

ORIGINAL ARTICLE

Histopathological Evaluation of Oral Cavity Lesions – 162 Cases

Arpit Jitendra Gohel¹, Hitesh Prajapati²¹Assistant professor, ²Tutor, Dept of pathology, GCS Medical College hospital and research centre, Ahmedabad

ABSTRACT

BACKGROUND AND OBJECTIVES: Objectives of this study was to evaluate the histopathology of oral cavity lesions and their incidence in relation to age group, gender, location and risk factors. **METHODS:** The present study was conducted in the department of pathology, Smt. NHL Municipal Medical College, Ahmedabad. The specimens were received either as excisional biopsy or as incisional biopsy and their histopathological results were studied. **RESULTS:** The age range of study group was from 11 months to 80 years with a mean age of 42.2 years. Maximum cases were seen in age group of 41-50 years. Total 39 cases of female and 123 cases were of male which suggest high male: female ratio. Out of total 162 cases studied, malignant lesions consisted of major bulk; 101 cases (62.4%), benign lesions contributed to 42 cases (25.9%) and premalignant lesions contributed to 19 cases (11.7%). The most common affected site was buccal mucosa (39.5%); followed by tongue (32.7%) and lip (19.1%). **CONCLUSION:** In this study the Deritis ratio is significantly raised in Group A patients with >2.0 & in Group B >1.0 . Total 162 cases of oral cavity lesions were studied. Among the benign lesions, Granuloma pyogenicum was the commonest lesion (10 cases out of 42 cases). A total 19 cases of premalignant lesions were reported to have high association with tobacco chewing and smoking (84%). The malignant oral cavity lesions constituted the major bulk. [101 cases out of 162 cases (62.3%)]. Oral cavity malignant lesions were seen mostly in 4th to 6th decade of life with male: female ratio of 3.15:1. Tongue was the most common site [45 cases (44.6%)] followed by Buccal mucosa [39 cases (38.6%)]. In patients with malignant lesions, significant association with tobacco consumption was observed. [68 cases out of 101 cases (67.3%)]. Squamous cell carcinoma was the most common malignant oral lesion.

Keywords: Oral cavity, Benign, Premalignant, Malignant, Granuloma pyogenicum, Squamous cell carcinoma.

INTRODUCTION

Oral cavity is a common site for many types of benign and malignant tumors. Benign tumors and tumors-like conditions of oral cavity include Eosinophilic granuloma, Fibroma, Granular cell tumor, Keratoacanthoma, Lipoma, Schwannoma, Neurofibroma, Papilloma, Verruciform xanthoma, Pyogenic granuloma etc. as well as Odontogenic tumors.¹ Oral cancer is the 8th most common cancer in men and ranks 14th among women worldwide.² Oral cancer is the most common type of cancer in India in men and actually accounted for 40% of all forms of cancers. Among the malignant lesions, Squamous cell carcinoma is the most common lesion of the oral cavity.³

***Corresponding Author:**

Dr Hitesh Prajapati
Tutor, Dept of pathology,
GCS Medical College hospital and
research centre, Ahmedabad

The accuracy of the intra oral biopsy in the diagnosis of oral carcinoma can approach 100%. These facts arouse a pathologist's interest in the study of oral cancers. The disease is widely prevalent in India and ample material is available for the detailed study.

MATERIALS AND METHODS

This study is an analysis of 162 oral cavity lesions for a period of 3 years. The various parameters like age & gender of the patients, risk factors association, location of lesions, and histopathological diagnosis of tissue specimen were studied. Tissue specimen consisted of incisional & excisional biopsy specimens. Histopathology sections were processed by routine paraffin embedding method & stained by Hematoxylin & Eosin.

OBSERVATIONS

A total 162 oral cavity lesions were analyzed.

Table 1: Various types of oral lesions

Type Of Tumors	No. Of Cases (%)
Malignant Lesions (N=101) (62.4%)	
Squamous Cell Carcinoma	88 (54.5%)
Verrucous Carcinoma	10 (6.1%)
Papillary Squamous Cell Carcinoma	01(0.6%)
Adenoid Cystic Carcinoma	01(0.6%)
Spindle Cell Sarcoma	01(0.6%)
Pre Malignant Lesions (N=19) (11.7%)	
Keratosis With Mild Dysplasia	09(5.6%)
Keratosis Without Dysplasia	06(3.7%)
Verrucous Hyperplasia	04(2.5%)
Benign Lesions (Neoplastic + Non Neoplastic) (N=42) (25.9%)	
Extravasatedmucocele	05 (3.1%)
Fibroma	02 (1.2%)
Capillary Haemangioma	05(3.1%)
Granuloma Pyogenicum	10(6.2%)
Neurofibroma	01(0.6%)
Squamous Papilloma	02(1.2%)
Necrotizing Sialometaplasia	01(0.6%)
Inflammatory Papillary Hyperplasia	03(1.9%)
Acute On Chronic Inflammation With Ulceration	07(4.3%)
Tonsillar Cyst	02(1.2%)
Pemphigus Vulgaris	03(1.9%)
Verruca Vulgaris	01(0.6%)
Total	162(100%)

