

SPECTRUM OF HISTOPATHOLOGICAL LESIONS IN HEAD AND NECK REGION: A STUDY AT TERTIARY CARE CENTRE IN NORTHERN MAHARASHTRA

Histopathology

Dr. Pranita Jaybhaye

Senior Resident, Department of Pathology, Dr. Ulhas Patil Medical College and Hospital, Jalgaon

Dr. Rashi Agrawal*

Junior Resident, Department of Pathology, Dr. Ulhas Patil Medical college and hospital, Jalgaon. *Corresponding Author

Dr. Shruti Biyani

Junior Resident, Department of Pathology, Dr. Ulhas Patil Medical College and Hospital, Jalgaon

ABSTRACT

Background: Head and neck lesions encompass a wide spectrum of pathological entities ranging from non-neoplastic to malignant conditions. Histopathological evaluation remains the gold standard for accurate diagnosis and management. **Methods:** This retrospective observational study was conducted in the Department of Pathology at a tertiary care centre in Northern Maharashtra over a period of one year (January–December 2025). A total of 107 cases of head and neck lesions were analysed. Clinical details and histopathological findings were reviewed. Specimens were processed routinely and stained with haematoxylin and eosin, with special stains applied where necessary. Data were analysed using descriptive statistics. **Results:** Among 107 cases, malignant lesions were the most common (50%), followed by benign neoplastic (23.5%) and non-neoplastic lesions (22.6%), while dysplastic lesions were least frequent (3.7%). The highest incidence was observed in the 41–60 years age group (36.7%), with a male predominance (57%). Buccal mucosa was the most frequently involved site (16%), followed by the nasal cavity (14%). Squamous cell carcinoma was the predominant malignancy, particularly affecting the oral cavity. **Conclusion:** The study highlights a high burden of malignant head and neck lesions, especially oral squamous cell carcinoma, in middle-aged males. Early detection, awareness of risk factors such as tobacco use, and timely histopathological diagnosis are crucial for improving patient outcomes.

KEYWORDS

Head And Neck Lesions, Histopathology, Malignant, Squamous Cell Carcinoma, Buccal Mucosa.

INTRODUCTION

Head and neck lesions are common among all age group of patients.1 Globally, HNCs rank as the sixth most common cancer, with a disproportionately high burden in South Asian countries, particularly India, where tobacco consumption, alcohol abuse, and poor oral hygiene serve as predominant risk factors.²

Anatomical site of origin of these lesions are forehead, scalp, face, neck, larynx, oral cavity, nose, salivary glands, otologic, thyroid and tonsil.3 These lesions include a variety of inflammatory, cystic, benign, dysplastic and malignant conditions.⁴

Clinical presentation of head and neck lesions can be non-specific and often overlaps between benign and malignant pathologies. Common symptoms include swelling, pain, ulceration, hoarseness, dysphagia, and unexplained weight loss.⁵

The challenge lies so as to differentiate between benign and malignant conditions, which is critical for timely and appropriate management. Fine Needle Aspiration Cytology (FNAC), imaging, and clinical examination are helpful tools; however, histopathological examination remains the gold standard for definitive diagnosis, grading, and typing of these lesions.⁶

This study aims for guiding early therapeutic intervention and understanding better the demographic distribution and nature of lesions and so providing valuable prognostic outlook.

Material and methods

This retrospective observational study was conducted in the Department of Pathology, Dr Ulhas Patil Medical College and Hospital; Jalgaon, Maharashtra, India over period of one year from January 2025 to December 2025. A total of 106 patients presenting with head and neck lesions were included in the study.

Clinical data, including patient demographic details, anatomical site of the lesion, and relevant clinical history, were retrieved from departmental records. Specimens were received either as of biopsy samples, excision biopsies, or resected surgical specimens involving the oral cavity, lymph nodes, thyroid, salivary glands and nasal cavity.

