



HISTOPATHOLOGICAL STUDY OF NEOPLASTIC LESIONS OF ORAL CAVITY

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ABSTRACT

Background: Oral cavity is one of the common sites for neoplasm in males especially in India. It is perhaps the only organ which directly and most commonly exposed to carcinogens like tobacco continuously. The clinical diagnosis of malignant lesions in oral cavity is not sufficient and his to pathological examination to confirm or to rule out the malignancy is essential for appropriate treatment.

Materials and methods: During the period of 5 years from January 2015 to December 2019,186 cases of oral lesions were studied in Department of Oral Pathology and Microbiology, Daswani Dental College and Research Centre, Kota, Rajasthan. The formalin fixed and processed tissue sections stained with haematoxylin and Eosin was analyzed, the slides of retrospective cases were reviewed and the histopathological diagnoses were correlated with clinical findings.

Results: The overall incidence of oral lesions was 8.25% of all the biopsies received. The malignant tumors (86.56%) contributed to major bulk of all the 186 cases. The invasive squamous cell carcinoma (85.48%) was the most frequent histological type of oral tumors. Apart from squamous cell carcinoma, this study also comes across single cases of basal cell carcinoma and verrucous carcinoma.

Conclusion: A higher degree of suspicion, based on clinical findings and associated risk factors, precise histopathological typing of lesions to confirm or rule out malignancy is essential in the management of oral lesions.

Keywords – Oral lesions, squamous cell carcinoma, smokeless tobacco.



INTRODUCTION

Oral cavity is a common site for many types of benign and malignant tumors. The benign tumors do not invade other tissues and do not spread to other parts of the body whereas the malignant tumors can penetrate into surrounding tissues and spread to other parts of the body. There are also some growths that start off harmless but can later develop into cancer. These are known as pre-cancerous conditions.

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. The usual treatment for these conditions is to surgically remove them since they are unlikely to recur¹

Oral cancer is the 8th most common cancer in men and ranks 14th among women worldwide. There were 274300 new cases and 145500 deaths worldwide in 2002. Two thirds of this burden is borne by developing countries and over 30% by India only alone². Oral cancer is the most common type of cancer in India in men and actually accounted for 40 % of all forms of cancers. In males, oral cancers

represent 4% of total body cancers whereas in females in India in 2% of all cancers are of oral cavity³.

The knowledge of etiological factors for the development of oral cancers can make the disease preventable by avoidance of risk factors like tobacco consumption, betel-quid chewing and alcohol abuse. Betel quid and areca nut chewing, were major risk factor evaluated by International Agency for Research on Cancer (IARC) as carcinogenic to humans in 2003 monograph evaluation². In western countries, tobacco usually takes the form of cigarette, cigar, or pipe smoking. The etiologic role of oncogenic HPV infections in the development of oral cancers is also being defined.

Syphilis, nutritional deficiencies, sunlight (in cases of lip cancer), miscellaneous factors including heat (particularly heat from a pipe stem in cases of lip cancer), trauma, sepsis, and irritation from sharp tooth and dentures also play a role in the etiology of oral cancers².

The possibility of lymph node metastasis from oral squamous cell carcinomas can be predicted with help of certain factors like site, size, histological differentiation of the tumor etc. (Shear, Hawkins and Ferr)⁴. 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 this part of the globe and ample material is available for the detailed study. Present work is undertaken to study the epithelial tumors of the oral cavity.

AIMS AND OBJECTIVES

1. To study the various histopathological varieties of oral neoplastic lesions.
2. To study the various oral neoplasm in relation to age and sex.
3. Histopathologically classify and study the various neoplasms of oral cavity.
4. To compare observed findings with those of similar studies done by other authors.

MATERIALS AND METHODS

This study includes five years study from January 2015 to December 2019, 186 cases of oral lesions were studied in Department of Oral Pathology and Microbiology, Daswani Dental College and Research Centre, Kota, Rajasthan. Three years retrospective (January 2015 to December 2017) and two years prospective study (January 2018 to December 2019).

