

A THREE-YEAR RETROSPECTIVE STUDY ON HISTOPATHOLOGICAL LESIONS IN UPPER GASTROINTESTINAL ENDOSCOPIC BIOPSIES

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ABSTRACT

Upper gastrointestinal tract disorders are one of the most commonly encountered problems in clinical practice. Histopathological study of lesions in upper gastrointestinal endoscopic biopsies are essential for accurate diagnosis as well as further management of various upper gastrointestinal disorders. The aim of this study is to determine the spectrum of histopathological lesions of the upper gastrointestinal tract which includes gastric, esophageal and duodenal lesions. This cross-sectional study was carried out in the Department of Pathology, Kathmandu Model Hospital - Institute of Health Sciences (KMH-IHS) over a period of 3 years. All the endoscopic biopsies received from the departments of medicine and surgery at the pathology department from January 1st 2023 to December 31st 2025 were included in the study. A total of 263 endoscopic biopsies were evaluated, out of which 162 (61.59%) were males and 101 (38.40%) were females. The age of the patients ranged from 15 to 88 years. The most common site was stomach 233 (88.50%). Adenocarcinoma of the stomach accounted for a total of 8 cases (3.43%). Among the 17 oesophageal biopsies; 15 cases (88.23%) were non-neoplastic and 2 cases (11.76%) were neoplastic. Chronic duodenitis was the most common diagnosis from the duodenal biopsies which accounted for a total of 9 cases (69.23%). Upper gastrointestinal endoscopy is an effective procedure which, combined with histopathology, plays an important role in early detection of lesions with accurate diagnosis as well as further management.

KEYWORDS

Adenocarcinoma, duodenitis, endoscopy, gastric, Nepal

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INTRODUCTION

The upper gastrointestinal tract (GIT) can be affected by various pathologies like infectious diseases, inflammatory disorders, mechanical trauma, toxic injuries, physical reactions, radiation damage and neoplasm.¹ The upper gastrointestinal fiber optic endoscopy was first used in 1968 and proved to be a major breakthrough in the diagnosis of oesophago-gastro duodenal lesions.² Endoscopy generates biopsy from sites that were previously inaccessible without a major surgery.³

Endoscopic biopsy examination followed by histological assessment is not only used to diagnose malignant and inflammatory lesions but also for monitoring the course, extent of disease, response of the therapy and early detection of complications. This is reflected by a rising trend in obtaining mucosal biopsies from upper GIT.^{4,5}

Across the world, gastric adenocarcinoma is the second most common cancer and carcinoma of the esophagus is the seventh most common carcinoma and also a leading cause of death.⁶ This paper reports the histopathological lesions in upper gastrointestinal endoscopic biopsies in Kathmandu.

MATERIALS AND METHODS

This retrospective cross-sectional study was carried out in the Department of Pathology, Kathmandu Model Hospital- Institute of Health Sciences (KMH-IHS) over a period of 3 years. All the endoscopic biopsies received from the departments of medicine and surgery at the pathology department from January 1st 2023 to December 31st 2025 were included in the study. A total of 263 endoscopic biopsies were evaluated. Permission for research was obtained from the Institutional Research Committee (IRC) prior to commencement of the study. Preserved tissue slides were examined under light microscope by the principal investigator. The patients of all ages and both sexes who underwent upper gastrointestinal endoscopy biopsy during the study period were included. The histopathological diagnosis of each lesion were recorded. Geimsa stain was performed to confirm the presence of *Helicobacter pylori* as needed. Grading for gastric and duodenal biopsies was done according to updated revised Sydney and modified marsh classification. All tumors were classified according to the WHO classification. For detection of *H. pylori* induced lesions, the surface epithelium and foveolar lumen were

searched for curved bacilli in Giemsa stain. Organisms were searched under oil immersion (100X). The sections were examined for various histopathological features related to gastritis like inflammatory infiltrate, neutrophilic activity, intestinal metaplasia, atrophy, and presence of *H. pylori*. The sections were also examined for the presence of malignant changes.