After gross examination, the specimens were fixed in 10% neutral buffered formalin, routinely processed, and embedded in paraffin. Sections of 3-5 µm thickness were cut using a microtome and stained

with Hematoxylin and Eosin (H&E) stain. Special stains such as Periodic Acid-Schiff (PAS), Ziehl-Neelsen (ZN), and Giemsa were utilized where required for further diagnostic evaluation.

Inclusion criteria

Inclusion criteria were all adequately preserved and processed specimens of head and neck lesions with complete clinical data.

Data was looked over in terms of clinical and pathological profiles of patients like gender, age, site of neck and head lesions involved and microscopic histopathology diagnosed.

Exclusion Criteria

Exclusion criteria included autolyzed or poorly fixed tissues, and cases lacking relevant clinical information.

The data collected was compiled and analyzed using Microsoft Excel. Frequencies and percentages were calculated for categorical variables including lesion type, site, age, and gender distribution.

RESULT

A total of 107 Histopathologically diagnosed head & neck lesions were included in the present study conducted over time of one year.

The lesions comprised a broad spectrum of non-neoplastic, benign, dysplastic and malignant.

Among all cases, malignant lesions comprised total 54 cases (50%). Followed by benign neoplastic lesions comprising for 25 cases (23.5%). Non- neoplastic lesions accounted 24 cases (22.6%), while dysplastic lesions were the least common like 4 cases (3.7%).

In this study age-wise distribution lesions highest number of cases were seen in the 41-60 years age group with 39 cases (36.7%), nearly followed by 21-40 years age group with 35 cases (33 %). Patient aged 61-80 years comprised 24 cases (22%), whereas paediatric and adolescents patients comprised 8 cases (7.5%). Least comprised age group in this study is 80 years with 1 case (0.94%).

Gender distribution showed a male predominance with 61 male patients (57%) and female patients comprised 46 cases (43%). The ratio of male to female is 1.3:1.

Site-wise distribution demonstrated that buccal mucosa was the most

commonly involved site with 17 cases(16%) followed by nasal cavity with 15 cases (14%). Thyroid and tongue lesions were 11 cases (10.3%) respectively. Floor of mouth lesions constituted 8 cases (7.5%), while sinus & post-auricular tissue lesions contributed 7 cases (6.6%) each. Retromolar trigone lesions accounted for 5 cases (4.7%). Tonsil, mandible & submandibular gland showed 4 cases(3.7%) respectively. Parotid gland, lymph node and occipital region lesions each of them comprises of 3 cases (2.83%). Lip along with maxillary lesions were relatively uncommon in this study with 2 cases (1.88%) and 1 case (0.9%) respectively. One lesion of supratentorial cerebral hemisphere was also accounted (0.9%).The findings of this study indicate that malignant lesions form major proportion of head and neck pathologies presenting to tertiary care centres, mostly middle-aged and elderly male patients.

Table1.Distribution of Head and Neck Lesions by Nature of Lesion

Type of lesion	Number of cases	Percentage %
Non-neoplastic	24	22.6%
Benign neoplastic	25	23.5%
Malignant	54	50%
Dysplastic	04	3.7%
Total	107	

Table 2: Age-wise Distribution of Head and Neck Lesion

Age group	Number of cases	Percentage
0-20	08	7.5%
21-40	35	33.0%
41-60	39	36.7%
61-80	24	22 %
>80	01	0.94%
Total	107	

Table 3: Gender Distribution of Cases

Gender	Number of cases	Percentage
Male	61	57 %
Female	46	43 %
Total	107	

Table 4: Site-wise Distribution of Lesions

Site	Number of cases	Percentage
Tonsil	04	3.77%
Lip	02	1.88%
Nasal cavity	15	14.0%
Sinuses	07	6.6%
Post auricular tissue	07	6.6%
Thyroid	11	10.3%
Tongue	11	10.3%
Buccal Mucosa	17	16.0%
Mandible	04	3.77%
Floor of mouth	08	7.5%
Retromolar trigone	05	4.7%
Maxilla	01	1.88%
Parotid gland	03	2.83%
Submandibular gland	04	3.77%
Lymph node	03	2.83%
Occipital region	03	2.83%
Supratentorial cerebral hemispheres	01	0.9 %
Total	107	