Inclusion criteria:

- 1) Specimen, which are adequate and representative of the lesion.
- 2) Properly resected surgical specimens like punch biopsies, incisional biopsies, wedge biopsies, surgical excision, radical neck dissection, hemiglossectomy, hemimandibulectomy etc. are included.
- 3) Neoplasms of oral cavity.

Exclusion criteria:

- 1) Inadequately preserved specimens with handling artifacts.
 - 2) Improper clinical record (history and examination)
 - 3) Neoplasms arising from Nasopharynx and oropharynx.
- The formalin fixed specimen will be subjected to detailed gross examination and subjected for histopathologic processing and paraffin blocks prepared.
 - Sections will be cut at 5 micron thickness and stained by Haematoxylin and Eosin.
 - The oral tumors are diagnosed and classified according to the recent WHO classification

OBSERVATION AND RESULTS

In the present study, the cases of Neoplastic lesion of oral cavity were studied from the records of Department of Oral Pathology and Microbiology, Daswani Dental College and Research



Centre, Kota, Rajasthan. There were 186 cases of neoplastic lesions of oral cavity.

Table 1: Incidence of oral biopsy out of all biopsy during Jan 2015 to Dec 2019 (5 years)

Total No of Biopsies	Total No of Biopsies from oral cavity	Benign	Premalignant	Malignant
2254	186	17	08	161
100%	08.25%	00.75%	00.35%	07.14%

Table 2: Age Incidence of all 136 cases of Neoplastic lesion of oral cavity

Sl. No.	Age group	No. of cases	Percentage
1	0-10	3	1.61
2	11-20	3	1.61
3	21-30	11	5.91
4	31-40	25	13.44
5	41-50	37	19.89
6	51-60	61	32.80
7	61-70	36	19.35
8	71-80	7	3.76
9	81-90	3	1.61
Total		186	100.00

Maximum cases were seen in 51-60yr age group (32.80%) followed by 41-50yr (19.35%).

Table 3: Sex distribution of all 186 cases of Neoplastic lesion of oral cavity

Sex	No. of Cases	Percent (%)
Male	120	64.52
Female	66	35.48
Total	186	100.00

Table 4: Distribution of Habits of all 186 cases of Neoplastic lesion of oral cavity

Sl. No.	Habits	No. of Cases	Percentage (%)
1	Tobacco chewing	90	48.39
2	Alcohol	4	2.15
3	Smoking	46	24.73
4	Pan	30	16.13
5	Smoking + Alcohol	6	3.23
6	Nil	10	5.38
Total		186	100.00

Table 5: Distribution of all oral tumors according to different sites in oral cavity

Site of lesion	No. of cases			Total	Percentage
	Benign	Premalignant	Malignant		
Tongue	03	01	50	54	29.03
Cheek	04	06	74	84	45.16
Lower lip	05	—	12	17	9.13
Soft Palate	03	—	9	12	6.45
Alveolus	02	—	10	12	6.45
Floor of mouth	00	01	2	03	1.61
Retro molar	00	—	4	04	2.15
Total	17	03	161	186	100

Table 6: Percentage incidence of the distribution of all cases under broad categories

Sl-No.	Major categories	No. of cases	Incidence %
1	Benign	17	9.14
2	Premalignant	8	4.30
3	Malignant	161	86.56
Total		186	100



It is observed from the present study that cheek (45.96%) represents the commonest site for the development of oral malignancy followed by tongue (31.06%); the other common sites are lower lip (7.45%) and Alveolus (6.21%) out of 161 cases of oral malignancies.