All endoscopic biopsies from lesions of upper gastrointestinal tract including the oesophagus, stomach and up to the second part of duodenum were included in the study. The lesions of the mouth and pharynx and the duodenal biopsies beyond the second part of duodenum were excluded in the study. The data were entered into Microsoft Excel 2010 and descriptive analysis with frequency and percentage was done.

RESULTS

Out of 263 cases in our study, 162 (61.59%) were males and 101 (38.40%) were females with male to female ratio being 1.6:1. The age of the patient ranged from 15 to 88 years.

Table 1: Histopathology diagnosis of lesions from the esophagus

Lesions	Cases (n)	%
Chronic nonspecific esophagitis	11	64.70
Benign esophageal ulcer	3	17.64
Barrett's esophagus without dysplasia	1	5.88
Squamous cell carcinoma	2	11.76
Total	17	100.00

Amongst the site wise distribution of endoscopic biopsies; the higher incidence was of the gastric biopsy which constituted a total of 233 cases (88.5%) followed by the Esophageal lesions, 17cases (6.46%). Histological diagnosis of gastric, esophageal and duodenal biopsies are presented below in tables 1, 2 and 3 respectively. On histology diagnosis of the total malignant cases from the gastric lesions; adenocarcinoma constituted a total of 8 cases (3.43%) and Mucosa-associated lymphoid tissue (MALT) lymphoma was diagnosed in 1 case (0.42%). Out of these malignant lesions, 5(55.55%) cases were male patients and 4 (44.44%) cases were female patients. Amongst 17 cases of esophageal biopsy, 2 cases (11.76%) were malignant which was diagnosed on histopathology as squamous

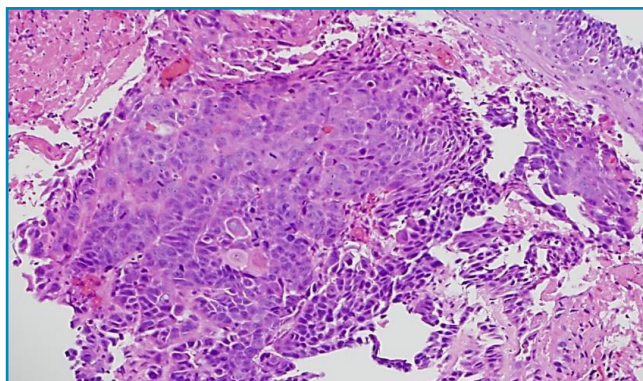


Fig. 1: Moderately differentiated squamous cell carcinoma, Esophagus; H&E stain (x10)

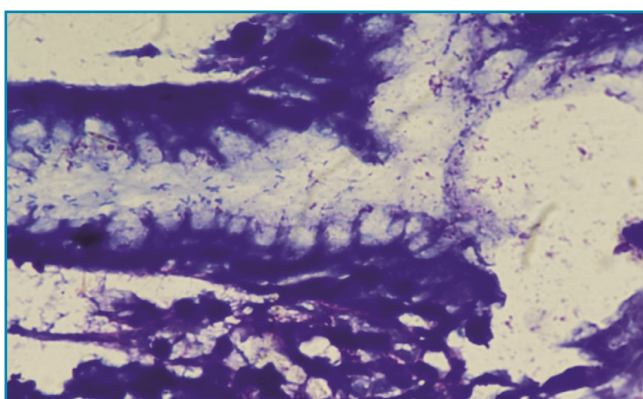


Fig. 2: Gastric biopsy demonstrating dark purple curved to rod shaped *Helicobacter pylori* in May Grunwald Giemsa stain (x100)

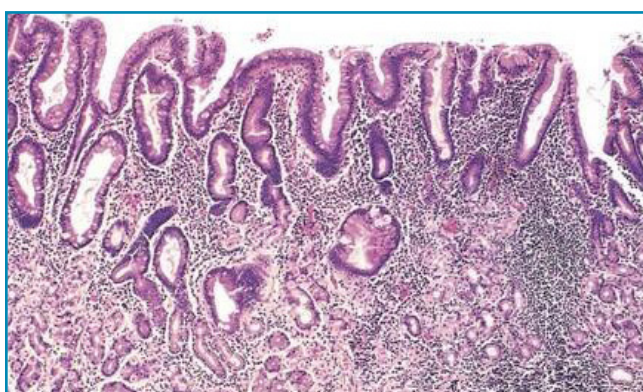


Fig. 3: Gastric biopsy demonstrating chronic gastritis; H&E stain (x10)

