

## Histopathological Spectrum of Lesions of Oral Cavity and Oropharynx in A Tertiary Health Centre

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### Abstract

**Background:** In day to day practice, the lesions of oral cavity and oropharynx are commonly encountered in India due to very high rate of tobacco consumption. According to GATS (Global adult tobacco survey report) 2016-2017, India has the 2nd largest tobacco consuming population in the world, estimating over 267 million. There is a strong association between tobacco chewing in the form of gutka and cigarette smoking with pathological lesions, both pre-cancerous and cancerous. Sometimes malignant lesions of oral cavity can be missed clinically due to their presentations similar to that of benign counterparts, hence histopathological diagnosis becomes the mainstay for accurate diagnosis and early treatment.

**Aim:** The present study aims at studying morphological spectrum of tumors and tumor like lesions of oral cavity and oropharynx, and their association with various habits.

**Study Design:** Two years prospective study.

**Material and Method:** It was a prospective study carried out in a tertiary care centre for a period of two year from august 2020 to august 2022. 205 cases of oral cavity and oropharynx lesions were included in this study. The tissues were processed and stained with routine hematoxylin and eosin and finally histopathological examination under light microscope was carried out. The data was analyzed using excel and SPSS software.

**Results:** 205 cases were analyzed during a study period of 2 years. Male preponderance was observed with 144 males(70.2%) and 61(29.8%) females. A wide age group ranging from 4 to 80 years were affected. Cystic and tumor like lesions were 43 (21%), inflammatory lesions were 19(9.3%), the benign tumors were 13 (6.3%), malignant tumors were 130 (63.4%). Buccal mucosa was the most commonly affected site. The combined habit of tobacco chewing and smoking was commonly associated with development of malignant lesions in oral cavity and oropharynx.

**Conclusion:** The incidence of the oral cavity and oropharynx lesions is relatively increasing. This can be attributed to increasing harmful habits of the people like tobacco chewing and smoking or may be due to increased public awareness about medical care. The ability to control oral malignancy will depend on two cornerstones: prevention and early diagnosis. Hence, doing aggressive campaigning regarding its prevention is of utmost need.

**Keywords:** Oral Cavity, Oropharynx, Squamous, Tobacco.

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## Introduction

In day to day practice, the lesions of oral cavity and oropharynx are commonly encountered in India due to very high rate of tobacco consumption.[1]

According to GATS (Global adult tobacco survey report) 2016-2017, India has the 2nd largest tobacco consuming population in the world, estimating over 267 million. There is a strong association between tobacco chewing in the form of gutka and cigarette smoking with pathological lesions, both pre-cancerous and cancerous.[2]

Odontogenic cysts such as radicular cysts, dentigerous cysts, gingival cysts, Fordyce disease, heterotropic islands, ranulas, cleft lip, cleft palate and white sponge nevus are the various type of congenital abnormalities encountered in oral cavity.[3] The non-neoplastic lesions found in oral cavity and oropharynx are mucocele, submucous fibrosis, lichen planus, pemphigus vulgaris, tonsillitis, amalgam tattoo, irritation fibroma, peripheral giant cell granuloma, pyogenic granuloma, and cemento-ossifying fibroma etc. Leukoplakia, erythroplakia, actinic cheilitis are among the most commonly found precancerous oral lesions. Regardless of the degree of epithelial dysplasia, these lesions have high propensity of transforming into cancerous lesions.[4]

Most common cancerous lesion found in oral cavity and oropharynx is squamous cell carcinoma. Nearly 300,000 and 142,000 cases emerge annually for oral cavity squamous cell carcinoma (including the lip) and oropharyngeal squamous cell carcinoma respectively, leading to nearly 145,000 and 96,000 deaths.[5]

Sometimes malignant lesions of oral cavity can be missed clinically due to their presentations similar to that of benign counterparts, hence histopathological diagnosis becomes the mainstay for

accurate diagnosis and early treatment. The present study aims at studying morphological spectrum of tumors and tumor like lesions of oral cavity and oropharynx, and their association with various habits.

## Material & Methods

It was a prospective study, carried out at Department of Pathology, Sardar Patel Medical College and Associated Group of Hospitals, Bikaner from August 2020 to August 2022. A total of 205 cases of tumor and tumor like lesions of the oral cavity and oropharynx were selected after applying inclusion and exclusion criteria. Inadequate and autolyzed tissue samples were excluded from the study. Brief history, clinical examination findings and relevant investigation reports were collected. The tissues were processed and stained with routine hematoxylin and eosin and finally histopathological examination under light microscope was carried out. Different parameters like percentage, mean were calculated using SPSS software. Informed consent was taken from the patients and ethical clearance was taken from the ethical committee of Department of Pathology, Sardar Patel Medical College and Associated Group of Hospitals, Bikaner.

