Section: ENT

Original Research Article

ORAL PREMALIGNANT AND MALIGNANT LESION: THE RISK FACTOR AND DIAGNOSIS ON THE BASIS OF PUNCH BIOPSY- A CLINICOPATHOLOGICALAL STUDY

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Received *: 18/12/2025*
Received in revised form *: 01/02/2026*
Accepted *: 16/02/2026*

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DOI: 10.70034/ijmedph.2026.1.366

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (1); 2103-2109

ABSTRACT

Background: Every year over 300,000 people are diagnosed with oral cancer globally. Out of all types of oral carcinoma, oral squamous cell carcinoma (OSCC) is the most common type of oral cancer. A premalignant lesion is a disease, if left untreated, may lead to cancer. The population with the lowest socioeconomic status is most vulnerable because they are exposed to a wide range of risk factors, which include tobacco chewing alcohol consumption, poor oral hygiene, human papilloma virus, nutritional factors etc. histopathology remain the "gold standard" for the detection of oral cancer.

Materials and Methods: Hospital based cross sectional observational study was carried out for duration of one year (March 2023 to February 2024) in Department of Otorhinolaryngology, Jorhat Medical College and Hospital, Jorhat. patients fulfilling the inclusion and exclusion criteria underwent punch biopsy and sent for histopathological examinations along with other necessary investigations

Results: In this study out of 40 cases, malignant oral lesions were 30 and premalignant lesion were found 10. malignant lesions revealed that the majority of cases were Squamous Cell Carcinoma (93.3%), followed by Verrucous Carcinoma (6.7%). Among premalignant lesions, the majority of cases were found to be OSMF. The majority of patients with oral malignant lesion were classified as stage III.

Conclusion: A good clinical examination with punch biopsy of the lesion is the main pre-operative assessment. From the study we can conclude that Oral cancer more often occurs around the 5th to 6th decade of life, with buccal mucosa as a most common site. Majority of oral malignant lesion were Well Differentiated-Squamous cell carcinoma.

Keywords: oral cancer; pre-malignancies; risk factor; diagnosis on basis of punch biopsy.

INTRODUCTION

Oral cancer is the eighth most frequent disease in the world, with over 300,000 new cases identified each year. Majority (85-90%) of malignancies in the oral cavity are squamous cell carcinomas (OSCC). The largest incidence is found in South-East Asia and a few Eastern European nations.[1] India has the greatest incidence of oral malignancies and accounts for one-third of all cases globally.[2] Oral cancer typically manifests in the 6th and 7th decade of life with men preponderance.[1]

The population with the lowest socioeconomic status is most vulnerable because they are exposed to a wide range of risk factors, which include tobacco chewing (mainly), alcohol consumption, poor oral hygiene, Human papilloma virus, nutritional factors etc. Epidemiologically, in India, West Bengal records the highest incidence of oral cancer, while Kerala has the lowest.[2]

Often, Oral squamous cell carcinoma is not discovered until the disease has progressed, despite the mouth cavity having easy access for inspection and evaluation. The overall survival rate after 5 years

of Oral squamous cell carcinomas is less because about two-thirds of cases are detected at stages III or IV of the disease, after the cancer has extended to the surrounding tissues and local Lymph Node (LN), Therefore, it's critical to identify Oral squamous cell carcinoma and oral premalignant Tumors (OPMLs) as soon as possible.[3]

A premalignant lesion is a pathological state, symptom, or finding that bears the possibility of progressing into cancer if left untreated. Any oral mucosal lesion that has the possibility to evolve into malignancy is referred to as an oral premalignant lesion. This includes lichen planus (LP), oral submucosal fibrosis (OSMF), leukoplakia, erythroplakia, erythroleukoplakia, and oral squamosal dysplasia, among other oral lesions.

ORAL LEUKOPLAKIA-World Health Organization (WHO) defined leukoplakia as a white patch or plaque that cannot be characterized, clinically or pathologically, as any other disease. It can be further divided into two types: homogenous lesions and non-homogenous lesions. Proliferative verrucous leukoplakia shows treatment resistance, has a high potential for malignant development, and manifests in a multifocal manner.

ORAL ERYTHROPLAKIA: Erythroplakia is a red lesion or patch found on the mucous membranes of the mouth, which cannot be linked to any other known condition. Clinically, it is characterized by erythematous changes in the mucosa that are flat or even depressed and lack patch lesions.