Table 2: Age incidence of oral cavity lesions

Sr. No.	Age group	No. of cases (%)
1	0-10	07(4.3 %)
2	11-20	10(6.2 %)
3	21-30	20(12.3 %)
4	31-40	37(22.8%)
5	41-50	40(25%)
6	51-60	33(20.4%)
7	61-70	12(7.4%)
8	71-80	03(1.6%)
Total		162(100%)

The age range of study group was from 11 months to 80 years with a mean age of 42.2 years. Maximum cases were seen in age group of 41-50 years.

Table 3: Gender wise incidence of oral cavity lesions

Sex	No. of cases	Percentage
Male	123	76%
Female	39	24%
Total	162	100%

The above table shows male preponderance with M: F ratio was 3.15:1.

Table 4: Categorywise distribution of oral cavity lesions

Sr. No.	Major categories	No. of cases (%)
1	Benign lesions*	42 (25.9 %)
2	Pre malignant lesions	19 (11.7%)
3	Malignant lesions	101(62.4%)
Total		162 (100%)

*Benign lesions included non-neoplastic lesions and benign tumors.

Out of total 162 cases studied, malignant lesions consisted of major bulk; 101 cases

(62.4%), benign lesions contributed to 42 cases (25.9%) and premalignant lesions contributed to 19 cases (11.7%).

Figure 1: Graphical presentation of various categories of oral lesions according to age

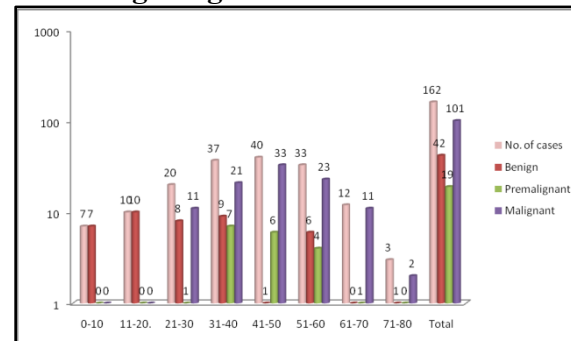
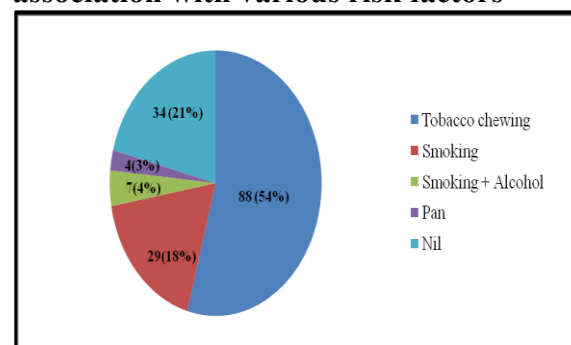


Figure 2: Oral cavity lesions and its association with various risk factors



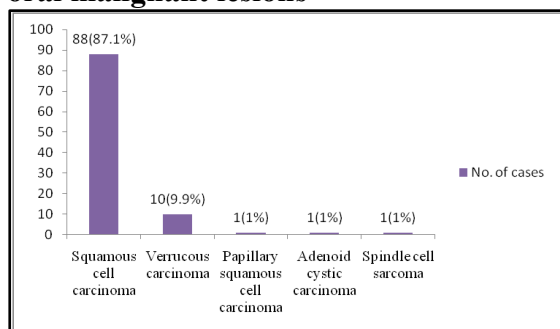
Tobacco chewing and smoking were the significant culprits for oral cavity lesions.

