



## CLINICOPATHOLOGICAL STUDY OF ORAL LESIONS IN A TERTIARY CARE HOSPITAL

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### ABSTRACT

**Background:** Oral cavity is a common site for various non-neoplastic and neoplastic lesions. Majority of lesions were neoplastic. Tobacco chewing, smoking and alcohol consumption were the common risk factors implicated in the etiology of malignant oral lesions. Squamous cell carcinoma was the most common lesion of the oral cavity.

**Aims&Objectives:** To study the clinicopathological lesions of the oral cavity with respect to age, gender, location, clinical presentation, histopathological patterns and various risk factors.

**Materials And Methods:** A retrospective study of 274 oral cavity lesions conducted for period of 2 years from January 2019 to December 2020 in the department of pathology, Andhra Medical College, Visakhapatnam, Andhra Pradesh.

**Results:** In our study, the age range of the patients was from 3 years to 87 years. Majority of cases were seen in age group of 41-50 years. Males were more commonly affected than females with a male to female ratio of 2.51:1. Majority of oral lesions were malignant. Squamous cell carcinoma was the most common oral lesion. Tongue was the most common site involved in oral lesions. Mucocele was the commonest non-neoplastic lesion and squamous papilloma was the most common benign lesion. Leucoplakia was the most common premalignant lesion and Squamous cell carcinoma was the commonest malignant lesion.

**Conclusion:** Majority of oral lesions were malignant. Squamous cell carcinoma was the most common oral lesion. Early and accurate identification of potentially malignant oral lesions is important and essential for prevention of morbidity, mortality and for proper treatment of cases. Along with clinical examination and laboratory investigations, histopathological examination is still the gold standard to establish a definitive diagnosis and for confirmation of the nature and origin of oral lesions.

**KEYWORDS :** squamous cell carcinoma, tongue, oral cavity, smoking.

### INTRODUCTION:

Oral cavity is one of the most common site for various non-neoplastic and neoplastic lesions. Lesions may originate from epithelial tissue, connective tissue, muscle tissue, nerve tissue and from vessels<sup>1</sup>. Tongue, hard palate, buccal mucosa, gingiva, floor of mouth and lip are usually involved. Non-Neoplastic lesions and benign tumors are usually treated by surgical removal since they are unlikely to recur<sup>2</sup>. Majority of oral lesions are malignant. Among malignant oral lesions, Squamous cell carcinoma is the most common cancer. Smoking, chewing Tobacco /Pan/ Gutka/Betel-quid/Areka nut and alcohol consumption are the major etiological factors implicated in oral malignancy<sup>3</sup>. Human papilloma virus, Epstein-Barr virus, nutritional deficiencies, poor oral hygiene, sunlight (in case of lip cancer) and miscellaneous factors including heat, trauma, sepsis and irritation from sharp teeth and ill-fitted dentures also play a role in the etiology of oral cancers. Oral cancer is a major public health problem in the developing countries. Overall, oral cancer is the sixth most common cancer in the world<sup>3</sup>. High incidence of oral cancer is found in southern Asia including India, Pakistan, Srilanka, Taiwan and China. Incidence is also high in Eastern and Western Europe, Latin America, the Caribbean and Melanesia. Worldwide oral cancer incidence is higher among males aged 50-70 years. Hence it is important to detect potentially malignant lesions at an early stage to prevent mortality, morbidity and for proper treatment of cases. Histopathological examination is an important tool to establish a definitive diagnosis of oral lesions.

### AIMS AND OBJECTIVES:

To study the clinicopathological changes of the oral cavity

lesions with respect to age, gender, clinical presentation of the patients, location of the lesions, histopathological patterns of the tissue specimens and various associated risk factors.

### MATERIALS AND METHODS:

The present study was conducted retrospectively for a period of 2 years from January 2019 to December 2020, in the department of Pathology, Andhra Medical College, Visakhapatnam. A total of 274 oral lesions were included in the study. The various parameters like age, gender, site, risk factors, clinical details, histopathological diagnosis were retrieved from the medical records. All types of tissue specimens consisted of incisional and excisional biopsy specimens and resected specimens were included in the study. Lesions of odontogenic origin, bone, teeth, oropharynx and nasopharynx were excluded in the present study. Histopathology sections were processed by routine paraffin embedding method and stained by Hematoxylin and Eosin. Data was collected and analyzed. Analysis was done using statistical software adobe PageMaker 7.0 and SPSS for windows.