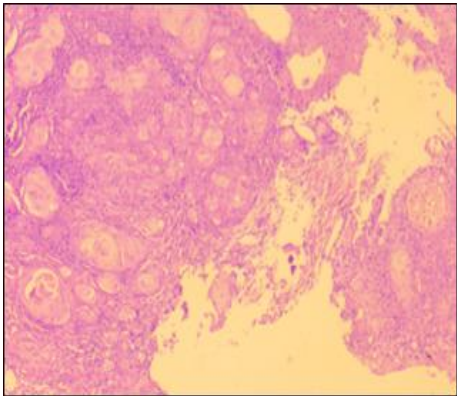
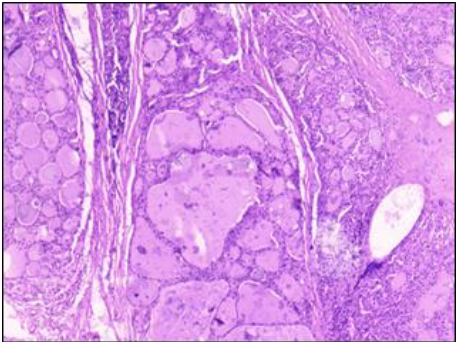


Fig 1:Well differentiated Squamous cell carcinoma



2:Follicular carcinoma of thyroid

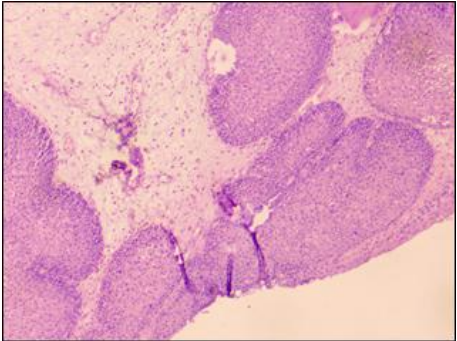


Fig 3:Inverted Papilloma

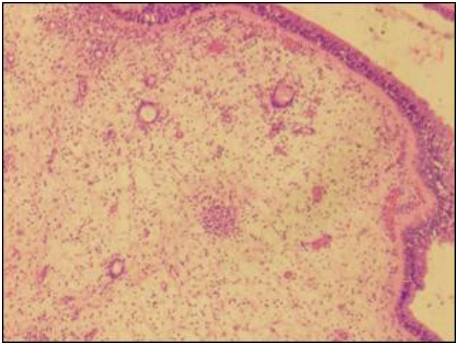


Fig 4:Inflammatory sinonasal polyp

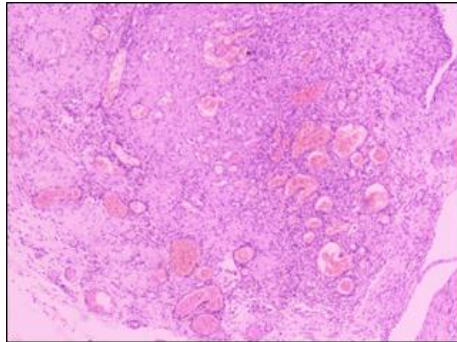


Fig 5:Hemangioma

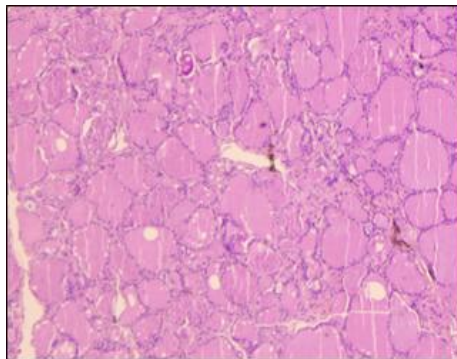
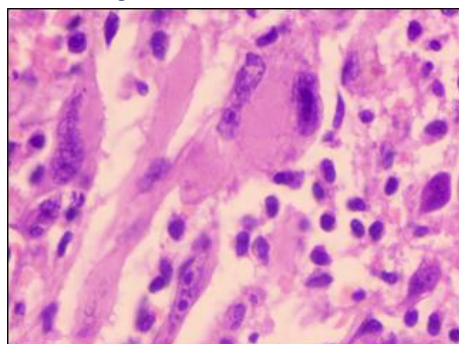