ORAL SUBMUCOSAL FIBROSIS (OSMF): Fibrous bands develop under the oral mucosa in oral submucous fibrosis, a degenerative illness. Chewing areca nut and betel quid is the strongest risk factor for OSMF. In the pathophysiology of Oral submucosal fibrosis, beta carotene is crucial. Therefore, a diet high in beta carotene should be used to treat Oral submucosal fibrosis in order to lessen the severity of the condition and its progression towards malignancy

ORAL LICHEN PLANUS (OLP): Oral lichen planus, initially identified by ―Erasmus Wilson‖, is a long-term autoimmune inflammatory condition that can impact the skin, nails, scalp, mouth lining, and genital mucosa. It is an autoimmune disease mediated by T-cells. The main causes of this disease are: genetic factors, cardiovascular agents, non-steroidal anti-inflammatory drugs, infectious agents (Epstein-Barr virus, Herpes virus-6, Hepatitis-C Virus, And Human Papilloma Virus), food allergies, immunodeficiency, stress, hypertension, trauma, dental materials (gold, amalgam, metals) and diabetes, bowel diseases.

Investigations should begin with a proper history taking and a details examination of the neck for lymphadenopathy and the mouth cavity for any suspicious lesions. Needle aspiration cytology) of suspicious lymph node, along with radiological investigations to determine if it has extended to distant or localized body parts. Punch biopsy is one of the quickest and least complicated procedures that may be performed on a regular basis.[4] The pathologic assessment of oral premalignant lesions is done to determine the malignant risk based on the degree and presence of epithelial dysplasia (mild, moderate, severe, or carcinoma in situ (CIS). High-grade dysplasia has a much higher risk of cancer than low-grade dysplasia.

Prevention is better than cure. By lowering risk factors including avoiding alcohol, giving up cigarettes or avoid chewing tobacco, sun protection of the lower lip, and getting the Human papilloma virus vaccine (Gardasil 9), oral premalignant lesions and Oral squamous cell carcinomas can be avoided.[5]

MATERIALS AND METHODS

The study was conducted from the March 2023 to February 2024 in the Department of Otorhinolaryngology in a tertiary care Centre of Assam, India. A total of 40 patients were included.

Inclusion Criteria

All patients of premalignant and malignant lesion of oral cavity attending Department of Otorhinolaryngology OPD and IPD.

Exclusion Criteria

1. Metabolic lesion, immunodeficiency, inherited disease of oral cavity.
2. Patients with benign oral swelling like mucous retention cyst, granuloma etc.
3. Recurrent and relapse cases.
4. Salivary gland tumour and mesenchymal Tumors.
5. Patients who did not give consent for treatment.

Study Population- Total 40 cases of oral lesions diagnosed on punch biopsy and /or histopathology were included.

RESULTS

The current study was a prospective hospital-based study, conducted in the department of Otorhinolaryngology, for a period of one year between March 2023 to February 2024. The result obtained are presented below-

Table 1: Age-wise distribution of oral cavity lesion

AGE-GROUP	NO OF CASES	PERCENTAGE (%)
<30 YRS	4	10.0
31 – 40	2	5.0
41 – 50	8	20.0
51 -60	11	27.5
61 – 70	10	25.0

71 – 80	4	10.0
> 80 YRS	1	2.5
Total	**40**	**100.0**

Table 2: Sex distribution of oral cavity lesion

SEX	NO OF CASES	PERCENTAGE (%)
MALE(M)	28	70.0
FEMALE(F)	12	30.0
Total	40	100.0

Table 3: Distribution of Socioeconomic status (SES) of the patients (based on revised BG Prasad classification)

Socioeconomic status	NO OF CASES	PERCENTAGE (%)
I-LOWER CLASS(LC)	19	47.5
II-LOWER MIDDLE CLASS(LMC)	11	27.5
III-MIDDLE CLASS(MC)	6	15.0
IV-UPPER MIDDLE CLASS(UMC)	2	5.0
V-UPPER CLASS(UC)	2	5.0
Total	40	100.0