### RESULTS:

A Total of 274 oral cavity lesions were studied and analyzed in the present study.

Out of total 274 cases, 33 cases were non-neoplastic and 241 were neoplastic. Neoplastic lesions were further divided into benign, premalignant and malignant oral lesions. Mucocele (39.39%) and Pyogenic granuloma(15.15%) were the most common non-neoplastic lesions, whereas Squamous papilloma (41.67%) and Hemangioma (33.33%) were the

common benign lesions. In premalignant lesions Leucoplakia (33.33%) was the most common lesion and Squamous cell carcinoma (97.19%) was the most common malignant oral lesion (table 1). Majority of oral cavity lesions were malignant consisting of 214 cases (78.10%). These were followed by non-neoplastic lesions with 33 cases (12.04%), premalignant lesions with 15 cases (5.48%) and benign lesions with 12 cases (4.38%) (table 2). In our study, the age range of the patient was from 3 to 87 years with a mean age of 45.2 years. The youngest patient was a 3-year-old male presented with Mucocele of lower lip whereas the oldest patient was an 87 year old male presented with Squamous cell carcinoma of tongue. Majority of non neoplastic lesions were seen in the age group of 11-30 years where as neoplastic lesions were more common in the age group of 40-70 years (table 3). All oral cavity lesions were more common in males with a male to female ratio of 2.51:1 except for benign lesions which showed a female preponderance in the present study (table 4). Tongue with 101 cases (36.86%) was the most common site involved in oral cavity lesions in our study. Lip and palate were the most common sites for non-neoplastic lesions whereas benign lesions were more common in tongue. Premalignant lesions were more common in palate. Tongue and palate were the predominant sites for malignant oral lesions (table 5). Oral growth lesion was the most common clinical presentation in our study seen in 159 cases (58.03%) followed by ulcerative lesions (79 cases, 28.83%) and Ulceroproliferative growth (29 cases, 10.58%) lesions (table 6). Tobacco/Pan/Gutka/Betel chewing and smoking were the predominant significant risk factors observed in our study associated with premalignant and malignant oral lesions (table 7). Majority of oral lesions were malignant. Squamous cell carcinoma (Fig 1, Fig 2) was the most common malignant lesion (208 cases, 78.10%) observed in our study. Out of 208 cases of Squamous Cell carcinoma, majority were moderately differentiated (108 cases, 51.92%) followed by well differentiated (92 cases, 44.23%) and poorly differentiated (8 cases, 3.85%) types (table 8).

**DISCUSSION**

In the present study, malignant lesions (214 cases, 78.10%) were the majority of oral cavity lesions followed by non-neoplastic lesions (33 cases, 12.04%), premalignant lesions (15 cases, 5.48%) and benign lesions (12 cases, 4.38%). Similar findings were observed in a study by Parikh S et al<sup>4</sup> and Mehrotra Ravi et al<sup>5</sup> and Patro P et al<sup>6</sup>. Non neoplastic lesions were most common in younger age groups (1<sup>st</sup> to 3<sup>rd</sup> decade of life) whereas neoplastic lesions were more common in older age groups (4th to 7th decades of life). These findings were in concordance with studies conducted by Gupta M et al<sup>7</sup>, Selvi S et al<sup>8</sup>, Bhalekar S et al<sup>9</sup>, R Agrawal et al<sup>10</sup> and Patro P et al<sup>6</sup>. In our study males (196 cases, 71.53%) were predominantly affected with a M:F ratio of 2.51:1. This is similar to a study observed by Kosam et al<sup>11</sup>, S V Suverkar et al<sup>12</sup> and Munsen HI et al<sup>13</sup>. This higher incidence of oral lesions in males could be due to higher consumption of tobacco in males in various forms like smoking, chewing etc. Hence screening programmes in men over 50 years of age would help in early diagnosis and prevention of potentially malignant oral lesions. Tongue was the most common site involved in oral lesions in our study. Non-neoplastic lesions were more common in lip and palate in our study however R Laishram et al<sup>14</sup> and Bhalekar S et al<sup>9</sup> showed buccal mucosa as the most common site for non neoplastic lesions in their study. Tongue was the most common site for benign oral lesions in our study whereas gingival was the most common site for benign lesions in a study done by R Laishoram et al<sup>14</sup>.

