

**Original Research Article****Histopathological Study of Oral Cavity Lesions****Mudholkar Vishal G.<sup>1</sup>, Amita Patil<sup>2</sup>, Deshpande Shubha A.<sup>3</sup>**

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**Abstract**

**Introduction:** Lesions involving oral cavity are very common in India, especially in the areas where tobacco, pan and related products are extensively used. Tongue, lip, floor of mouth, hard palate, gingiva and buccal mucosa are usually involved. Malignant lesions in the oral cavity are one of the most common malignant lesions in the Indian subcontinent. Early diagnosis is very important and can be lifesaving because, in late stages, they may be progressed to severe dysplasia, carcinoma in situ and/or carcinoma. Oral cancer is more common in men in developing countries.

**Aims and objectives:** (i) To study the different types of oral cavity lesions. (ii) To study the prevalence of oral cavity malignancies. (iii) To find the correlation between personal habits and oral cavity lesions.

**Material and Methods:** This study included patients presenting with definitive oral cavity masses, leucoplakia or ulcers. All cases of oral cavity lesions were included in the study. FNAC or Scrape cytology was done whenever possible and biopsy were obtained in the form of incisional, excisional or punch biopsy for histopathological examination. The H & E staining was used for microscopic evaluation of cytological smears and histopathological sections.

**Result:** A total of 170 cases were analyzed during the study period. Malignant lesions were the most common oral cavity lesions accounting to about 41%. The most common site was buccal mucosa (35.88%) followed by tongue (24.12%). Males were more commonly affected than females with the ratio of 1.25:1. Tobacco chewing was the most common personal habit related to non-neoplastic and malignant lesions of oral cavity.

**Keywords:** Buccal Mucosa; Leucoplakia; Oral Cavity Lesions.

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**Introduction**

The oral cavity is the point of entry for the digestive and respiratory tract. The mucous membrane of the mouth consists of squamous epithelium covering vascularized connective tissue. The epithelium is keratinized over the hard palate, lips and over gingiva, while elsewhere, it is non-keratinized. Mucous glands (minor salivary glands) are scattered throughout the oral mucosa. Sebaceous

glands are present in the region of the lips and buccal mucosa only. Lymphoid tissue is present in the form of tonsils and adenoids.

Lesions involving oral cavity are very common in India, especially in the areas where tobacco, pan and related products are extensively used. Tongue, lip, floor of mouth, hard palate, gingiva and buccal mucosa are usually involved. Most of these lesions are either neoplastic or

non-neoplastic. Malignant lesions in the oral cavity are one of the most common malignant lesions in the Indian subcontinent. Early diagnosis is very important and can be lifesaving, because in late stages, they may be progressed to severe dysplasia and even carcinoma in situ and/or squamous cell carcinoma (SCC). In India, the age-standardized incidence rate of oral cancer is 12.6/100,000 population. According to the World Health Report 2004, cancer accounted for 7.1 million deaths in 2003 [1]. In South East Asia, oral and oropharyngeal SCC account for 40% of all cancers compared with approximately 4% in developed countries [2].

Oral cancer is more common in men in developing countries. Out of total deaths worldwide related to oral cancer, two-thirds were taken place in developing countries [3]. Although the disease is largely preventable by individuals avoiding risk factors such as tobacco or alcohol use, a high rate of oral cancer has been recorded in the Indian subcontinent, central and eastern Europe, parts of France, southern Europe, South America and Oceania [4]. Oral cancer is the most common form of cancer and of cancer-related death in men in India [3,4]. Its high risk in the Indian subcontinent is related to the popularity of pan-tobacco (a combination of betel leaf, lime, arecanut and sun-dried tobacco) chewing in the region [5]. A rising trend in oral cancer mortality has been recorded especially in central and eastern Europe [6].

This cross sectional study was an attempt to study frequency, occurrence and distribution of oral cavity lesions amongst the population and their correlation with the personal habits by the histopathological examination of those lesions.

### Aims and Objectives

1. To study the different types of oral cavity lesions.
2. To study the prevalence of oral cavity malignancies.
3. To find the correlation between personal habits and oral cavity lesions.

