



## CLINICOPATHOLOGICAL SPECTRUM OF UPPER GASTROINTESTINAL TRACT LESIONS: AN ASSESSMENT THROUGH ENDOSCOPIC BIOPSIES

### Pathology

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### ABSTRACT

**Background And Aims:** Upper gastrointestinal tract (UGIT) disorders encompass a spectrum of inflammatory, benign, and malignant lesions, posing significant diagnostic challenges. While endoscopic biopsy allows direct visualization and tissue sampling, histopathology ensures definitive diagnosis. This study aimed to assess the clinicopathological spectrum of UGIT lesions by correlating endoscopic findings with histopathological results to enhance diagnostic accuracy and patient management. **Methods:** This observational study was conducted at the Department of Pathology, Heritage Institute of Medical Sciences, Varanasi, with approval from the Ethics and Scientific Committee. A total of 226 retrospective and prospective cases were analyzed between 2019 and 2022. Patients underwent endoscopic biopsies, and consent was obtained from all participants. Clinical data, including symptoms and endoscopic impressions, were recorded. Specimens were processed through standard histopathological techniques, and results were analyzed using SPSS 28. **Results:** Chronic duodenitis was the most frequent finding (n=100), often associated with ulcers (91 cases). Adenocarcinoma primarily manifested as ulceroproliferative lesions (11 cases). In the esophagus, esophagitis (12 cases) was prevalent, followed by adenocarcinoma and squamous cell carcinoma. Chronic gastritis predominated in the stomach (50 cases), with adenocarcinoma identified in 9 cases. Significant agreement was found between histopathological and endoscopic findings, confirming the importance of combining both for accurate diagnosis. **Conclusion:** The study shows that endoscopic biopsy, paired with histopathology, offers a robust approach to diagnosing UGIT lesions. Chronic duodenitis, esophagitis, and gastritis were frequently encountered, emphasizing the need for precise histological evaluation in UGIT disorders to improve patient outcomes.

### KEYWORDS

Upper gastrointestinal tract; Endoscopic biopsy; Chronic gastritis; Histopathology.

### INTRODUCTION

The gastrointestinal tract (GIT) frequently serves as a site for a wide range of physiological and pathological conditions, with upper GIT disorders posing a substantial burden on global health.<sup>1</sup> Gastrointestinal cancers account for 12.9% of all malignancies and contribute to 15% of global cancer-related deaths.<sup>2</sup> Among these, stomach cancer ranks as the fifth most prevalent malignancy and the third leading cause of cancer-related mortality worldwide. Early diagnosis and intervention remain crucial in improving patient outcomes and reducing morbidity and mortality.<sup>3</sup>

Upper GIT disorders, which include inflammatory, benign, and malignant lesions, present significant diagnostic challenges. Endoscopic biopsy has emerged as a cornerstone of clinical practice, enabling direct visualization and tissue sampling for histopathological analysis.<sup>4</sup> The use of flexible, fiber-optic endoscopes allows clinicians to detect lesions in hard-to-reach areas, enhancing diagnostic accuracy and offering insights that are otherwise not achievable through non-invasive methods.<sup>5</sup> Endoscopy not only aids in the detection of early neoplastic changes but also supports monitoring disease progression, treatment response, and complications.<sup>6</sup>

This study aims to explore the clinicopathological spectrum of upper GIT lesions by correlating endoscopic findings with histopathological results. Despite advances in diagnostic tools, a gap exists in understanding the patterns and prevalence of these lesions within specific regions, including Purvanchal. This study intends to provide valuable insights into the frequency and nature of various upper GIT lesions, enabling early diagnosis and better disease management strategies.

### MATERIAL AND METHODS

This observational study was conducted in the Department of Pathology at Heritage Institute of Medical Sciences, Varanasi, with approval from the Hospital Ethics and Scientific Committee. Both retrospective and prospective cases of patients who underwent upper gastrointestinal (GIT) endoscopic biopsies were included. Informed consent was obtained from all participants after a detailed explanation of the study's purpose and procedures. The sample size was determined to be 226 cases, calculated using a statistical formula with a prevalence of 18%, a 95% confidence interval ( $Z = 1.96$ ), and a 5% margin of error. Patients of all ages and genders were eligible, with exclusion criteria limiting cases to those without known GIT malignancies and excluding biopsies from the oral cavity or pharynx. Clinical data,

including symptoms like pain, dyspepsia, nausea, and regurgitation, were recorded along with demographic information and endoscopic findings. The retrospective cases were analyzed from hospital records, while prospective cases involved processing fresh biopsy specimens through a series of steps including fixation, dehydration, embedding, section cutting, and staining with hematoxylin and eosin.