Table 4: Substance Abuse by the patients

HABITS	NO OF CASES	PERCENTAGE (%)
BETALNUT(BN)	22	55.0
SMOKING(SM)	27	67.5
TOBACCO(TO)	27	67.5
ALCOHOL(ALC)	24	60.0

Table 5: Chief complaints of the patients

CHIEF COMPLAINTS	NO OF CASES	PERCENTAGE (%)
ULCERATION & SWELLING(US)	32	80
NECK SWELLING(NS)	26	65
DISCOLOURATION OF MUCOSA(DC)	8	20
RESTRICTED TONGUE MOVEMENT(RT)	4	10
PAIN(PN)	15	37.5
TRISMUS(TR)	11	27.5

Table 6: Different sub-sites of oral cavity lesions

SITE	NO OF CASES	PERCENTAGE (%)
BUCCAL MUCOSA(BM)	18	45
ANGLE OF MOUTH(AM)	1	2.5
ALVEOLUS(AL)	2	5
FLOOR OF MOUTH(FM)	4	10
GINGIVOBUCCAL SULCUS(GBS)	6	15
HARD PALATE(H)	2	5
LIP(L)	2	5
RETROMOLAR TRIGONE(R)	1	2.5
TONGUE(T)	4	10
TOTAL	40	100.0

Table 7: Neck Node metastases

NECK NODE METASTASIS	NO OF CASES	PERCENTAGE (%)
ABSENT	15	37.5
PRESENT	25	62.5
1.UNILATERAL	21	52.5
2.BILATERAL	4	10
Total	40	100.0

Table 8: Pre-Malignant Lesions

Pre-Malignant Lesions	NO OF CASES	PERCENTAGE (%)
ERYTHROPLAKIA(ERYTHRO)	1	2.5
LEUKOPLAKIA(LEUKO)	3	7.5
ORAL SUBMUCOUS FIBROSIS(OSMF)	4	10.0
SQUAMOUS HYPERPLASIA	2	5
LICHEN PLANUS	0	0.0
ACTINIC CHEILITIS	0	0.0

Table 9: Histo-pathological (HPE) differentiation: The Malignant Lesions

MALIGNANT LESIONS	NO OF CASES	PERCENTAGE (%)
SQUAMOUS CELL CA(SCC)	28	93.3
a) Well differentiated (SCC-WD)	20	66.7
b) Moderately differentiated (SCC- MD)	5	16.6
c) Poorly differentiated (SCC PD)	3	10
VERRUCOUS CARCINOMA	2	6.7

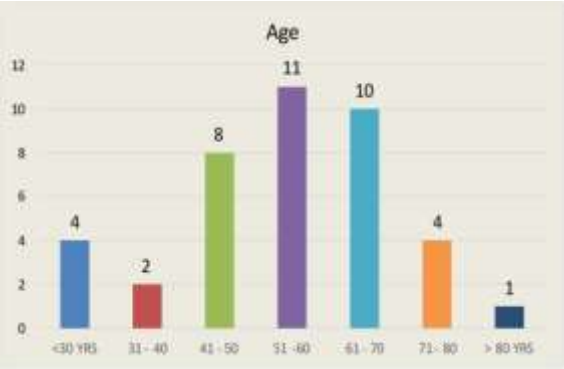


Figure 1: Age-wise distribution of oral cavity lesion

Out of the 40 patients of oral cavity lesions, —the maximum numbers of patients seen in the age group of 51-60 yrs (27.5%), followed by the age 61 -70 years (25%) and age 41- 50 years were 20%. The mean age (54 ± 15). The oldest patient was 84 years old whereas the youngest was 17 years old.

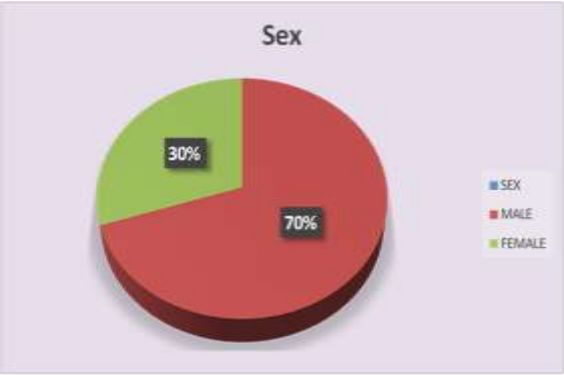


Figure 2: Pie diagram describes sex composition of the samples in the study

The data shows that 70% of the samples were males and 30% were females in the study. Male: female ratio of 2.3:1.

