell carcinoma esophagus**(HPEH&EX40)

Figure: 5 Well differentiated intestine all type of gastricadenocarcinoma(40xH&E)

DISCUSSION

Our study's observation of a high incidence of chronic gastritis aligns with the findings by Anjana M.L[7]. and Kavitha Yevoor, who reported chronic gastritis as the most common gastric lesion, highlighting the widespread nature of this condition and the significant role of Helicobacter pylori. This is further supported by Gulia et al[8]., who emphasized the importance of H. pylori detection in gastritis cases.

The prevalence of esophageal carcinomas in our study (67%) is notable and warrants comparison with Varadarajulu et al[9]., who investigated the yield of upper endoscopy in dysphagia and identified esophageal cancer as a significant finding. This highlights the critical role of endoscopic evaluation in the early detection of malignancies.

Our findings on the presence of neoplastic lesions in the duodenum, although less common, resonate with the work of Afzal et al[10]., underscoring the morphological spectrum of gastric lesions and the importance of endoscopic biopsy in identifying neoplastic conditions.

The male-to-female ratio observed in our study draws parallels with the epidemiological data presented by Zhang et al[11]., which could reflect underlying genetic or environmental risk factors specific to our study population. This gender disparity in GI tract lesions warrants further investigation into hormonal or lifestyle factors influencing disease prevalence.

Our study's demographic distribution, with the highest number of cases observed in individuals aged 61-70 years, is consistent with the findings of Enzinger and Mayer on the age-related increase in esophageal and gastric cancers, suggesting an age-dependent rise in the susceptibility to GI malignancies[12].

The concordance between endoscopic and histopathological diagnoses in our study emphasizes the diagnostic power of combining these modalities, a sentiment echoed by Islam et al[13]., who highlighted the efficacy of endoscopic evaluation in upper GI lesions. However, discrepancies in certain cases underscore the need for histopathological confirmation, as endoscopic appearance alone may not always accurately predict the underlying pathology.

The significant presence of H. pylori in gastritis cases within our study, akin to findings by Jemilohun et al[14]., underscores the bacterium's role in the etiopathogenesis of gastritis and its potential progression to more severe conditions, including malignancy. This reinforces the importance of H. pylori eradication in the management of chronic gastritis and its precancerous sequelae.

The variation in disease patterns, particularly the prevalence of esophageal and gastric cancers observed in our study compared to regional studies like those by Rumana et al[15]., suggests the influence of geographical, dietary, and genetic factors on the histopathological spectrum of GI diseases. This highlights the importance of context-specific research in understanding the global burden of GI diseases.

CONCLUSION

The study on the histopathological spectrum of upper gastrointestinal endoscopic biopsies in a tertiary care center provided valuable insights into various GI tract lesions, highlighting the crucial role of integrating endoscopic findings with histopathological diagnoses for accurate patient management. Our findings, which showed a significant prevalence of conditions such as chronic gastritis and various neoplastic lesions, align with the broader literature, emphasizing the importance of these diagnostic tools in detecting and managing upper GI diseases effectively.

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