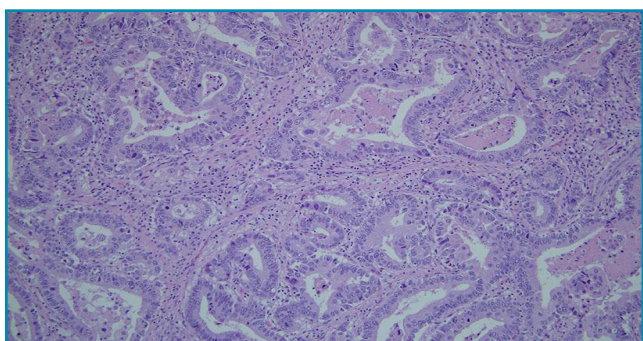


Fig. 4: Moderately differentiated adenocarcinoma, Stomach; H&E stain (x10)

cell carcinoma. A total of 13 duodenal biopsies revealed no malignancy (Table 4).

Table 2: Histopathology diagnosis of lesions from the stomach

Lesions	Cases (n)	%
Chronic gastritis with <i>H. pylori</i> negative	75	32.18
Chronic gastritis with <i>H. pylori</i> positive	54	23.17
Chronic active gastritis with <i>H. pylori</i> positive	45	19.31
Chronic active gastritis with <i>H. pylori</i> negative	20	8.58
Chronic gastritis with intestinal metaplasia	5	2.14
Chronic gastritis with <i>H. pylori</i> positive and Intestinal metaplasia	2	0.85
Gastric ulcer with glandular intraepithelial neoplasia	2	0.85
Chronic gastritis with glandular intraepithelial neoplasia	4	1.71
Benign gastric ulcer	6	2.57
Polyps	11	4.72
Gastric adenocarcinoma	8	3.43
Gastric MALT lymphoma	1	0.42
Total	233	100.00

Table 3: Histopathology diagnosis of lesions from the duodenum

Lesions	Cases (n)	%
Chronic duodenitis	9	69.23
Duodenal ulcer	2	15.33
Brunner's gland hyperplasia without dysplasia	1	7.69
Inflammatory polyp	1	7.69
Total	13	100.00

DISCUSSION

Thapa *et al*⁷ have stated that biopsy sampling of the gastric mucosa at endoscopy provides useful information which helps in the diagnosis of various lesions.⁷ According to Hirachand *et al*,⁹ endoscopy is incomplete without histopathological examination of biopsy and so, the combination plays an important role in diagnosis and management

of upper gastrointestinal tract disorders.⁸ Histopathological study of endoscopic biopsy specimens is used to confirm the endoscopic diagnosis in case of suspected malignancy or to make the diagnosis of a benign condition, thus allowing an early therapeutic decision without unnecessary delay.

In our study, amongst the 263 upper gastrointestinal tract endoscopic biopsies, 162 (61.59%) were males and 101 (38.40%) were females with male to female ratio being 1.6:1. Male predominance was also observed in other studies done by Gulia *et al*,¹⁰ Krishnappa *et al*⁴ and Shennak *et al*.¹¹ Hirachand *et al*⁸ also stated that out of the 243 cases, 138 (56.8%) were males and 105 (43.2%) were females with the male to female ratio of 1.76:1. This may be due to the fact that males are exposed to more risk factors than females and gastrointestinal malignancies are more common in male.

In our study, the maximum number of cases were in the 5th to 7th decade, which was comparable to the studies conducted by Jeshadi *et al*,¹² Sharma *et al*¹³ and Hirachand *et al*.⁸ The youngest patient was 15 years old and the oldest patient was 88 years old. The age related difference could be due to varied exposure to the risk factors among the different age groups, especially in relation to dietary habits.