### Inclusion criteria:

1. Tissue specimens of oral cavity and oropharynx lesions submitted in the Department of Pathology of tertiary health centre irrespective of age and sex of the patient.

### Exclusion criteria:

1. Autolysed/necrosed tissue specimens were excluded from the study.
2. Inadequate tissue specimens were excluded.

**Statistical Analysis:** Data were collected and tabulated as shown in the results. Statistical analysis was done using

Microsoft Excel. Frequency and percentage of each parameter were calculated and analysed. The risk estimates were analyzed between the cases and controls by calculating the odds ratio, 95% confidence interval, and *P* value. *P* Value of <0.05 was considered significant.

## Results

Our study comprised of 205 cases. Of these 205 lesions from oral cavity and oropharynx, cystic and tumor like lesions were 43 (21%), inflammatory lesions were 19(9.3%), the benign tumors were 13 (6.3%), malignant tumors were 130 (63.4%). The distribution of different lesions among each category has been shown in table-1 indicating that pseudoepitheliomatous hyperplasia (Figure-1) as most common lesion in cystic and tumor like category, tonsillitis in inflammatory category, ameloblastoma in benign category and moderately differentiated squamous cell carcinoma (Figure-2) in malignant category. Rare lesions like lymphangioma(Figure-3) and schwannoma (Figure-4) were also identified in benign category. The male to female ratio in the present study was 2.3: 1, with 144(70.2%) males and 61 (29.8%) females.(Chart-1) The lesions of oral cavity and oropharynx were distributed among wide age groups ranging from 4 to 80 years. The age group of 51-60 years was affected most commonly. (Table-2)

In the present study, 51 out of 205 cases (24.8%) were observed in the buccal mucosa followed by 49 cases (23.9%) in tongue. Other sites of involvement are dental soft tissue, tonsil, soft palate, hard palate, tonsillar region, floor of mouth, gingivobuccal area, angle of mouth and mandible, alveolus, vestibule and retromolar trigone. (Table-3)

In the present study, maximum cases were having the combined habit of tobacco chewing and smoking (61 cases), out of which 57 cases have developed malignant tumors. It is followed by habit of tobacco

chewing (33 cases), out of which 32 cases have developed malignant tumors. None of the inflammatory lesions were associated with any harmful habits.(Table- 4)

Oral cavity lesions are commonly encountered in subcontinental countries like India, where the habit of tobacco chewing and alcohol consumption, smoking of cigarettes and bidi is very common. Above habits leads to increased risk of carcinoma of oral cavity and oropharynx.[6]

## Comparative Analysis Of Lesions Of Oral Cavity And Oropharynx

In the present study, out of the 205 cases studied, 43 cases (21%) of cystic and tumor like lesions, 19 (9.3%) cases of inflammatory lesions, 13 cases (6.3%) of benign tumors, and 130 cases (63.4%) of malignant tumors were encountered. Above results indicated that malignant tumors were encountered most commonly. Similar observations were made by Prabhakar et al.[7] and Gowthami et al. [8]

## Age Incidence

In the present study, the affected age range was 4 to 80 years. Overall age group of 51-60 years (23.4%) was affected predominantly. This is in concordance to the study conducted by Khateeb et al. [9], Mehta et al. [10], and Gowthami M R et al. [8] In the study done by Gowthami M R et al. [8], and Gupta M et al. [11], the age group of 51-60 years was affected predominantly.

## Sex Incidence

In the present study, overall, male predominance was seen with sex ratio of 2.3:1. In the study done by Agrawal et al.[12], Mehrotra et al.[13] and Manjit singh bal et al.[14] males were commonly affected than females with sex ratio of 3.3:1, 3.6:1, and 2.4:1 respectively, which is concordant with the present study.

### Site of Lesion

In our present study, buccal mucosa (24.8%) was the commonest site of involvement followed by tongue (23.9%), dental soft tissue (13.6%), tonsil (11.2%) etc. Similar observations were seen in study conducted by Mehta et al. [10], Dowerah et al.[15] and Modi et al.[16]

### Comparison of Lesions with Predisposing Habits

In our study, 61 cases had combined habit of tobacco chewing and smoking which was followed by tobacco chewing (33 cases). On the other hand, Garg et al. [17] and Ramchandra et al. [18] found that tobacco chewing alone was more common predisposing factor for occurrence of oral malignant lesions. In a study done by Taranikanti et al. [19], tobacco smoking was the most frequent habit followed by tobacco chewing. All three studies have discordance with the present study. Such variation can be attributed to varied lifestyle of people pertaining to different geographical conditions, and their socioeconomic status.