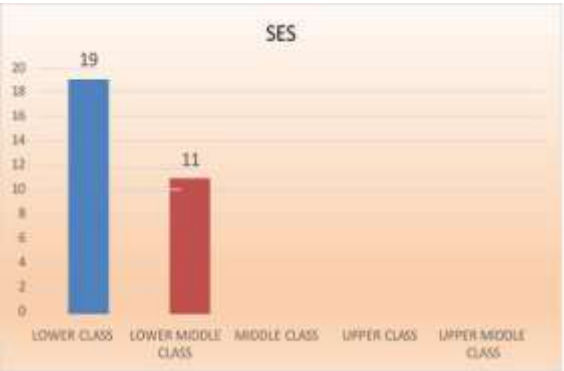


Figure 3: Describes the SES of the patients

In this study, maximum number of patients (47.5%) were from lower class followed by 27.5% were from lower middle-class‖, 15% were from middle class‖. 5% were from upper middle class‖ and 5% were from upper class.

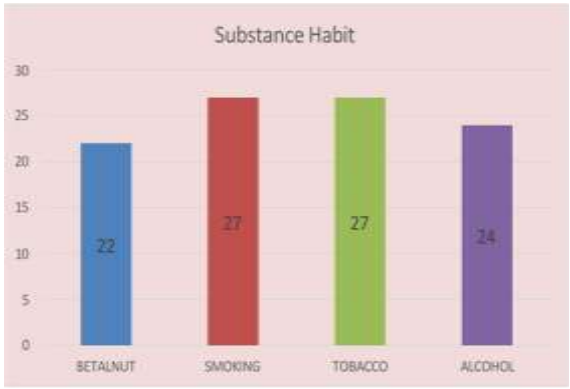


Figure 4: Habits of the patients

The data reveals that 55% had habit of chewing betel nut, 67.5% had the habit of smoking, and chewing Tobacco, 60% of the sample had the habit of drinking Alcohol among the samples of the study. Various forms of substance use are seen among the study population with most of them having combination of different substance use with a predominance of tobacco chewing.

Figure 5: Graph of chief complaints

Patients may present with a varied range of symptoms like ulceration/swelling in oral cavity, neck swelling, discolorations of oral mucosa, pain etc. Majority of the patients presented with ulceration & swelling followed by neck swelling.

Figure 6: Graph of site of lesions

In this study, it can be seen that large proportion 45% had Buccal Mucosa, 15% had Gingivobuccal sulcus, 10% had on floor of mouth, 10% had on tongue, 5% each had on lip, hard palate, and alveolus. 2.5% had on angle of the mouth and retro molar trigone. Buccal mucosa is the commonest site to be involved in this study population.

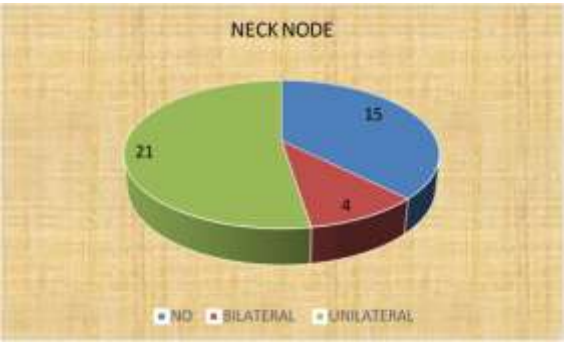


Figure 7: Pie chart of Neck Node metastasis

In this study found that 62.5 % of the cases were presented with neck node metastasis out of which 52.5% had unilateral and 10% had bilateral neck node metastasis.

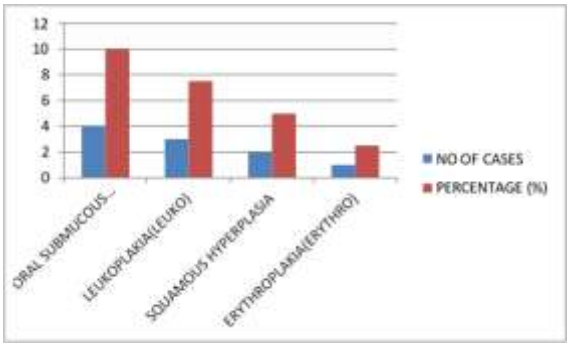


Figure 8: Bar chart of Pre-Malignant Lesions

In this study the data shows that 10 per cent of the case had Oral squamous cell carcinoma, followed by 7.5 per cent had Leukoplakia, 5% had squamous hyperplasia and few 2.5% had Erythroplakia in oral cavity. Various pre-malignant lesions were seen among the patients with OSMF being the majority.