**Table 1:** Age wise distribution of oral cavity lesions

Sr. No	Age group (years)	Number of cases	Percentage %
1.	0-10	2	1.17
2.	11-20	15	8.82
3.	21-30	23	13.53
4.	31-40	26	15.29
5.	41-50	29	17.06
6.	51-60	39	22.94
7.	61-70	26	15.29
8.	71-80	9	5.29
9.	81-90	1	0.59
	Total	170	

### Material and Methods

This study included patients presenting with definitive oral masses, leucoplakia or ulcers. The cases were referred from ENT and Dental outpatient departments and wards of a tertiary care hospital in the period from 1st January 2016 to 30th December 2017. All the cases of oral cavity lesions were included in the study. FNAC or Scrape cytology was done whenever possible and biopsy were obtained in the form of incisional, excisional or punch biopsy for histopathological examination. The Haematoxyline & Eosin staining was done for microscopic evaluation of cytological smears and histopathological sections.

### Observations and Results

**Benign Lesions** include hemangioma, squamous papilloma, lipoma, nevus, pleomorphic adenoma, papillary cystadenoma, fibrous dysplasia, ameloblastoma and adenomatoid odontogenic tumor

**Premalignant Lesions** include hyperplasia without dysplasia, mild dysplasia, moderate dysplasia, severe dysplasia and carcinoma in situ

**Malignant Lesions** include squamous cell carcinoma, spindle cell carcinoma, malignant melanoma, salivary duct carcinoma and mucoepidermoid carcinoma.

### Discussion

In this study of 170 cases of oral cavity lesions, malignant lesions (41%) were the most common followed by non neoplastic lesions (27%). The reactive lesions were more common in males (55%) in the buccal mucosa (35%) and in the sixth decade (51-60 years) (almost 23%).

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 [7]. Pathologic evaluation of the presence and degree of epithelial dysplasia (mild,

**Table 2:** Sex-wise distribution of oral cavity lesions

Sr. No.	Sex	Number of Cases	Percentage (%)
1	Males	94	55.29
2	Females	76	44.71
	Total	170	100.00

**Table 3:** Age and sex wise distribution of oral cavity lesions

Sr. No	Age group (years)	Male	Female	Number of cases	Percentage (%)
1.	0-10	2	0	2	1.17
2.	11-20	9	6	15	8.82
3.	21-30	14	9	23	13.53
4.	31-40	15	11	26	15.29
5.	41-50	16	13	29	17.06
6.	51-60	21	18	39	22.94
7.	61-70	13	13	26	15.29
8.	71-80	4	5	09	5.29
9.	81-90	0	1	01	0.59
	Total	94	76	170	100

**Table 4:** Distribution of oral cavity lesions according to the location the oral cavity

Sr. No.	Site	Number of cases	Percentage (%)
1	Tongue	41	24.12
2	Lip	17	10
3	Buccal mucosa	61	35.88
4	Gingiva	26	15.29
5	Retromolar region	4	2.35
6	Palate	8	4.71
7	Floor of mouth	6	3.53
8	Maxilla	5	2.94
9	Mandible	2	1.17
	Total	170	100

**Table 5:** Distribution of oral cavity lesions as per their presentation at the time of oral examination

Sr. No	Clinical presentation	Number of cases	Percentage %
1	Swelling	104	61.17
2	Ulcer	18	10.58
3	Ulceroproliferative	21	12.35
4	Papule	1	0.58
5	Bleeding	8	4.70
6	White patch	17	10.00
7	Red patch	1	0.58
	Total	170	100

**Table 6:** Distribution of oral cavity lesions according to major histopathological categories

Sr. No.	Lesion	Number of cases	Percentage %
1	Inflammatory	09	5.29
2	Non neoplastic	47	27.64
3	Benign	17	10.00
4	Premalignant	11	6.47
5	Malignant	71	41.76
6	Miscellaneous	15	8.82
	Total	170	100

moderate, severe or carcinoma in situ) is used to assess the malignant risk of oral premalignant lesion [8].

The premalignant epithelial lesions in our study are 12.21% (16/131). This finding is in contrast with the Lee JJ in which prevalence of dysplasia (pre-malignant lesion) was 45.6% and 12.9% that of carcinoma [9].

In the present study, the age distribution ranged from 7 to 84 years with a peak at 51-60 years. The mean age of patients was 43.18 years and the sixth decade was more frequently affected (55%), which is in contrast with the findings of other studies like Zhang et. al. [10], Awange et. al. [11]. In the study of Awange et. al. [12], the age distribution ranged from 2 to 78 years (mean = 30.5 years) with a peak at 20-29 years. Also in the study of Bataneh