Table 5: Distribution of oral cavity lesions according to site

Site of lesion	No. of cases			Total cases (%)
	Benign	Pre malignant	Malignant	
Tongue	05	03	45	53 (32.7%)
Buccal mucosa	09	16	39	64(39.5%)
Lip	21	00	10	31(19.1%)
Hard palate	03	00	01	04(2.5%)
Soft palate	01	00	02	03(1.9%)
Retromolar	01	00	01	02(1.2%)
Tonsil	02	00	01	03(1.9%)
Gingiva	00	00	01	01(0.6%)
Pyriform fossa	00	00	01	01(0.6%)
Total	42	19	101	162(100%)

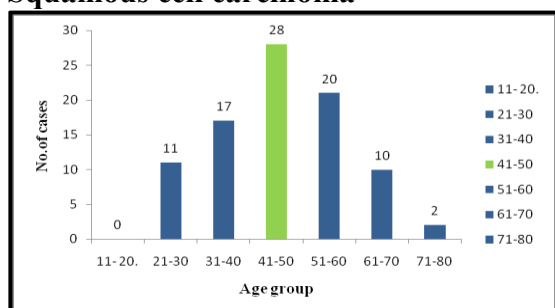
The most common affected site was buccal mucosa (39.5%); followed by tongue (32.7%) and lip (19.1%).

Figure 3: Histopathological varieties of oral malignant lesions



88 cases of conventional squamous cell carcinoma (87.1%); 10 cases of Verrucous carcinoma (10%); 1 case of papillary squamous cell carcinoma, 1 case of adenoid cystic carcinoma and 1 case of spindle cell sarcoma were noted. This shows squamous cell carcinoma is the most common oral malignant lesion.

Figure 4: Age incidence of Conventional Squamous cell carcinoma



The maximum incidence of squamous cell carcinoma was noted in the age group of 41 to 50 years.

Figure 5: Gender wise distribution of Conventional squamous cell carcinoma

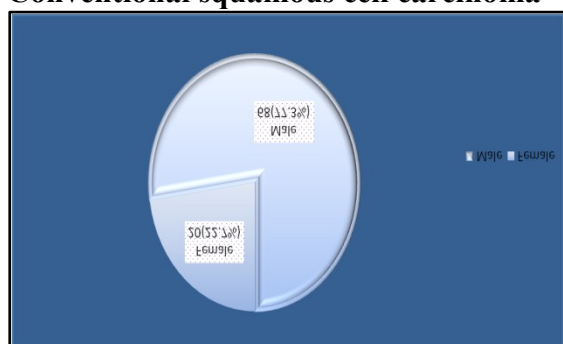


Table 6: Oral cavity malignant lesions and its association with Various risk factors

Sr.No.	Habits	No. of cases (%)
1	Tobacco chewing	68 (67.3%)
2	Smoking	22 (21.8%)
3	Smoking + Alcohol	05 (5%)
4	Nil	06 (5.9%)
Total		101 (100%)

The above table shows that tobacco chewing and smoking were the significant culprits for oral malignant lesions.

DISCUSSION

Epidemiological research concerning oral lesions is complex due to the existence of multiple anatomic structures, the oral cavity exhibits. The oral cavity can be host to a multitude of pathological lesions which may be benign (neoplastic and non-neoplastic), premalignant, or malignant. Oral cavity is one of the most common sites for neoplasm in males especially in India which is due to higher consumption of tobacco in the form of chewing and smoking. In our study, age incidence of oral cavity lesions ranged from 11 months to 80 years with mean age of 42.2 years. Different studies reveal wide age range of oral cavity lesions. In a study done in Northern Jordanian population by Khateebet al⁵, age of the patients ranged from 6 to 98 years. Maximum cases were seen in the age group of 4th to 6th decade in our study. Similar finding was seen in a study done by Gopalkrishna et al⁶; which showed maximum cases of oral lesions were in the age group of 4th to 6th decade. However, in the studies undertaken by Khateebet al⁵ & Pudasaini S et al⁷, it was between 2nd to 4th decades. In both these studies, soft tissue lesions constituted the predominant lesions as opposed to the epithelial lesions in our study & so, malignant epithelial lesions were more in the present study which accounted for higher age group reflection in the present study. In the present study, oral lesions showed marked male preponderance with male: female ratio of 3.15:1 and this is in accordance with findings of other studies. This higher incidence of oral lesions in males may be due to higher consumption

of tobacco in males in various forms like tobacco chewing, smoking etc. In the study of Thakur B. S.⁸, male to female ratio was 5.3:1. Because of diversities of structures, different studies showed wide variations of the affected sites of oral cavity lesions. In our study there was predominance of tongue and buccal mucosa involvement followed by lip which is in accordance with the results in studies conducted by Thakur B.S.⁸, Mehta *et al*⁹ and Shivshetty B.S.¹⁰ However, the study conducted by Al- Khateebet *al*⁵ showed predominance of palatal lesion. Pudasainiet *al*⁷ showed predominance of lip lesion (Table no.7). The wide variation among different studies can be explained by variables like sample size, age, group selection, geographical variation, risk factor association and topography of lesions etc.