Palate and tongue are the commonest sites in premalignant lesions in our study whereas a study conducted by Misra et al<sup>15</sup>, Bhalekar S et al<sup>9</sup>, and Patro P et al<sup>6</sup> showed buccal mucosa as the commonest site for premalignant lesions. Tongue was the most common site for malignant lesions in our study which

is similar to studies conducted by Patro P et al<sup>6</sup>, R Mehrotra et al<sup>5</sup>, Giri P et al<sup>16</sup> and R Laishram et al<sup>14</sup>. Different studies showed wide variations of the affected sites of oral cavity lesions. This could be due to diversities of structures, sample size, age, geographical variation, risk factor association and topography of lesions etc. Most common clinical presentation in our study was oral growth (159 cases, 58.03%) followed by ulcerative lesions (71 cases, 28.83%). This is similar to a study by Suverkar et al<sup>12</sup> and Gupta M et al<sup>7</sup>. Tobacco/Pan Chewing (44.54%) and smoking (25.33%) were the significant risk factors observed in the present study. These findings are in consistent with studies done by Parikh S et al<sup>4</sup> and SV Suverkar et al<sup>12</sup>. Mucocele (39.39%) was the most common non neoplastic lesion followed by Pyogenic granuloma (15.15%) (Fig 5) in our study whereas Bhalekar S et al<sup>9</sup> showed Pseudoepitheliomatous hyperplasia as the most common non-neoplastic lesion. Squamous papilloma (41.67%) (Fig 3, Fig 4) and Hemangioma (33.33%) were the most common benign lesions in the present study similar to a study by Rahul Y S et al<sup>17</sup>. Leucoplakia was the most common premalignant lesion similar to a study observed by Nayak P et al<sup>18</sup> and Gowthami M R et al<sup>19</sup>. Squamous cell carcinoma (97-19%) was the most common oral malignant lesion observed predominantly in males and in older age groups (from 4<sup>th</sup> to 7<sup>th</sup> decades of life). These findings are in consistent with studies conducted by Gupta M et al<sup>7</sup>, Nayak P et al<sup>18</sup> and Gowthami M R et al<sup>19</sup>. In our study, majority of Squamous cell carcinoma were moderately differentiated (51.92%) followed by well-differentiated (44.23%) (Fig 1, Fig 2) and poorly differentiated (3.85%). This is similar to a study done by Bushra A et al<sup>20</sup>. Studies conducted by Rahul Y S et al<sup>17</sup> and Gowthami M R et al<sup>19</sup> showed well-differentiated type as the most common grade followed by moderately differentiated grade.

**CONCLUSION:**

Majority of oral lesions were malignant. Squamous cell carcinoma was the most common oral lesion. Oral lesions were more common in tongue and palate. Males were predominantly affected in oral lesions. Non-neoplastic lesions were common in younger age groups whereas neoplastic lesions were more common in older age groups. Development of oral malignancy is strongly associated with Tobacco/Pan Chewing and smoking. Early and accurate identification of potentially malignant oral lesions is important and essential for prevention of morbidity, mortality and for proper treatment of cases. Along with clinical examination and laboratory investigations, histopathological examination is still the gold standard to establish a definitive diagnosis and for confirmation of the nature and origin of oral lesions.