### Conclusion

The incidence of the oral cavity and oropharynx lesions is relatively increasing. This can be attributed to increasing harmful habits of the people like tobacco chewing and smoking or may be due to increased public awareness about medical care. The ability to control oral malignancy will depend on two cornerstones: prevention and early diagnosis.

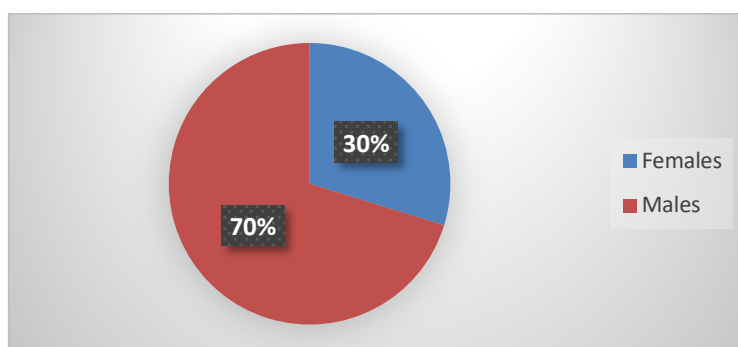
Every year, month of April is marked as oral cancer awareness month. Always remember, Prevention Is Better Than Cure! Hence, doing aggressive campaigning regarding its prevention is of utmost need, where following points should be emphasized:

- Maintaining oral hygiene.
- Limiting alcohol, smoking and tobacco intake.
- Eating healthy balanced diet.
- Avoiding HPV infection.

Early detection of disease is very crucial for long survival. Hence, upon noticing any long lasting ulcer, red or white patch, lumps or swelling or any sudden bleeding in mouth, we should immediately seek medical advice.

**Table-1: Showing the distribution of lesions of oral cavity and oropharynx**

Category Of Lesion	No. Of Cases	Percent
Cystic And Tumor Like Lesions	43	21.0
Inflammatory	19	9.3
Benign	13	6.3
Malignant	130	63.4
Total	205	100



**Chart-1: Sex distribution of cases**

**Table 2: Showing age wise distribution of individual cases of lesions of oral cavity and oropharynx**

Age Groups	Cystic And Tumor Like Lesions										Inflammatory		Benign							Malignant										
	DENTIGEROUS CYST	EPULIS	FIBROEPITHELIAL POLYP	LEUKOPLAKIA(HYPERPLASTIC)	MUCOCELE	MUCUS RETENTION CYST	PSEUDOEPITHELIOMATOUS HYPERPLASIA	PYOGENIC GRANULOMA	RADICULAR CYST	Total	CHRONIC NON-SPECIFIC TONSILLITIS	FOLLICULAR TONSILLITIS	Total	AMELOBLASTOMA	ANEURYSMAL BONE CYST	LYMPHANGIOMA	ODONTOGENIC KERATOCYST	ODONTOMA	OSSIFYING FIBROMA	SCHWANNOMA	SQUAMOUS PAPILLOMA	Total	ADENOID CYSTIC CARCINOMA	DYSPLASTIC	MODERATELY DIFFERENTIATED SCC	SCC IN SITU	WELL DIFFERENTIATED SCC	Total		
01-10	0	0	0	0	0	0	0	0	0	0	2	8	10	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11-20	0	2	1	0	0	0	0	1	0	4	0	7	7	2	0	0	1	1	1	0	0	5	0	0	0	0	0	0	0	0
21-30	1	1	0	0	0	1	0	1	2	6	0	0	0	0	1	0	1	0	1	0	0	3	0	0	2	0	1	3	0	
31-40	0	2	1	0	0	1	3	0	4	10	0	0	0	0	0	1	1	0	0	0	3	1	1	14	0	4	20	0		
41-50	1	0	0	0	0	0	4	0	0	5	0	1	1	0	0	0	1	0	0	0	1	2	1	7	20	1	2	31		
51-60	1	1	1	0	0	0	1	0	0	4	0	0	0	0	0	0	1	0	0	1	2	4	0	2	31	2	5	40		
61-70	0	0	1	1	1	0	2	0	3	8	0	1	1	0	0	0	0	0	0	0	0	5	15	2	0	22	0			
71-80	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	10	1	1	14			
<b>Total</b>	<b>3</b>	<b>6</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>10</b>	<b>2</b>	<b>9</b>	<b>38</b>	<b>2</b>	<b>17</b>	<b>19</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>19</b>	<b>2</b>	<b>17</b>	<b>92</b>	<b>6</b>	<b>13</b>	<b>130</b>		