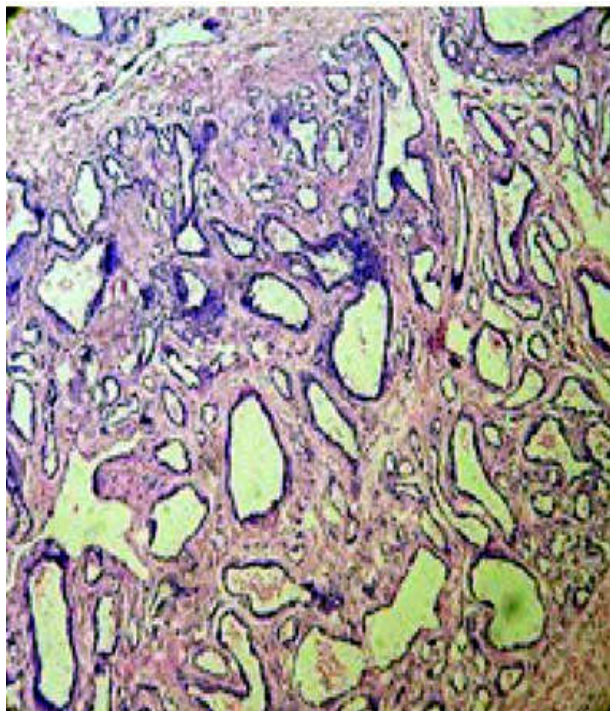
[12], the peak was in the 31 to 40 year old age group (10.54%) followed by the 51 to 60 years (7.82%). This finding reflects that the factors involved in producing reactive lesions have a high influencing effect in the sixth decade and applying preventive methods for personal habits is important.

In the present study, the lesions were most commonly located in the buccal mucosa comprising 35% of the total cases. This finding was similar to Bataneh et. al. [12] in which buccal mucosa was the most common anatomical location and in contrast to Awange et. al. [11] in which more than three fourth lesions were present at gingiva.

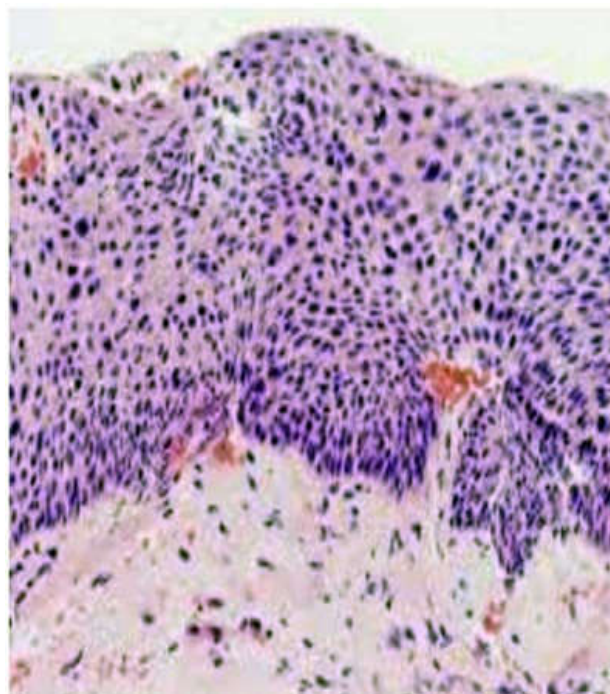
In this series, the oral reactive lesions were more frequent in males (55%) with a male:female ratio of 1.25:1. This was

**Table 7:** Distribution of personal habits related to non-neoplastic and malignant lesions of Oral Cavity

Sr. No.	Habits	Non-Neoplastic lesions		Malignant lesions	
		Cases	Percentage (%)	Cases	Percentage (%)
1.	Tobacco chewing	11	23.40	33	46.47
2.	Smoking	4	8.51	5	7.04
3.	Alcohol	4	8.51	3	4.22
4.	Tobacco chewing + smoking	3	6.38	2	2.81
5.	Smoking + alcohol	3	6.38	3	4.22
6.	Tobacco chewing + alcohol	3	6.38	2	2.81
7.	Tobacco chewing + smoking + alcohol	4	8.51	8	11.26
8.	Pan	3	6.38	5	7.04
9.	Others (mava, gutkha, khaini etc.)	4	8.51	4	5.63
10.	Nil	8	17.02	6	8.45
	Total	47	100	71	100

