ORIGINAL RESEARCH PAPER
Volume - 14 | Issue - 09 | September - 2025 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

HISTOPATHOLOGICAL ANALYSIS OF ENDOSCOPIC ESOPHAGEAL BIOPSIES: A PROSPECTIVE STUDY IN TERTIARY CARE CENTRE IN HARYANA

Pathology

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ABSTRACT

Introduction: The present study analysed the prevalence and pattern of various histopathological findings in esophageal biopsy. **Material and Methods:** The current prospective cross-sectional study was conducted on samples received in Department of Pathology, MAMC, Agroha, Hisar (Haryana). Data for patient's age, gender & site of lesion were noted. Only endoscopic esophageal biopsies were included in study. Biopsy specimens were immediately preserved in 10% formalin. Microscopic evaluation was done. Data analysis and collection was done in IBM SPSS version 2.5. **Result:** Out of the 80 patients, 51 were males and 29 were females with a ratio of 1.7:1 and age range was from 21 to 80 years. Highest prevalence of esophageal lesions was observed in 60 to 69 age group (31.3%). Maximum percentage of esophageal biopsies were obtained from middle esophagus (38.8%) Out of the 80 patient's biopsies, 47 biopsies revealed Squamous Cell Carcinoma, Adenocarcinoma was noted in 10, esophagitis was diagnosed in 6, Barrett's esophagus was seen in 3 and Squamous dysplasia was noted in 3 cases. **Conclusion:** This study highlights the significant burden of esophageal pathologies, particularly malignancies, diagnosed through endoscopic biopsies in a tertiary care centre in Haryana.

KEYWORDS

Endoscopic Esophageal Biopsies, Esophagitis, Squamous Cell Carcinoma, Barrett's Esophagus.

INTRODUCTION

The esophagus, a vital component of the gastrointestinal tract, is susceptible to various pathological conditions ranging from inflammatory lesions to premalignant disorders and invasive cancers.[1] Common benign esophageal diseases include gastroesophageal reflux disease (GERD), esophagitis, Barrett's esophagus.[2] GERD is the most prevalent, causing symptoms like heartburn and acid regurgitation. Esophagitis, often a result of GERD, involves inflammation that can lead to discomfort and swallowing difficulties. Barrett's esophagus, a complication of chronic GERD, involves the replacement of the normal esophageal lining with tissue similar to the intestinal lining, increasing the risk of developing esophageal adenocarcinoma. Esophageal cancer presents in two primary types: squamous cell carcinoma and adenocarcinoma.[3]

The epidemiology of esophageal lesions varies significantly across different geographical regions. Dietary habits such as the consumption of hot beverages, spicy food, alcohol consumption, smoking and preserved meats have been implicated in the etiology of esophageal cancer. Furthermore, conditions like Gastroesophageal Reflux Disease (GERD) and Barrett's Esophagus, which are known precursors to esophageal adenocarcinoma, are increasingly being recognized in the Indian population.[4]

Histopathological examination of esophageal biopsies plays a pivotal role in the diagnosis and management of esophageal diseases.[5] The advent of endoscopic techniques has greatly enhanced the diagnostic accuracy and the ability to obtain targeted biopsies from visually abnormal lesions. For patients with esophageal cancer, biopsies can provide staging information, which is essential for determining the scope of surgical resection or the need for neoadjuvant therapy.[6]

In this context, the present study was conducted to estimate prevalence and patterns of various histopathological findings in esophageal biopsies among patients presenting to a tertiary care hospital of Haryana, India.

MATERIAL AND METHODS

The present cross-sectional study was conducted on a sample size of 80 endoscopic esophageal biopsies received in Department of Pathology, MAMC, Agroha, Hisar (Haryana) over a period of 12 months. Ethical committee approved the study and informed consent is obtained from each patient. Data regarding age, sex, site of lesion was recorded in case performa. Histopathological processing was done as per routine histopathological processing protocol. H & E staining and PAS staining for fungal infection were utilized. Frequency of various esophageal lesion was calculated and tabulated. Quantitative analysis of distribution of these lesions based on age, gender, site of lesions and final histopathological analysis was done.

OBSERVATION AND RESULTS

Table 1. Distribution of Study Participants According to their Age (n=80)

Age groups (years)	Frequency
<40	10
40-49	11
50-59	22
60-69	25
70 and above	12
Total	80

The highest proportion of participants (31.3%) were in the 60-69 age group, followed by 50-59 years (27.5%). Only 12.5% were under 40 years.

Table 2. Distribution of Study Participants According to their Sex (n=80)

Sex	Frequency
Female	29
Male	51
Total	80

There were more male patients (63.7%) than female patients (36.3%) in the study.

Table 3. Distribution of Study Participants According to their Involved Site (n=80)

Involved site	Frequency	Percentage
Gastroesophageal junction	8	10
Lower esophagus	23	28.7
Middle esophagus	31	38.8
Upper esophagus	16	20
Whole esophagus	2	2.5
Total	80	100

The middle esophagus was most commonly involved (38.8%), followed by the lower esophagus (28.7%).

Table 4. Distribution of Study Participants According to their Final Diagnosis (n=80)

Final diagnosis	Frequency	Percentage
Acute inflammatory pathology	1	1.3
Acute on chronic inflammatory pathology	4	5.1
Barrett's esophagus	3	3.8
Barrett's esophagus with low grade dysplasia	2	2.6
Chronic non-specific inflammatory pathology	6	7.5
Eosinophilic esophagitis	1	1.3
Esophageal candidiasis	2	2.5
Herpetic esophagitis	1	1.3
Squamous dysplasia	3	3.8
Squamous cell carcinoma	47	58.8
Adenocarcinoma	10	12.5
Total	80	100

Squamous cell carcinoma was diagnosed in 58.8% of participants, making it the most frequent malignancy, followed by adenocarcinoma (12.5%).