**Table(1):- Distribution Of Oral Cavity Lesions According To Their Histopathological Diagnosis**

S.No.	Histopathological Diagnosis	No. of Cases	Percentage (%)
I.	NonNeoplastic:	33	12.04
	Mucocele	13	4.74
	Pyogenic Granuloma	5	1.82
	Oral Candidiasis (Oral Thrush)	2	0.73
	Ranula	4	1.46
	Fibroepithelial Polyp	3	1.09
	Fibrous Epulis	1	0.37
	Epidermal Cyst	1	0.37
	Nasopalatine Cyst	1	0.37
II.	Benign	32	4.38
	Squamous Papilloma	5	1.82
	Hemangioma	4	1.46
	Pleomorphic adenoma	1	0.37
	Fibroma	1	0.37
III.	Lipoma	1	0.37
	Premalignant	15	5.48
	Mild Dysplasia	2	0.73

	Moderate Dysplasia	2	0.73
	Severe Dysplasia	3	1.09
	Leucoplakia	5	1.82
	Submucous fibrosis	2	0.73
	Verrucous hyperplasia	1	0.37
IV.	Malignant	214	78.10
	Squamous Cell Carcinoma	208	75.91
	Verrucous Carcinoma	4	1.46
	Mucoepidermoid Carcinoma	1	0.37
	Epithelial myoepithelial Carcinoma	1	0.37
	Total	274	100%

**Table(2): Distribution Of Oral Cavity Lesions According To Major Histopathologic Categories**

Category	Non-neoplastic Number (%)	Benign Number (%)	Premalignant Number (%)	Malignant Number (%)	Total Number (%)
Number of Cases	33 (12.04%)	12 (4.38%)	15 (5.48%)	214 (78.10%)	274 (100%)

**Table(3): Distribution Of Oral Cavity Lesions According To Age**

Age Group (in years)	Non neoplastic Number (%)	Benign Number (%)	Premalignant Number (%)	Malignant Number (%)	Total Number (%)
0-10	5(1.82)	0	0	0	5(1.82)
11-20	8(2.92)	1(0.36)	0	1(0.36)	10(3.65)
21-30	6(2.19)	2(0.73)	0	10(3.65)	18(6.57)
31-40	4(1.46)	3(1.09)	3(1.09)	34(12.41)	44(16.6)
41-50	4(1.46)	3(1.09)	3(1.09)	68(24.82)	78(28.47)
51-60	4(1.46)	2(0.73)	3(1.09)	48(17.52)	57(20.80)
61-70	2(0.73)	0	6(2.19)	38(13.87)	46(16.79)
>71	0	1(0.36)	0	15(5.48)	16(5.84)
Total	33 (12.04)	12 (4.38)	15 (5.48)	214 (78.10)	274 (100%)

**Table(4): Distribution Of Oral Cavity Lesions According To Gender**

Gender	Non-Neoplastic Number (%)	Benign Number (%)	Premalignant Number (%)	Malignant Number (%)	Total Number (%)
Male	22 (8.03)	4 (1.46)	11 (4.01)	159 (58.02)	196 (71.53)
Female	11 (4.01)	8 (2.92)	4 (1.46)	55 (20.07)	78 (28.47)
Total	33 (12.04)	12 (4.38)	15 (5.48)	214 (78.10)	274 (100)

**Table(5): Distribution Of Oral Cavity Lesions According To Site**

Site Of Lesion	Non Neoplastic Number (%)	Benign Number (%)	Premalignant Number (%)	Malignant Number (%)	Total Number (%)
Tongue	3 (1.09)	10 (3.65)	5 (1.82)	83 (30.29)	101 (36.86)
Buccal mucosa	3 (1.09)	2 (0.73)	2 (0.73)	44 (16.06)	51 (18.62)
Lip	11 (4.01)	0	1 (0.36)	15 (5.48)	27 (9.85)
Palate	6 (2.19)	0	6 (2.19)	50 (18.25)	62 (22.63)
Gingiva	4 (1.46)	0	1 (0.36)	4 (1.46)	9 (3.29)

Floor Of Mouth	4 (1.46)	0	0	5 (1.82)	9 (3.29)
Retromolar Trigone	1(0.36)	0	0	4(1.46)	5(1.82)
Tonsil	1 (0.36)	0	0	6 (2.19)	7 (2.55)
Angle Of Mouth	0	0	0	3(1.09)	3(1.09)
Total	33 (12.04)	12 (4.38)	15 (5.48)	214 (78.10)	274 (100)