**Table 3: Site of lesion wise distribution of cases**

Site	No. of Cases	Percent
Alveolus	3	1.5%
Angle Of Mouth	4	2.0%
Buccal Mucosa	51	24.8%
Dental Soft Tissue	28	13.6%
Floor Of Mouth	6	2.9%
Gingivobuccal	10	4.8%
Hard Palate	8	3.9%
Mandible	4	2.0%
Retromolar Trigone	1	0.5%
Soft Palate	10	4.9%
Tongue	49	23.9%
Tonsil	23	11.2%
Tonsillar Region	7	3.4%
Vestibule	1	0.5%
<b>Total</b>	<b>205</b>	<b>100.0%</b>

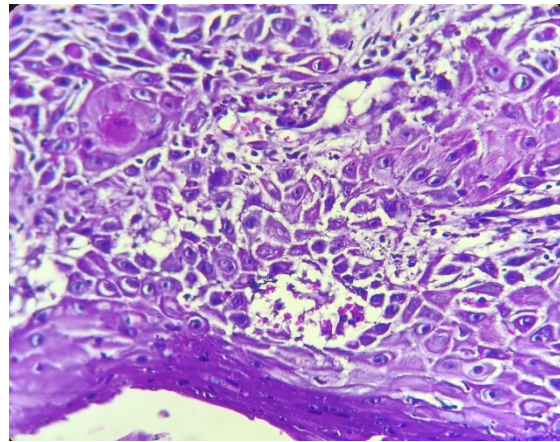
**Table 4: Characteristic of lesion according to predisposing habits**

Habits	Category of Lesion									
	Cystic And Tumor Like Lesions		Inflammatory		Benign		Malignant		Total	
No Habits	37	44.0%	19	22.6%	11	13.1%	17	20.2%	84	100.0%
Tobacco Chewing	1	3.0%	0	0.0%	0	0.0%	32	97.0%	33	100.0%
Tobacco Chewing And Alcohol	0	0.0%	0	0.0%	0	0.0%	12	100.0%	12	100.0%
Tobacco Chewing And Smoking	2	3.3%	0	0.0%	2	3.3%	57	93.4%	61	100.0%
Tobacco Smoking	3	23.1%	0	0.0%	0	0.0%	10	76.9%	13	100.0%

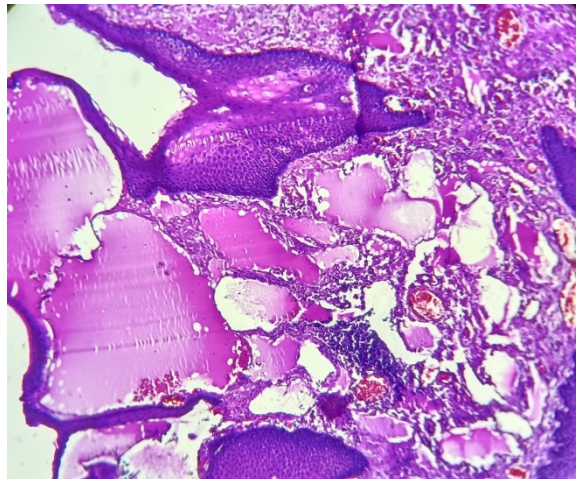
Tobacco Smoking And Alcohol	0	0.0%	0	0.0%	0	0.0%	2	100.0%	2	100.0%
Total	43	21.0%	19	9.3%	13	6.3%	130	63.4%	205	100.0%



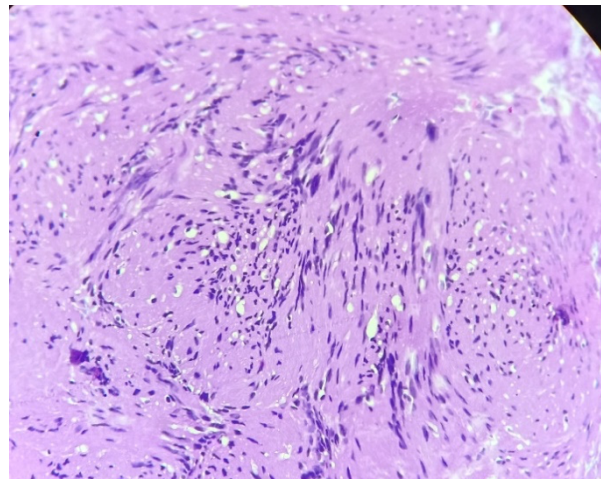
**Figure 1: Pseudoepitheliomatous Hyperplasia(4x)**