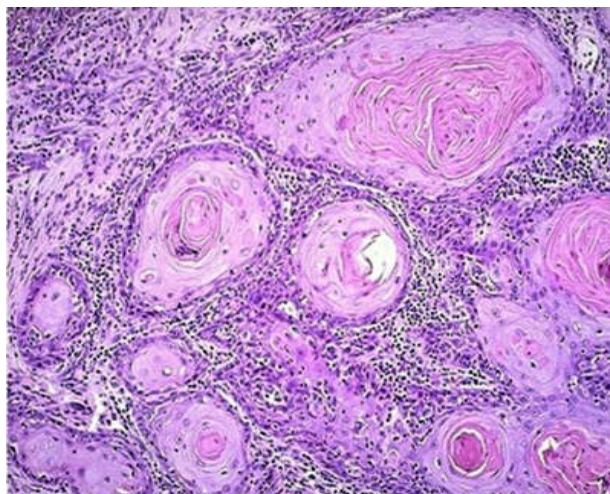


**Fig. 1:** Microscopic photograph showing lobular capillary haemangioma. H & E (100X)

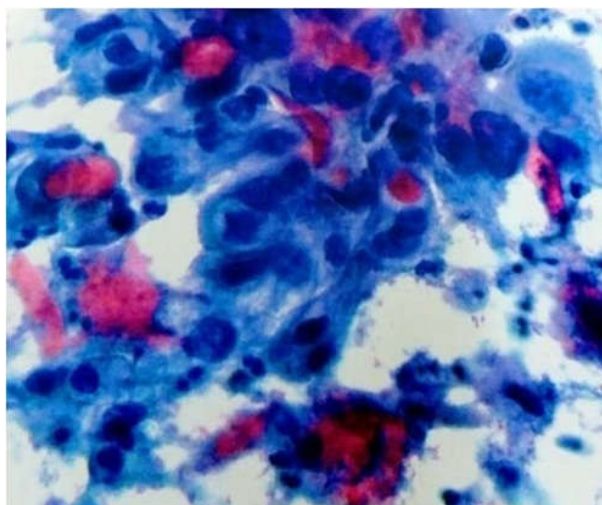


**Fig. 2:** Microscopic photograph showing stratified squamous epithelium with severe dysplasia. H & E (400X)

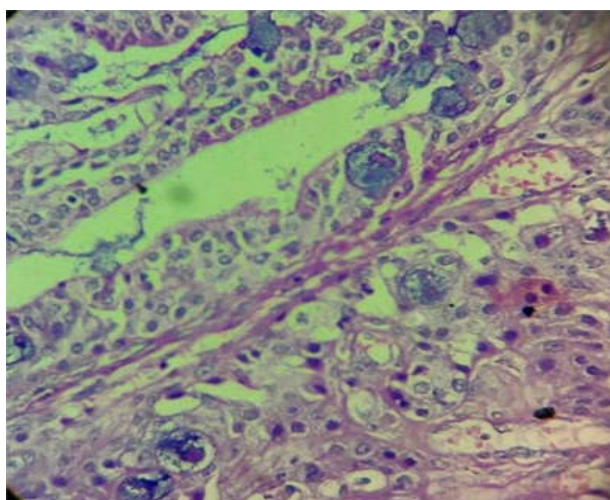




**Fig. 3:** Microscopic photograph showing well formed keratin pearls in squamous cell carcinoma. H & E (400X)



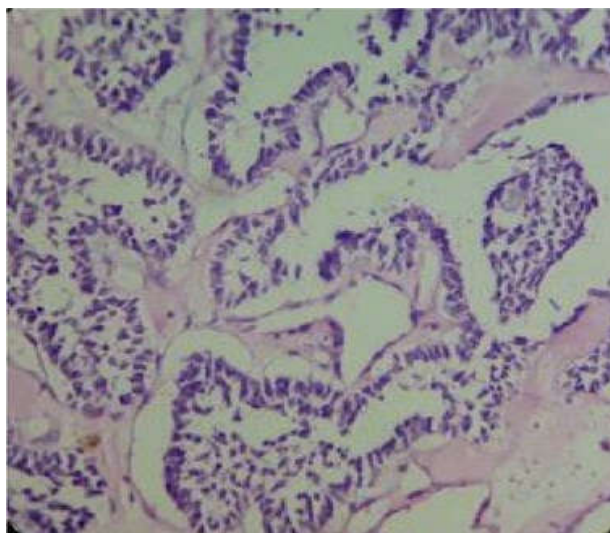
**Fig. 6:** Scrape cytology showing squamous cells with moderate nuclear atypia. Pap stain (400X)