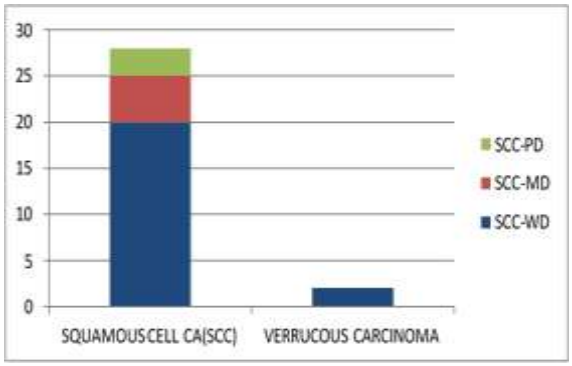
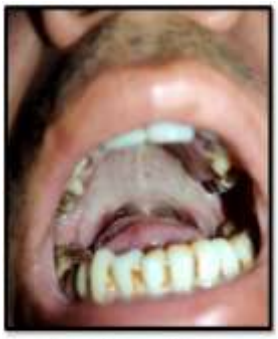


Figure 9: Graph of Malignant lesions

In this study it is found that out of 30 malignant cases 93.3% (ie.28) are diagnosed as squamous cell carcinoma, and out of which 66.6% had well differentiated Squamous cell carcinoma, followed by 16.6% had moderately diff Squamous cell carcinoma,10% had poorly differentiated Squamous cell carcinoma. —Well differentiated Squamous Cell Carcinoma was found to be most common HPE finding among the malignant lesions whereas Oral submucosal fibrosis is the most common HPE finding among the premalignant lesions in this study.

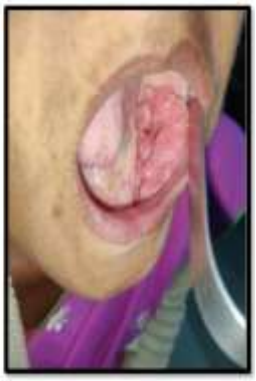
PHOTOGRAPHS



Oral Submucous Fibrosis

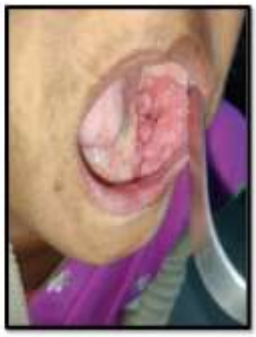
Oral Leukoplakia

Oral Erythroplakia

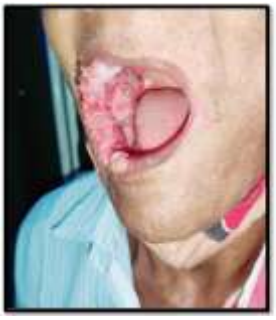


Squamous Hyperplasia

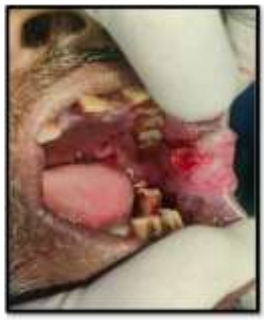
Oral Erythroplakia



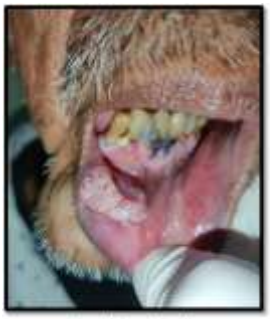
Squamous Hyperplasia



Buccal Mucosa Growth

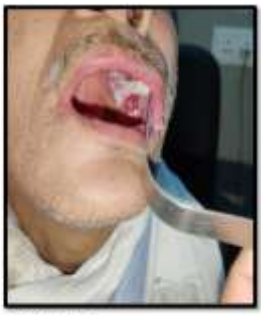


Angle of Mouth Growth



Growth involving lip

Gingival Buccal Sulcus growth



Growth in Retromolar Trigone

Verrucous Carcinoma

DISCUSSION

AGE DISTRIBUTION

The present study found that the mean age of the occurrence of malignant lesions of oral cavity was 54 years to 69 years, the findings are similar with the Khanna et al., 1975 found mean age group to be between 6th and 7th decade.[6]

SEX DISTRIBUTION

The study reported that the —male-female ratio was 2.3:1, this finding was different as per the Khanna et al., 1975 which was male – female ratio 2:3,[6] and Bhattacharjee et al., 2006 reported male –female ration 2.9:1,[7] the finding is similar to our study.