The biopsies were thoroughly examined microscopically, and findings were categorized into neoplastic or non-neoplastic lesions. Neoplastic lesions were further graded and subtyped, while non-neoplastic cases were evaluated for inflammatory patterns, granulomas, or the presence of parasites. Data were analyzed using SPSS version 28, with results presented through tables, bar diagrams, and pie charts to ensure clarity and ease of interpretation.

This study, which spanned retrospective data from 2019 to 2022 and included prospective cases over two years from the date of thesis approval, aimed to provide insights into the clinicopathological spectrum of upper GIT lesions. The use of endoscopic biopsy, with its ability to offer precise histopathological correlations, proved invaluable for diagnosing both early and advanced stages of disease, facilitating timely clinical decisions and improved patient care.

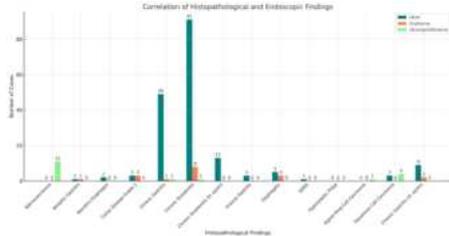
### RESULTS

**Table 1: Correlation Of Histopathological And Endoscopic Findings**

Histopathological Findings	Endoscopic Findings						Total Cases
	Ulc er	Eryt hema	Ulceroprol iferative	Plaques	Nod ules	Pol yp	
Adenocarcinoma	0	0	11	2	0	1	14
Atrophic Gastritis	1	1	0	0	0	0	2
Barrett's Esophagus	2	0	0	0	0	0	2
Celiac Disease Grade 2	3	3	0	0	0	0	6
Chronic Gastritis	49	1	1	0	0	0	51
Chronic Duodenitis	91	8	1	0	0	0	100
Chronic Duodenitis (H. pylori)	13	0	0	0	0	0	13
Erosive Gastritis	3	0	0	0	0	0	3
Esophagitis	5	3	0	3	1	0	12
GERD	1	0	0	0	0	0	1
Hyperplastic Polyp	0	0	0	0	4	2	6

Signet Ring Cell Carcinoma	0	0	1	0	0	0	1
Squamous Cell Carcinoma	3	0	4	1	0	0	8
Chronic Gastritis (H. pylori)	9	2	0	0	0	0	11

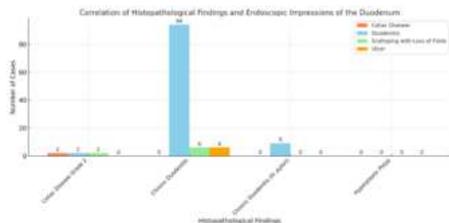
This table represents the correlation between histopathological findings and endoscopic observations. Chronic duodenitis was the most frequent finding, often associated with ulcers (91 cases). Additionally, adenocarcinoma primarily manifested as ulceroproliferative lesions (11 cases), while esophagitis had a notable presence in cases involving plaques (3 cases).



**Table 2: Correlation Of Histopathological Findings And Endoscopic Impressions Of The Duodenum**

Histopathological Findings (Duodenum)	Endoscopic Findings					Total Cases
	Celiac Disease	Duodenitis	Polypoidal Lesion	Scalloping With Loss Of Folds	Ulcer	
Celiac Disease Grade 2	2	2	0	2	0	6
Chronic Duodenitis	0	94	0	6	6	106
Chronic Duodenitis (H. pylori)	0	9	0	0	0	9
Hyperplastic Polyp	0	0	1	0	0	1

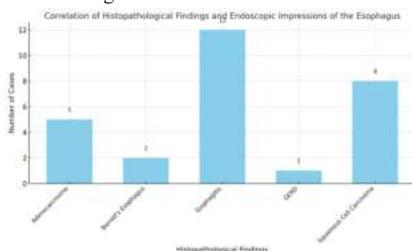
This table represents the correlation between histopathological findings and endoscopic impressions for duodenal conditions. Chronic duodenitis was the most frequent finding (94 cases), with six cases showing scalloping with loss of folds and six presenting as ulcers. Celiac disease grade 2 showed an association with scalloping in two cases.