**Table(6): Distribution Of Oral Cavity Lesions According To Clinical Presentation**

Clinical presentation	Non-Neoplastic Number (%)	Benign Number (%)	Premalignant Number (%)	Malignant Number (%)	Total Number (%)
Growth	26 (9.49)	9 (3.28)	6 (2.19)	118 (43.06)	159 (58.03)
Ulcer	3 (1.09)	2 (0.73)	3 (1.09)	71 (22.91)	79 (28.83)
Ulceroproliferative growth	2 (0.73)	1 (0.36)	1 (0.36)	25 (9.12)	29 (10.58)
White patch	2 (0.73)	0	5 (1.82)	0	7 (2.55)
Total	33 (12.04)	12 (4.38)	15 (5.48)	214 (78.10)	274 (100)

**Table(7): Distribution Of Various Risk Factors Associated With Premalignant And Malignant Oral Cavity Lesions (N=229)**

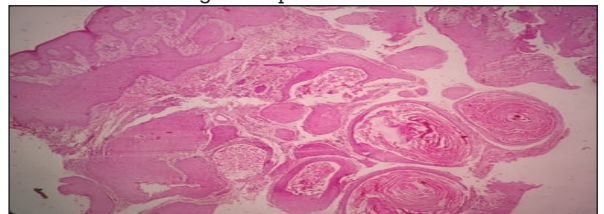
Habits	Number	Percentage
Tobacco/Pan/Gutka/Betel Chewing	102	44.54
Smoking	58	25.33
Alcohol	30	13.10
Smoking+ Tobacco Chewing+ Alcohol	15	6.55
None	24	10.48
Total	229	100

**Table(8):- Distribution Of Squamous Cell Carcinoma According To Grading (N=208)**

Grade Of Squamous Cell Carcinoma	Number	Percentage
Well-differentiated	92	44.23
Moderately differentiated	108	51.92
Poorly differentiated	8	3.85
Total	208	100



**Fig1: Clinical Photograph Of Squamous Cell Carcinoma Of Hard Palate Showing Ulceroproliferative Lesion.**

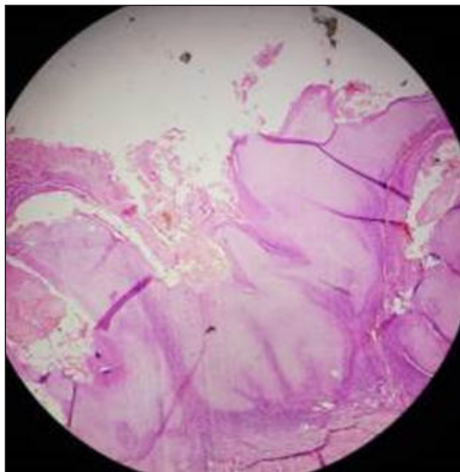


**Fig2: Microphotograph Of Well Differentiated Squamous Cell**

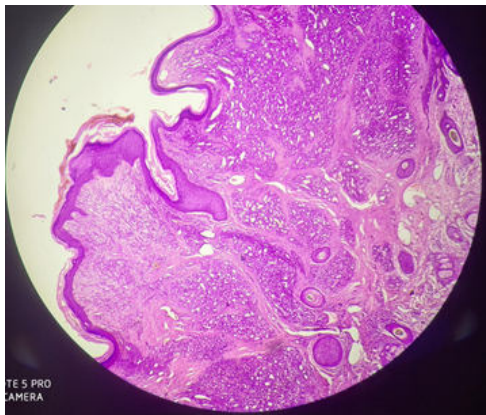
**Carcinoma Showing Invading Islands Of Malignant Squamous Cells With Keratin Pearl Formation (H&E, 40X)**



**Fig 3:** Clinical Photograph Of Squamous Papilloma Of Tongue Showing Wart Like Lesion.



**Fig 4:** Microphotograph Of Squamous Papilloma Showing Finger Like Projections Of Keratinized Stratified Squamous Epithelium With Fibrovascular Tissue Cores (H&E, 40X).



**Fig 5:** Microphotograph Of Pyogenic Granuloma Showing Lobules Of Capillary Sized Blood Vessels Lined By Endothelial Cells And Separated By Edematous Fibrous Stroma Which Is Infiltrated With Inflammatory Cells(H&E, 40x).

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