The most common site for upper gastrointestinal endoscopic biopsy is the stomach- 233 cases (88.0%), followed by esophagus - 17 cases (6.46%) and duodenum, being the least common site with 13 cases (4.94%). Gulia *et al*¹⁰ showed similar findings with stomach being the most common site corresponding to a total of 84.85% and duodenum being the least common with a percentage of 5.62%. Similar findings were observed in a study conducted by Hirachand *et al*⁸ with stomach being the most common site with a percentage of 90.12%.

In the present study, the most common histology diagnosis amongst the gastric lesion was Chronic gastritis with *H. pylori* negative with a total of 75 cases (32.18%) followed by Chronic gastritis with *H. pylori* positive with a total of 54 cases (23.17%). *H. pylori* associated chronic active gastritis was diagnosed in a total of 45 cases (19.31%) and *H. pylori* negative chronic active gastritis was diagnosed in a total of 20 cases (8.58%). *H. pylori* was positive in 66 (30.14%) cases out of 77 cases of chronic active gastritis in a study done by Hirachand *et al*.⁸ The higher incidence of *H. pylori* negative cases in our study could be due to intake of proton pump inhibitors prior to endoscopic biopsy. Gastric adenocarcinoma comprised a total of 8 cases

(3.43%) and Gastric MALT lymphoma one case (0.42%) in our study. Gulia *et al*¹⁰ and Memom *et al*³ showed similar incidence with 6.58% and 4.9% percentage of gastric adenocarcinoma respectively. Alcohol consumption, dietary factors, smoking and social habits have been proposed as risk factors for gastric cancer in an independent survey done by Gajalakshmi *et al*.¹⁷

Amongst a total of 17 esophageal biopsies in our study, the most common diagnosis was chronic nonspecific esophagitis which accounted for 11 cases (64.7%). Barrett's esophagus was the least common diagnosed in only one case (5.88%). This correlated with a study done by Kaur *et al*¹⁴ where the common diagnosis was non-specific esophagitis (79.0%) and the least common was Barrett's esophagus (3.0%). We diagnosed 2 cases (6.06%) of malignant lesions in our study which was confirmed as squamous cell carcinoma on histopathology. This correlated with similar studies done by Krishnappa *et al*,⁴ Abilash *et al*¹⁵ and Sheikh *et al*,¹⁶ where all neoplastic lesions were diagnosed as squamous cell carcinoma. Higher incidence of malignant lesions were however shown in other studies conducted by Hirachand *et al*⁸ (20 %) and Pajeta Gulia *et al*¹⁰ (16.67%).

Duodenal biopsies were the least received in our study and all were non-neoplastic lesions. The commonest lesion diagnosed was chronic duodenitis constituting 9 cases (69.23%) similar to other studies done Abilash *et al*,¹⁵ Hussain *et al*¹⁸ and Shepherd *et al*.¹⁹

Kaur *et al*¹⁴ highlighted the correlation of endoscopic findings such as erythema, edema, exudates, loss of scalloping and mucosal granularity with the histopathology findings for reaching correct diagnosis.

Hussain *et al*¹⁸ have stated that histopathological study detects mucosal lesions at an early stage especially atrophy, intestinal metaplasia and dysplasia which is helpful to prevent progress of these lesions to invasive cancer.

This research uses updated revised Sydney and Modified Marsh Classification for grading gastric and duodenal lesion, classify upper gastrointestinal lesion by topography, morphology and etiology as well as diagnose benign and malignant lesion in a single comprehensive study which offers significant advantages in diagnostic accuracy and risk stratification. The limitations of this study are that it is a single institutional study and it is a retrospective study. Also in our study, immunohistochemical and molecular studies could not be performed.

In conclusion, upper gastrointestinal tract disorders are one of the most commonly encountered problems in the general population in Nepal. Upper gastrointestinal endoscopy with combination of histopathology examination of

biopsy samples play an important role in early detection of lesions with accurate diagnosis as well as further management.

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