**Figure 2 : Moderately Differentiated Squamous Cell Carcinoma (10x)**



**Figure 3: Lymphangioma (Tongue)(10x)**



**Figure 4: Schwannoma (Tongue)(40x)**

### Bibliography

1. Sharan RN, Chanu TM, Chakrabarty TK, Farsalinos K. Patterns of tobacco and e-cigarette use status in India: a cross-sectional survey of 3000 vapers in eight Indian cities. *Harm Reduct J.* 2020; 30:17(1):21.
2. Mearini F, Fanos V, Crisponi G. Anomalies of the oral cavity in newborns. *J Perinatol.* 2020; 40(3): 359-368.
3. Naderi NJ, Eshghyar N, Esfahanian H. Reactive lesions of the oral cavity: A retrospective study on 2068 cases. *Dent Res J (Isfahan).* 2012;9(3):251-5.
4. Ferlay J., Soerjomataram I., Ervik M. International Agency for Research on Cancer; Lyon, France: 2013. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 7.
5. Markopoulos AK. Current aspects on oral squamous cell carcinoma. *Open Dent J.* 2012; 6:126-30.
6. Coelho KR. Challenges of the oral cancer burden in India. *J Cancer Epidemiol.* 2012; 701932.

7. Patro P, Lad P, Mithila KB et.al. A histopathological study of oral cavity lesions. *Int J Health Sci Res.* 2020; 10(3):17-21.
8. Gowthami M R S, Veerabasappa M, Surhonne SP. Etiological and clinical profile of patients with lesions of oral cavity and oropharynx. *Indian J Pathol Oncol.* 2020;7(3):428-434.
9. Al-Khateeb TH. Benign oral masses in a Northern Jordanian population retrospective study. *Open Dent J.* 2009; 3:14
10. Mehta NV, Dave KK, Gonsai RN, Goswami HM et al. Histopathological study of oral cavity lesions: a study on 100 cases. *J cur resrev.* 2013; 05(10): 115-116.
11. Gupta M, Choudhary H, Gupta N, Gupta A. Histopathological study of neoplastic lesions of oral cavity and oropharynx. *Int J Res Med Sci.* 2016; 4:1506-10.
12. Agrawal R, Chauhan A, Kumar P. Spectrum of Oral Lesions in A Tertiary Care Hospital. *Journal of Clinical and Diagnostic Research: Journal of Clinical and Dental Research.* 2015;9(6):11-13.
13. Mehrotra R, Nigam S. Incidence of oral cavity lesions and their clinic histopathological correlation. *Journal of Evolution of Medical and Dental Sciences.* 2013; 2(4)3:8223-8228.
14. Singh M, Jain A, Bodal VK, Kaur J et al. A Clinico-Pathological Study of 200 Cases of Oral Cavity Lesions. *Research Journal of 98 Pharmaceutical, Biological and Chemical Sciences.* 2014; 5(6):1035-1040.
15. Dowerah E, Bhuyan AP. Clinicopathological study of oral cavity neoplasms: experience at a tertiary care hospital of Assam, India. *The Clarion.* 2014; 3(2):1- 6
16. Modi D, Laishram RS, Sharma LD, Debnath K. Pattern of oral cavity lesions in a tertiary care hospital in Manipur, India. *J Med Soc.* 2013; 27:199-202.
17. Garg KN, Raj V, Chandra S. Trends in frequency and duration of tobacco habit in relation to potentially malignant lesion: A 3 years retrospective study. *Journal of Oral and Maxillofacial Pathology.* 2013; 17(2): 201-206.
18. Garg KN, Raj V, Chandra S. Trends in frequency and duration of tobacco habit in relation to potentially malignant lesion: A 3 years retrospective study. *Journal of Oral and Maxillofacial Pathology.* 2013; 17(2): 201-206.
19. Taranikanti M, Das B. Risk factor profile of oral cancer patients in Northeast India. *International Journal of Biomedical Research.* 2013; 04 (11): 615-622