SOCIO-ECONOMIC STATUS

It is evident from the present study that low socio-economic section of the society is highly vulnerable due to their various substance abuse habit, that is tobacco chewing and Alcohol consumption. The study by Ganesh et al., 2013 in Tamil Nadu reported majority of the oral cancer patients belonged to low socio-economic class, unskilled laborers, and illiterates.[8]

SUBSTANCE ABUSE HABITS

The present study found that there were multiple habits among the patients, smoking and tobacco was the most common among them. Gupta PC et al., 1996 shared that in India the risk for oral cancer in traditional tobacco users (beedi, chutta, cheroot) that is twice as high as industrial tobacco users, which is due to that the traditional tobacco has a higher alkalinity and carcinogenicity.[9]

CHIEF COMPLAINTS

In the present study, patients came with different symptoms at the time of presentation. The most common presenting symptom was ulcer/swelling in oral cavity found in 32 cases (80%) followed by neck swelling in 26 patients (65%), trismus in 11 cases (27.5%), discoloration of mucosa in 8 patients (20%), restricted tongue movements in 4 (10%), and pain in oral cavity in 15 (27.5%).

LOCATION OF THE LESIONS

The present study found that majority of cases (18) had infection in buccal mucosa, 6 cases were found in gingivobuccal sulcus, and 4 cases floor of the mouth.

Khanna et al., 1975 set up malignancy of buccal mucosa (28.1%) to be slightly more common than tongue (26.9%) but his series reported malignancy gum (32.7%) to be the most common point. N.B. Ramachandra (2012) reported buccal mucosa (57.5) to be the most common point followed by tongue (24.2).

HPE (HISTOPATHOLOGICAL DIFFERENTIATION)

The present study found, out of 10 premalignant lesions, the majority of histopathology is oral submucous fibrosis (OSMF) (4), followed by leukoplakia (3), erythroplakia (1) and squamous hyperplasia (2). The Histopathology among malignant lesions (30 cases) was found to be Squamous Cell Carcinoma (93.3%) in which majority are well differentiated (66.7%). Verrucous carcinoma was seen in 6.7%.

According to National Cancer Registry Project of the Indian Council of Medical Research 2010, Squamous cell carcinoma was the commonest histological variety and majority of the Tumors were well differentiated. According to Ballenger (1985), SCC accounts for more than 90% of newly diagnosed cases of oral.[10]

NECK NODE

In the present study of 40 patients, 25 cases (62.5%) had cervical neck node metastases where unilateral involvement was seen in 21 cases (52.5%) and bilateral in 4 patients (10%). In majority of them, Level IB neck nodes were involved.

A study by Wahi et al., 1965 set up clinical involvement of cervical lymph nodes in 70.6 per cent cases of oral cancer. They observed 60.9 per cent cases had unilateral and 9.7 per cent had bilateral involvement of lymph nodes. This result was nearly analogous to that achieved in the present series.[11]

CONCLUSION

Oral cancer is the eighth most frequent disease in the world, with over 300,000 new cases identified each year. India has the greatest incidence of oral malignancies and accounts for one-third of all cases globally. Oral cancer more often occurs around the 5th to 6th decade of life. In the present study males are prone to oral cavity issues than female, for every 2 males there is 1 female at the vulnerability of oral cancer, which may be due to their increased substance use compared to females.

Use of substances such as tobacco, betel nuts chewing, smoking, and alcohol significantly contributes to the development of oral cancer. Smoking alone has independent effect on oral cancer. Poor oral hygiene and diet low in fruits and vegetables also play a role in the pathogenesis of oral cancer.

Oral cancers are usually preceded by premalignant lesions. The main premalignant lesions found were oral submucous fibrosis, leukoplakia and erythroplakia. So early diagnosis and management of these lesions can improve patient ‘s survival. Biopsy is the gold standard investigation for oral cancer diagnosis and punch biopsy is the easiest and cost-effective method of biopsy which can be used for screening both premalignant and malignant lesions of oral cavity. Any oral lesions for prolonged period should be considered as malignancy unless proved otherwise by biopsy.

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