Table 7: Comparison of distribution of oral lesions according to site

Site of lesion	Thakur B.S. ⁸	Shivshetty B.S. ¹⁰	Present study
Tongue	30.3	29.03	32.7
Buccal mucosa	42.5	45.16	39.5
Lip	15	9.13	19.1
Hard palate	-	-	2.5
Soft palate	5.8	5.91	1.9
Retromolar	0.8	3.2	1.2
Tonsil	-	-	1.9
Gingiva	-	-	0.6
Pyiform fossa	-	-	0.6
Floor of mouth	3.3	2.15	-
Alveolus	2.5	5.37	-
Total	100	100	100

present study, malignant lesions were majority of the oral lesions consisting of 62.4%. Comparable results were found in the study conducted by Shivshetty B.S.¹⁰ and Mehrotra Ravi *et al*.¹¹ (Table no. 8)

Table 8: Comparison of categories of oral cavity lesions

Sr.No.	Study	Benign	Premalignant	Malignant
1	Mehrotra Ravi <i>et al</i> ¹¹	35.17%	16.73%	39.93%
2	Shivshetty B.S. ¹⁰	9.14%	4.30%	86.56%
3	Present study	25.9%	11.7%	62.4%

Ninety percent of all the oro-facial malignant neoplasms are squamous cell

carcinoma which holds the eighth position in cancer ranking worldwide, being the third most common malignancy in south central Asia.¹² In our study, there were 88 cases of conventional squamous cell carcinoma (87.1% of malignant lesions) which are maximally in the 4th to 6th decade. Similar findings are observed in the studies conducted by Shivshetty B.S.¹⁰ & Mehta *et al*.⁹ Male preponderance was noted in present study which is also similar to finding observed by Shivshetty B.S.¹⁰ The most common site of oral involvement of Squamous cell carcinoma is tongue followed by buccal mucosa & Lip in our study, while in study conducted by Mehta *et al*⁹ buccal mucosa was most common site followed by tongue. In present study, the strong association with risk factors like tobacco chewing (67.3%), smoking (21.8%) & smoking along with alcohol (5%) was observed in patients with malignant oral cavity lesions. Comparable findings were observed in the study conducted by Shivshetty B.S.¹⁰ The verrucous carcinoma is rare, low grade variant of Squamous cell carcinoma; most commonly affect elderly males. The common sites of oral mucosal involvement include the buccal mucosa, followed by the mandibular alveolar crest, gingiva and tongue. This tumor is commonly seen in males in the sixth decade of life.^{13,14} Present study supports this analysis as all the 10 cases of verrucous carcinoma were observed in males with predominant buccal mucosal involvement. Papillary squamous cell carcinoma is a rare form of invasive cancer found anywhere in the upper aero digestive tract with most arising in the larynx, Sino nasal tract, hypo pharynx and oral cavity⁴. One case of papillary squamous cell carcinoma was found in our study. The prevalence of premalignant epithelial lesions in our study was 11.8% (19/162 cases). Buccal mucosa was the common site for premalignant epithelial lesions (16/19 cases, 84%). Tobacco chewing was the most common associated risk factor (12/19 cases, 63%). In the study conducted by Shivshetty

B.S.¹⁰, buccal mucosa was the common site (80%) and tobacco chewing was the most common associated risk factor (100%). In 1972, the World Health Organization (WHO) defined a precancerous lesion as a morphologically altered tissue in which cancer is more likely to occur than in its apparently normal counterpart. The most commonly encountered and accepted precancerous lesions in the oral cavity are leukoplakia, erythroplakia & erythroleukoplakia. The definitions of these entities do not have & the risk of malignant transformation varies according to the histologic grade of dysplasia. In present study, the prevalence of benign lesions was 25.9% (42/162). Among these, granuloma pyogenicum accounted for the highest cases (10/162, 6.2%), nonspecific inflammation accounted for 7 /162 cases (4.3%) next to the granuloma pyogenicum. Comparable findings are observed in the study of Nadia Zaibet al¹⁵, which revealed the highest incidence of granuloma pyogenicum common oral lesions since their tissue of origin *i.e.* salivary glands is widely distributed throughout the oral cavity. We found that the peak incidence was in the first and second decades with lower lip being the most common site. These findings are in agreement with previous work.

CONCLUSION

During the specified period, 162 cases of oral cavity lesions were studied. The lesions affecting the oral cavity constitute a diverse group of pathologies.

Among the benign lesions, Granuloma pyogenicum was the commonest lesion (10 cases out of 42 cases). Tongue and lip were the common sites. Other benign lesions reported were fibroma, capillary haemangioma, neurofibroma, mucocele, tonsillar cyst, squamous papilloma and nonspecific acute on chronic inflammation.