**Table 3: Correlation Of Histopathological Findings And Endoscopic Impressions Of The Esophagus**

Histopathological Findings (Esophagus)	Endoscopic Findings			Total Cases
	Carcinoma	Esophagitis	Ulcer	
Adenocarcinoma	5	0	0	5
Barrett's esophagus	0	2	0	2
Esophagitis	0	12	0	12
GERD	0	0	1	1
Squamous Cell Carcinoma	8	0	0	8

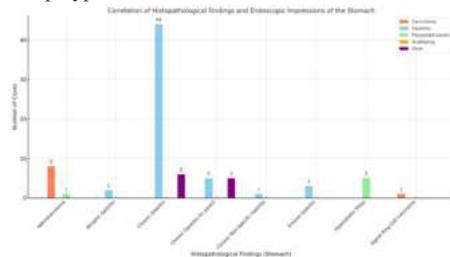
This table presents the correlation between histopathological findings and their endoscopic impressions in esophageal cases. Adenocarcinoma and squamous cell carcinoma were found primarily as carcinoma cases, while esophagitis presented frequently with 12 cases. GERD had a single case associated with ulceration.



**Table 4: Correlation Of Histopathological Findings And Endoscopic Impressions Of The Stomach**

Histopathological Findings (Stomach)	Endoscopic Findings					Total Cases
	Carcinoma	Gastritis	Polypoidal Lesion	Scalloping With Loss Of Folds	Ulcer	
Adenocarcinoma	8	0	1	0	0	9
Atrophic Gastritis	0	2	0	0	0	2
Chronic Gastritis	0	44	0	0	6	50
Chronic Gastritis (H. pylori)	0	5	0	0	5	10
Chronic Non-Specific Gastritis	0	1	0	0	0	1
Erosive Gastritis	0	3	0	0	0	3
Hyperplastic Polyp	0	0	5	0	0	5
Signet Ring Cell Carcinoma	1	0	0	0	0	1
<b>Total</b>	<b>9</b>	<b>55</b>	<b>6</b>	<b>1</b>	<b>10</b>	<b>81</b>

This table represents the histopathological findings and their corresponding endoscopic impressions in the stomach. Chronic gastritis was the most frequent finding (55 cases), with six cases presenting as ulcers. Adenocarcinoma accounted for nine cases, while hyperplastic polyps were seen in five cases.



**DISCUSSION**

This study aimed to correlate histopathological findings with endoscopic impressions across three regions: the duodenum, esophagus, and stomach. The analysis highlighted the diagnostic role of endoscopic biopsies in identifying both inflammatory and neoplastic lesions in these areas, confirming that histopathology plays a critical role in verifying endoscopic impressions.

In the **duodenal region** (n=122), the most frequent finding was **chronic duodenitis** (99 cases), with **H. pylori-associated duodenitis** present in 13 cases. Celiac disease grade 2 was diagnosed in 5 cases, and rare conditions like hyperplastic polyps and indeterminate colitis appeared once each. These results align with **Siddiqui B et al.**<sup>7</sup>, who reported that non-specific inflammation and duodenal ulcers were prevalent in adults and children but less frequent among geriatric patients. Their findings also confirmed that celiac disease had a higher occurrence among pediatric patients compared to adults and older populations.

In the **esophagus** (n=28), the study found that **esophagitis** was the leading diagnosis with 12 cases, followed by **squamous cell carcinoma** in 8 cases and **adenocarcinoma** in 5 cases. Barrett's esophagus accounted for 2 cases, and **GERD** was observed in one case. These findings are consistent with **Rani D et al.**<sup>8</sup>, who reported that all malignant esophageal tumors identified during endoscopy were confirmed by histology. **Siddiqui B et al.**<sup>7</sup> found squamous cell carcinoma to be particularly common in adult and geriatric populations, which is consistent with the patterns observed in this study.

In the **stomach** (n=80), **chronic gastritis** was the most frequent finding, diagnosed in 50 cases. Additionally, **adenocarcinoma** was identified in 9 cases, **H. pylori-associated gastritis** in 10 cases, and **hyperplastic polyps** in 5 cases. Less common findings included **erosive gastritis** (3 cases), **atrophic gastritis** (2 cases), and **signet ring cell carcinoma** (1 case). These results align with **Somani N.S. et al.**<sup>9</sup>, who found that adenocarcinoma was more prevalent in the lower third of the stomach, attributing the trend to lifestyle factors like alcohol consumption and smoking. **Sharma A et al.**<sup>10</sup> similarly noted chronic gastritis as the most common finding and reported cases of ulcerative lesions, polypoidal growths, and a few instances of signet ring cell carcinoma, reflecting similar pathology.