**Fig. 4:** Microscopic photograph showing mucoepidermoid carcinoma. H & E (400X)



**Fig. 7:** Clinical photograph showing ulcero-proliferative growth of squamous cell carcinoma from buccal mucosa



**Fig. 5:** Microscopic photograph showing ameloblastoma. H & E (400X)

comparable to Bataneh et al study, in which 182 (61.9%) were female patients and 112 (30.1%) were males. This finding is not in agreement with other studies which have shown the higher prevalence of reactive lesions in females than males [10-15]. Most lesions were presented as swellings (61%) followed by ulcero-proliferative lesions (12%) in the oral cavity. This finding is not in agreement with the reports of Kfir et. al. [13] and Zhang et. al. [10], who found swelling (granuloma) to be the least common type of oral reactive proliferation in their series. In the personal habits, most common habit was tobacco chewing in 55 cases (32.35%). This finding was comparable with the study of V Misra et. al. [16] in which almost 36% patients were having habit of chewing tobacco. The proportion of tobacco chewing was more in malignant (46%) as compared to non-neoplastic lesions (23%) (Almost double than non neoplastic).

## Conclusion

It is concluded that the incidence of premalignant as well as malignant lesions of the oral cavity is increasing and showing a predilection for higher age groups but it is increasing in younger age groups also due to the increase in intake of tobacco, pan masala and other related intoxicants. It is like a smoldering volcano, which if not taken care of may erupt, leading to increased morbidity and mortality. A detailed clinical work up with histology can help in diagnosing more and more cases of oral cavity premalignant lesions and reducing morbidity and mortality due to malignant lesions.

## References

1. Petersen PE. Strengthening the prevention of oral cancer: The WHO perspective. *Community Dent Oral Epidemiol* 2005;33:397-9.
2. Weber AL, Bui C, Kaneda T. Malignant tumors of the mandible and maxilla. *Neuroimaging Clin N Am* 2003;13:509-24.
3. Ferlay J, Parkin DM, Pisani P. GLOBOCAN 2002: cancer incidence, mortality and prevalence worldwide. Lyon: IARC Press, 2004.
4. Parkin DM, Whelan SL, Ferlay J, Teppo L, Thomas DB, eds. Cancer incidence in five continents. Lyon: IARC Press, 2002.
5. IARC monographs on the evaluation of carcinogenic risks to humans. Betel-quid and areca-nut chewing and some areca-nut derived nitrosamines.
6. Lyon: IARC Press, 2004. La Vecchia C, Lucchini F, Negri E, Levi F. Trends in oral cancer mortality in Europe. *Oral Oncol* 2004;40:433-39.
7. Axell T, Pindborg JJ, Smith CJ, van der Waal I. Oral white lesions with special reference to precancerous and tobacco related lesions: conclusions of an international symposium held in Uppsala, Sweden, May 18-21 1994. International Collaborative Group on Oral White Lesions. *J Oral Pathol Med* 1996;25(2):49-54.
8. Rosin MP, Poh CF, Elwood JM, Williams PM, Gallagher R, MacAulay C and others. New hope for an oral cancer solution: together we can make a difference. *J Can Dent Assoc* 2008; 74(3):261-6.
9. Lee JJ, Hung HC, Cheng SJ, et. al. Carcinoma and dysplasia in oral leukoplakias in Taiwan: Prevalence and risk factors. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology* 2006;101(2):472-80.
10. Zhang W, Chen Y, An Z, Geng N, Bao D. Reactive gingival lesions: a retro-spective study of 2,439 cases. *Quintessence Int.* 2007;38:103-10.
11. Awange DO, Wakoli KA, Onyango JF, Chindia ML, Dimba EO, Guthua SW. Reactive localised inflammatory hyperplasia of the oral mucosa. *East Afr Med J.* 2009;86:79-82.
12. Bataineh A, Al-Dwairi ZN. A survey of localized lesions of oral tissues: a clinicopathological study. *J Contemp Dent Pract.* 2005;6:30-9.
13. Kfir Y, Buchner A, Hansen LS. Reactive lesions of the gingiva. A clinicopathological study of 741 cases. *J Periodontol.* 1980;51:655-61.
14. Zarei MR, Chamani G, Amanpoor S. Reactive hyperplasia of the oral cavity in Kerman province, Iran: a review of 172 cases. *Br J Oral Maxillofac Surg.* 2007;45:288-92.
14. Layfield LL, Shopper TP, Weir JC. A diagnostic survey of biopsied gingival lesions. *J Dent Hyg.* 1995;69:175-9.
16. Vatsala Misra, Premala A Singh, Nirupama Lal, Pooja Agarwal, and Mamta Singh; Changing Pattern of Oral Cavity Lesions and Personal Habits Over a Decade: Hospital Based Record Analysis from Allahabad; *Indian J Community Med.* 2009 Oct;34(4):321-25.