Histopathological diagnosis	No. of Cases	Percent (%)
Squamous cell carcinoma	159	98.76
Verrucous carcinoma	1	0.62
Basaloid carcinoma`	1	0.62

Table 7: Comparison of various types of oral tumors and their percentage incidence in 186 cases in the present study

Malignant Epithelial tumors		
Squamous Cell Carcinoma	159	85.48
Verrucous Carcinoma	1	0.54
Basaloid Squamous Cell Carcinoma	1	0.54
Premalignant lesion		
Leukoplakia	5	2.69
Carcinoma in situ	3	1.61
Benign Epithelial tumor		
Papilloma	6	3.23
Benign soft tissue tumors		
Fibroma	1	0.54
Hemangioma	7	3.76
Pyogenic granuloma	1	0.54
Neurofibroma	1	0.54
Granular cell tumor of new born	1	0.54
Total	186	100.00

Squamous Cell Carcinoma was the most common tumor encountered among all malignant tumors (159 cases out of 161

cases) and Hemangioma was the commonest among the benign tumors (7 out of 17 cases).

DISCUSSION

Oral tumors are common tumors of India. This changing pattern of malignancy in developing India is due to higher consumption of tobacco in the form of chewing as well as smoking. Oral cancer accounted for 274,300 new cases and 145,500 deaths occurred worldwide in 2002, two-thirds of which occurred in less-developed countries like India and other South East Asian countries [5].

This study includes five years study from January 2015 to December 2019. Three years retrospective (Jan 2015 to Dec 2017) and 2 years prospective study (Jan 2018 to Dec 2019). The specimens were obtained from Department of Oral Pathology and Microbiology, Daswani Dental College and Research Centre, Kota, Rajasthan.

A variety of oral tumors summing upto 186 cases, both benign and malignant were analyzed for the purpose of studying the clinical aspects as well as histopathological patterns of oral tumors. The observations were recorded in an orderly manner and were compared with work of other reputed research



publications and we tried to reach to a conclusion.

Table 8: Incidence of oral tumors in India and worldwide countries⁶

US Blacks	America	10.0	3.0
US Whites	America	5.5	2.7
New Zealand	America	33	1.6
Canada	America	4.9	1.9
UK	Europe, Northern	2.7	1.2
France	Europe, Central	9.0	2.1
Germany	Europe, Southern	9.4	1.6
Italy	Europe, Southern	7.2	0.9
Czech Republic	Europe, Eastern	4.3	0.8
Hong Kong	Asia	4.0	2.0
Japan	Asia	3.0	1.3
China	Asia	1.7	1.3
India, Bombay	Asia	12.7	6.9
India, Madras (Chennai)	Asia	13.2	10.2
India, Bangalore	Asia	6.3	6.3

Table 9: Comparative analysis of incidence of oral cancer to total cancer

Place	Author	Year	% of oral cancers
U.K	Khonalkar ⁷	1950	6.7
U.S.A	Sharma ⁸	1964	7.0
Afghanistan	Sobin ⁹	1969	2.7
Bombay	Khonalkar ⁷	1950	35.90
Vishakhapatnam	Reddy et al ¹¹	1971	10.7
Greater Bombay	Jassawala and Deshpande ¹²	1971	22.2
Karnataka	Bhargava ¹³	1973	16.3
Karnataka	Thakur, B. S. ¹⁴	1997	6,23
Present study		2019	8,25

Table 10: Comparative analysis of age incidence of oral tumors.

Age	Sharma et al ⁸ (1964)	Gopalakrishna et al ¹⁶ (1967)	Thakur B.S. ¹⁴ (1997)	Present study (2019)
0-10	00	00	00	1.61
11-20	00	00	0.8	1.61
21-30	1.6	2.1	4.2	5.91
31-40	328	16.0	12.5	13.44
41-50	33.7	34	28.5	19.89
51-60	26.2	35.1	32.5	32.80
61-70	5.7	6.2	19.2	19.35
71-80	00	6.2	25	3.76
81-90	00	00	00	1.61
Total	100	100	100	100.00

In the present study oral tumors showed a marked male preponderance with male female ratio of 1.8:1 (120 males and 66 females), and this is in accordance with the findings other studies. This higher incidence of oral tumors may be due to higher consumption of tobacco in males in various forms like chewing, smoking and also may be due to eating pans.