The present study also examined the **correlation between endoscopic and histopathological findings**. Adenocarcinoma was strongly associated with **ulceroproliferative lesions** (11 cases) and occasionally with ulcers (1 case). Atrophic gastritis was linked to both ulcers and erythema, and Barrett's esophagus exclusively appeared with ulcers. Chronic duodenitis often presented with ulcers (91 cases) and, to a lesser degree, with erythema (8 cases). H. pylori-associated duodenitis was only found alongside ulcers (13 cases). Similarly, chronic gastritis frequently coexisted with ulcers (49 cases) and was less often linked with erythema or ulceroproliferative lesions. **Hyperplastic polyps** were identified in association with nodules and polypoidal lesions, while **signet ring cell carcinoma** was observed with ulceroproliferative growths.

The findings confirm the complementary nature of **endoscopy and histopathology**. Sharma A et al. observed a high level of agreement between these two diagnostic methods, particularly in cases involving polyps. Similarly, Somani N.S. et al.<sup>9</sup> reported a 91% concordance between endoscopic and histological diagnoses. This study reinforces that while endoscopy provides a reliable initial impression, **histological evaluation is essential** for definitive diagnosis, especially in cases involving malignancy. The results are consistent with Islam SMJ et al.<sup>11</sup>, who demonstrated that histopathology plays a key role in identifying adenocarcinomas that might be misinterpreted as benign during endoscopy.

In short this study emphasizes that **endoscopic biopsy remains a valuable diagnostic tool** for UGIT lesions. However, **histopathological confirmation** is critical to ensure diagnostic accuracy and inform effective treatment strategies.

**Strengths**

This study provides valuable insights into the correlation between endoscopic findings and histopathological results, enhancing diagnostic accuracy for upper gastrointestinal tract lesions. The inclusion of both retrospective and prospective cases ensures comprehensive data collection. Additionally, the use of standardized biopsy procedures and thorough histopathological analysis adds to the study's reliability.

**Limitations**

The study is limited by its single-center design, potentially reducing the generalizability of the findings. Additionally, a relatively small sample size for certain rare conditions may impact the statistical significance. Lastly, the retrospective component may introduce bias due to incomplete or inconsistent medical records.

**CONCLUSION**

The study demonstrated a strong correlation between histopathological findings and endoscopic impressions across the upper gastrointestinal tract. Chronic duodenitis was the most frequent finding in the duodenum, often appearing as duodenitis and occasionally with scalloping or ulcers. In the esophagus, esophagitis was the most common condition, while adenocarcinoma and squamous cell carcinoma were also observed. GERD had limited association with ulcers. In the stomach, chronic gastritis predominated, with some cases presenting as ulcers, and adenocarcinoma was identified in several instances. Hyperplastic polyps appeared in both the stomach and duodenum. These findings showed the importance of combining endoscopy with histopathology for accurate diagnosis and effective patient management.

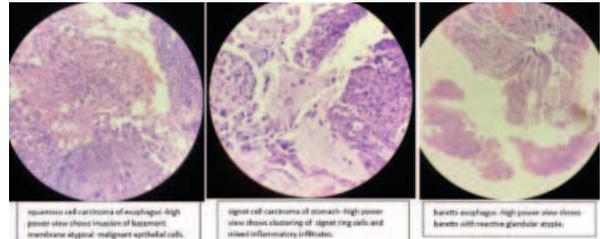
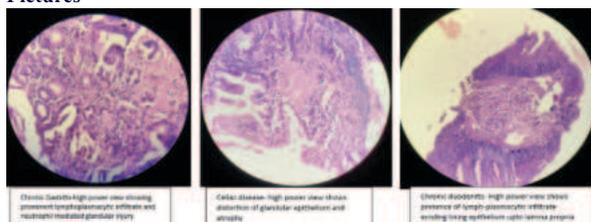
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**Funding:** The study did not receive any financial support.

**Consent:** Written informed consent was obtained from all participants and securely archived.

**Ethical Approval:** The study received ethical clearance, adhering to the required institutional protocols.

**Pictures**



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