A total 19 cases of premalignant lesions were reported to have high association with tobacco chewing and smoking (84%). The malignant oral cavity lesions

histologic connotation and is used strictly as a clinical description. However, using clinical features to classify lesions as premalignant is difficult because they vary in appearance and are likely to be interpreted subjectively by the clinician. A histopathologic diagnosis is generally more indicative of premalignant change than clinically apparent alterations. Histopathologic finding of “epithelial dysplasia” suggests that the lesion has a greater probability of undergoing malignant change than do normal tissue (9.6%) followed by nonspecific inflammation. Salivary glands constitute an important component of the oral region and they also present a wide range of pathologies. Salivary gland tumors are relatively rare, accounting for 3-10% of head and neck tumors. In the present study, five cases of mucocele, one case of adenoid cystic carcinoma & one case of necrotizing sialometaplasia were noted. Mucocele are

constituted the major bulk. [101 cases out of 162 cases (62.3%)]. Oral cavity malignant lesions were seen mostly in 4th to 6th decade of life with male: female ratio of 3.15:1. Tongue was the most common site [45 cases (44.6%)] followed by Buccal mucosa [39 cases (38.6%)]. In patients with malignant lesions, significant association with tobacco consumption was observed. [68 cases out of 101 cases (67.3%)]. Squamous cell carcinoma was the most common malignant oral lesion. Majority of squamous cell carcinomas were moderately differentiated.

Besides squamous cell carcinoma, other malignancies reported were verrucous carcinoma, papillary squamous cell carcinoma, adenoid cystic carcinoma and spindle cell sarcoma.

Of all the oral biopsies reported in the present study, Squamous cell carcinoma was the most commonly reported pathology making it an emerging threat to the community and highlighting the need to take effective measures to increase the public awareness about the risk factors and

consequences of this life-threatening condition. Measures should be designed to encourage the population to have routine oral examination making an early detection of any pathological changes, which may contribute in alleviating oral health problems of the population.

REFERENCES

1. American Cancer Society (homepage on the internet) (Cited 2006Oct.20);available <http://www.cancer.org/docroot/CRI/content/CRI-2-4-IX>
2. Dr. Sankarnarayanan. Oral cancer screening saving lives. Lyon, France International agency for research on cancer WHO. Press release 3rd June 2005; available from http://www.iarc.fr/ENG/press_releases/Pr164a.html.
3. EHM News Bureau. India has the highest rate of cancer in the world; Study. Express health care management 2004 Dec.16-31,P.7
4. Sternberg's Diagnostic surgical pathology, 5th edition, volume 1, chapter-19.
5. Al-Khateeb T. Benign oral masses in a northern Jordanian population – a retrospective study. Open Dent J 2009;3:147-53.
6. Gopalakrishna, saxena, singh A.K.; Oral carcinoma; Ind J.Surg:1967.
7. Pudasaini S, Baral R, Oral cavity lesions: A study of 21 cases, Journal of Pathology of Nepal (2011) Vol., 49-51.
8. Thakur B.S.,J.H. Makannavar; Oral and oropharyngeal tumors-clinicopathological study of 243 tumors(1991-1997); Karnataka
9. Histopathological study of oral cavity lesions:A study of 100 cases by Mehta et al; IJCRR, Vol.05 ;Issue 10.
10. Histopathological study of neoplastic lesions of oral cavity by Dr.Shivshetty B.S., Karnataka.
11. Mehtrotra, R. Singh,M., Kumar,D.,Pandey,A.N.,Gupta,R.K.,Sinha,U.S.Age specific incidence rate and pathological spectrum of oral cancer in Allahabad, Indian J.Med. sci. 2003;57:400-4.
12. Massano J, Regateiro FS, Januario G, Ferreira A. Oral squamous cell carcinoma: Review of prognostic and predictive factors: Oral Surg Oral Med Oral Pathol Oral Radiol Endod.2006; 102: 67-76.
13. Walvekar RR, Chaukar DA, Despande MS, Pai PS, Chaturvedi P, Kakade A, Kane SV, D'Cruz AK.Verrucous carcinoma of the oral cavity: A clinical and pathological study of 101 cases. Oral Oncol. 2009; 45: 47-51.
14. Alkan A, Bulut E, Gunhan O, Ozden B. oral verrucous carcinoma: a study of 12 cases. Eur J Dent. 2010; 4: 202-07.
15. Nadia Zaib, MadihaSajjad, SaminaIltaf, Abeen Abbas, Salma Shaheen: Oral biopsies: study of 114 cases: Pakistan Oral & Dental Journal Vol. 32, No. 3 (December 2012); 416-20.