Table 11: Comparative analysis of sex wise distribution of oral tumors

Author	Year	Male: Female
Balasubramanyam ¹⁷	1954	1.5:1
Bhargava ¹³	1973	1.9:1
Thakur B. S. ¹⁴	1997	5.3:1
Present study		1.8:1



However a recent study conducted in Karnataka by Thakur B. S.[14] et al in 1997 showed a much higher prevalence of oral tumors in males. Some of the psychoactive substances that are commonly used by Indian people are alcohol, tobacco, arecanut. All these are implicated in development of oral lesions like dental caries, gingivitis, extrinsic stains, oral submucous fibrosis (OSF), periodontitis, leukoplakia, melanosis, nicotinopalatini and erythroplakia in initial stages and later development of malignancy i.e., squamous cell carcinoma¹⁸

In the present study the majority were tobacco chewers (48.39%) and smokers (24.43%). However previous studies showed a much higher consumption of tobacco chewing in patients with oral tumors, ranging from 69.2% to 91.3%. This lower association of tobacco chewing may be due to regional variation in tobacco use and also use of tobacco in the form of smoking or use of areca nut without tobacco more common.

Table 12: Distribution of oral lesions according to site in oral cavity

Site of lesion	Saxena and Agarwal ¹⁹ (1965)	Gopalakrishna et al. ¹⁹ (1967)	Krolls and Hoffman ²⁰ (1976)	Alvi et al., ²¹ (1996)	Thakur B.S ¹⁴ (1997)	Present study
Tongue	28.9	24.7	24	30.1	30.3	29.03
Cheek	56.8	51.5	12	12	42,5	45.16
Lower lip	3.3	7.2	23	10.4	15	9.13
Soft Palate	4.3	5.2	04	3.2	5.8	5.91
Alveolus	6.7	9.3	11	16,7	2.5	537
Floor of mouth	—	2.1	26	27.6	3.3	2.15
Retro molar	—	—	--	—	0.8	3.22
Total	100	100	100	100	100	100

The present study showed majority of the cases occurred in cheek or buccal mucosa (45.16%) followed by Tongue (29.03%) which is in accordance with the results in the study conducted by Thakur B.S.[14] (cheek-42.5% and tongue-30.3%), Gopalakrishna et al.,[16] (cheek-51.5% and tongue-24.7%) and Saxena and Agarwal [19] (cheek-56.8% and tongue-28.9%). However study conducted by Krolls and Hoffman [20] (cheek-12%) and Alvi et al.,[21] (Cheek-12%) showed a slightly lower incidence in cheek or buccal mucosa, but a higher incidence in Alveolus or Gingiva (26% and 27.6% respectively). This difference in results could be due to



much higher incidence of pan eating or tobacco chewing in Indian culture which is a constant irritant to cheek.

SUMMARY AND CONCLUSION

The approach was to study the various histopathological varieties of oral neoplastic lesions, their classification and thorough study of various such oral lesions and to compare the observed findings to similar studies in relation to incidence, age, sex and risk factor distribution.

- The malignant tumors (86.56%) contributed to major bulk of all the 186 cases.
- The invasive squamous cell carcinoma (85.48%) was the most frequent histological type of oral tumors.
- Apart from squamous cell carcinoma, this study also comes across single cases of basal cell carcinoma and verrucous carcinoma.
- In the premalignant category there were 5 cases of leukoplakia which were commonly seen on buccal mucosa and 3 cases of carcinoma in situ. Both were showing male preponderance with associated risk factors of tobacco chewing and smoking.
- Oral cancers were seen mostly, in 6th decade of life with a male: female ratio of 1.7:1.

- The cheek (45.96%) was the commonest site involved

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