Table 5. Association Between Sex and Malignancy (n=80)

Sex	Non-malignant	Malignant	p-value
Female	7 (21.2)	22 (46.8)	0.019*
Male	26 (78.8)	25 (53.2)	
Total	33 (100)	47 (100)	

*Statistically significant

A statistically significant association (p=0.019) was observed between sex and malignancy, with females showing higher rate of malignant lesions.

Table 6. Association Between Involved Site and Malignancy (n=80)

Site involved	Non-malignant	Malignant	p-value
Gastroesophageal junction	6 (18.2)	2 (4.3)	0.024*
Lower esophagus	12 (36.4)	11 (23.4)	
Middle esophagus	7 (21.2)	24 (51.1)	
Upper esophagus	8 (24.2)	8 (17)	
Whole esophagus	0 (0)	2 (4.3)	
Total	33 (100)	47 (100)	

*Statistically significant

The middle esophagus was significantly associated with malignancy (p=0.024), supporting the observation that middle esophageal region is more likely to harbor malignancies.

DISCUSSION

The results demonstrated significant variation in the prevalence and types of esophageal pathologies across different age groups, sexes and site of occurrence. These findings align with and add depth to existing literature on esophageal disorders.

The highest proportion of patients was observed in the 60–69 age group, followed by the 50–59 age group, consistent with the demographic trends reported by Nandini et al., where esophageal lesions were most prevalent in individuals aged 61–70 years (42.1%) and Ishtiaq et al., where the most commonly affected age group was 51-60 years (36.3%).[7,8]

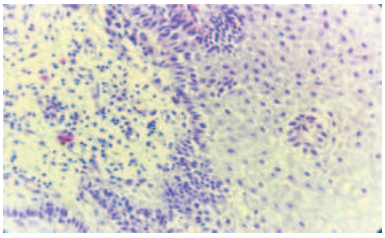
A male predominance (63.7%) in the current study parallels findings by Nandini et al., (male: female ratio of 1.51:1), Memon et al. (male: female ratio of 1.6:1) and Ishtiaq et al., who also reported a higher prevalence of esophageal lesions in males (66.7%), reflecting gender-based behavioural and environmental risk factors such as smoking and alcohol consumption.[8,9]

The predominance of middle esophageal involvement (38.8%) reflects anatomical vulnerabilities, consistent with findings by Tsai et al., who reported a high occurrence of lesions in the middle third of the esophagus.[10] This regional predilection may be influenced by factors such as lymphatic drainage and exposure to irritants.

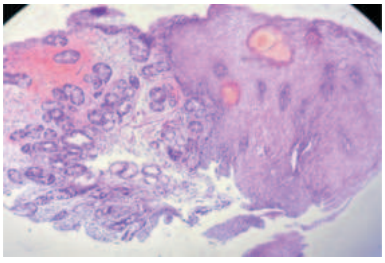
Squamous cell carcinoma (58.8%) was the most common malignancy, corroborating findings by Islam et al. (81.25% of esophageal biopsies), Memon et al. (78.6%), and Abhilash et al. (42.1%), where squamous cell carcinoma consistently accounted for the majority of esophageal cancers.[11-12] The second most frequent malignancy, adenocarcinoma (12.5%), was less prevalent but aligns with studies such as Pandey et al. (8.6%), which noted a rise in adenocarcinoma cases linked to Barrett's esophagus.[13]

CONCLUSION

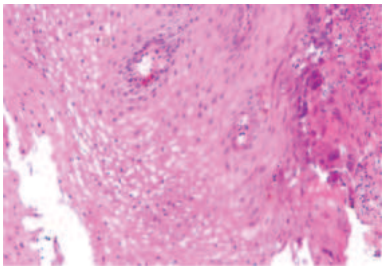
This study highlights the significant burden of esophageal pathologies, particularly malignancies, diagnosed through endoscopic biopsies in a tertiary care centre in Haryana. Squamous cell carcinoma emerged as the most prevalent malignancy, with a notable association with older age and female sex. Given the high prevalence of malignancies, early screening and intervention strategies for high-risk groups are crucial.



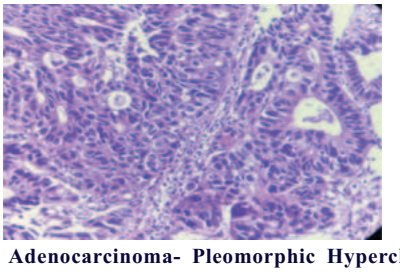
Picture 1: Chronic Non-specific Inflammatory Pathology-Lymphoplasmacytic Infiltrate (High Power)



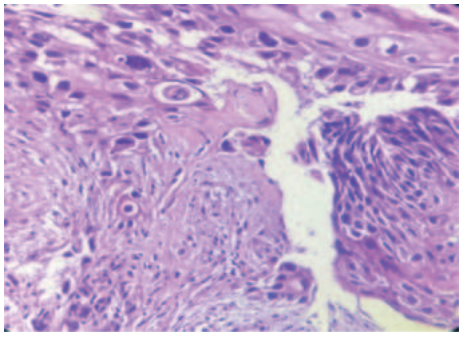
Picture 2: Barrett's Esophagus-Showing Transition from Squamous Epithelium to Intestinal Epithelium (Low Power)



Picture 3: Herpetic Esophagitis- Showing Viral Cytopathic Effect (Low Power)



Picture 4: Adenocarcinoma- Pleomorphic Hyperchromatic Nuclei, Irregular Nuclear Contours, and Moderate Cytoplasm (High Power)



Picture 5: Well Differentiated Squamous Cell Carcinoma- Mitotic Figure Seen (High Power)

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