Fig 6:Multinodular goitre**Fig 7: Xanthoastrocytoma**

DISCUSSION-

The present study delineates the histopathological spectrum of head and neck lesions in tertiary care hospital, with notable predominance of oral cavity squamous cell carcinoma.

Squamous cell carcinoma (SCC) of the oral cavity emerged as the most frequently encountered malignancy in our cohort, consistent with observations by Agrawal et al., who highlighted the oral cavity as the primary site for SCC, particularly the tongue and buccal mucosa.⁷

Increased prevalence of malignancy in head and neck region are mostly due to tobacco chewing, smoking, alcohol consumption, poor oral hygiene and late presentation to healthcare facilities which are common risk factors in our population. The variations in tobacco chewing habit might also pre dispose to the subsite of oral cavity predominantly involved. A host of studies have reported the buccal mucosa as the commonest subsite involved amongst oral cavity lesions.^{8,9} In our study although buccal mucosa was the commonest subsite involved with 16% cases.

Lesions of the nasal cavity, including inverted papilloma and chondroma, though infrequent, demand clinical vigilance due to their potential for local aggressiveness and recurrence. Similarly, antrochonal polyps, while benign, require differentiation from neoplastic sinonasal masses, reaffirming the critical role of histopathology, as discussed by Muddegowda et al. in their comparative cytological study of neck lesions.¹⁰

Benign neoplastic lesions comprised 23.5% of cases, while non-neoplastic lesions accounted for 22.6 % cases in the present study. Dysplastic lesions were comparatively less common (3.7%). These findings tells the importance of early detection of premalignant and dysplastic lesions, as timely intervention can reduce progression to invasive carcinoma.

A male predominance was noted in the present study with males accounting 57% of cases. The male to female ratio in this study is 1.3:1. This is similar from study by Sharma et al who recorded male to female ratio of 1.37 and also from study by Kanu et al with a ratio of 1.2.9.11

The maximum number of cases in the present study seen in the 41-60 years age group(36.7%), followed by the 21-40 years age group(33%). Here head and neck lesions incidence higher seen in this middle-aged individuals. These findings are comparable with studies by Lei et al¹² and Shubha et al¹³. The increased incidence in this age group may be due to prolonged exposure to habits and addictions carrying carcinogenic effects and environmental risk factors over time.

Site-wise analysis in the present study revealed buccal mucosa as the most common site involved (16%) followed by nasal cavity(14%) ,thyroid and tongue (10.3%).

Buccal mucosa and tongue lesions are commonly associated with tobacco chewing and betel nut consumption, which are highly prevalent and common habits in Maharashtra and other parts of India. Similar observations regarding oral cavity have been reported in previous Indian studies.

Salivary gland lesions involving parotid and submandibular glands formed a smaller proportion of total lesions, which is consistent with

findings reported in other histopathological studies. Lesions involving the floor of mouth and retromolar trigone are clinically important because of their known association with oral squamous cell carcinoma and potentially malignant lesions.

The present study emphasizes the major role of histopathological examination in accurate diagnosis and grading of head & neck lesions. Early diagnosis and interventions are essential for reducing morbidity and improving patient outcome and prognosis in benign and malignant lesions.

CONCLUSIONS

The present study highlights histopathological spectrum of head & neck lesions encountered in a tertiary care centre. This Study comprised range from inflammatory to malignant conditions. Malignant lesions were predominant particularly affecting the oral cavity. Middle-aged males were the most commonly affected demographic group, and the oral cavity was the most frequent site involved.

Histopathological examination plays a crucial role in accurate diagnosis and early management. Early detection and awareness in society regarding risk factors such as tobacco consumption are essential for reducing burden of diseases.

REFERENCES

- Sharma M, Sharma A, Gandhi S, Khajuria A, Goswami KC. Histopathological patterns of head and neck lesions- a two year retrospective hospital based study. *Int J Res Med Sci*. 2017;5(4):1282-7.
- Siddiqui MS, Chandra R, Aziz A, Suman S. Epidemiology and histopathological spectrum of head and neck cancers in Bihar, a state of Eastern India. *Asian Pac J Cancer Prev*. 2012;13(8):3949-53. doi: 10.7314/apjcp.2012.13.8.3949. PMID: 23098498.
- Urooj A, Mirza T, Ali A, Agha A, Rasool S. Frequency of Head and Neck lesions According to Histopathological Diagnosis. *J Dow Univ Health Sci Karachi*. 2011;5(2):70-3.
- Singhal U, Nanda A, Lamba S, Sethi D, Jain S. Histomorphological spectrum of Head and Neck lesions: A three year retrospective analysis. *Rec Adv Path Lab Med*. 2018;4(2):1-5.
- De Sati RD, Rosenzweig F, Gersdorff G, Gregoire A, Rombaux P, Deggouj N. Auditory Neuropathy Spectrum Disorders: From Diagnosis to Treatment: Literature Review and Case Reports. *J Clin Med*. 2020 Apr 10;9(4):1074. doi: 10.3390/jcm9041074. PMID: 32290039; PMCID: PMC7230308.
- Bhat V, Salins PC, Bhat V. Imaging spectrum of hemangioma and vascular malformations of the head and neck in children and adolescents. *J Clin Imaging Sci*. 2014 Jun 24;4:31. doi: 10.4103/2156-7514.135179. PMID: 25161800; PMCID: PMC4142469.
- Agrawal R, Chauhan A, Kumar P. Spectrum of Oral Lesions in A Tertiary Care Hospital. *J Clin Diagn Res*. 2015 Jun;9(6):EC11-3. doi: 10.7860/JCDR/2015/13363.6121. Epub 2015 Jun 1. PMID: 26266127; PMCID: PMC4525516.
- Gupta A, Prakash O, Jamwal PS (2018) Pattern of occurrence of primary Head and Neck Cancers in Jammu City- A Hospital based study. *Ann Int Med Den Res* 4:EN01-04
- Sharma RG, Bang B, Verma H, Mehta JM (2012) Profile of oral squamous cell Cancer in a Tertiary Level Medical College Hospital: a 10 yr study. *Indian J Surg Oncol* 3:250-254. <https://doi.org/10.1007/s13193-012-0165-z>.
- Muddegowda PH, Srinivasan S, Lingegowda JB, Kurpad R R, Murthy KS. Spectrum of cytology of neck lesions: comparative study from two centers. *J Clin Diagn Res*. 2014 Mar;8(3):44-5. doi: 10.7860/JCDR/2014/7250.4102. Epub 2014 Mar 15. PMID: 24783077; PMCID: PMC4003682.
- Kanu OO, Nnoli MA, Asoegwu CA. Prevalence of head and neck tumours in Calabar, South Eastern Nigeria. *Asian J Med Sci*. 2016;7(3):123-6. doi:10.3126/ajms.v7i3.14216.
- Lei F, Chen PH, Chen JY, Wang WC, Lin LM, Huang HC. Retrospective study of biopsied head and neck lesions in a cohort of referral Taiwanese patients. *Head & Face Medicine* 2014; 10:28.
- Bhat SP, Bhat V, Permi H, Shetty J K, Aroor R et al. Oral and Oropharyngeal malignancy: A clinic-pathological study. *Internet Journal of Pathology and Laboratory Medicine* 2016; 2(1):OA3.