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# THE OUTLINE OF RISK FACTORS DIAGNOSIS AND MANAGEMENT OF ORAL SQUAMOUS CELL CARCINOMA

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**Abstract**
Oral squamous cell carcinoma (OSCC) is universal public health concern. It constitutes about 90% burden of total malignancies around the world. The globally prevalence of OSSC observed around 500,000 new cases per year 2020. The lesion may be present at any site within the oral cavity but commonly involve the lower lip, lateral border of the tongue and the floor of mouth. Tobacco, betel nut, and alcohol consumption are the most common risk factors to develop this lesion. Usage of these harmful agents causing genetic and epi-genetic changes to develop this cancerous lesion in oral cavity or promote the growth of already existing precancerous lesion in the oral cavity. The diagnosis and treatment of this lesion can be possible by using TNM classification and evaluation of stage of the OSCC. First choice treatment of OSCC is the surgical removal of the lesion. Radiotherapy is another choice of noninvasive treatment mode. The mortality rate in general population due to OSCC cannot be completely eradicated but it can be reduced by changing lifestyle modalities and general awareness/education programs.
**Keywords:** Oral cancer, Oral squamous Cell Carcinoma, Risk Factors, Invasive and Noninvasive Treatment.

## Introduction

Oral squamous cell carcinoma (OSCC) is universal public health concern. It constitutes about 90% burden of total malignancies around the world and considered as 6$^{th}$ most prevalent type of cancer. [1-2] The global prevalence of OSSC observed around 500,000 new cases per year 2020. [3-4] It contemplate to make highest weight towards the mortality globally. According to World Health Organization (WHO) the highest prevalent region of the world are South-East Asia and Europe. Pakistan, India, Taiwan, Sri-lanka are the countries covered by South-East Asia region whereas Europe region include countries such as France, Slovakia, Hungary and Slovenia.[5-6] There are many anatomical sites which are affected by this lesion including floor (sub-lingual region) of the mouth, roof (soft and hard palate) of the mouth, lateral borders of the tongue, upper and lower lips, retromolar area, upper and lower gingiva, Buccal and alveolar mucosa, and oropharynx even extended to salivary glands. The lesion most commonly occurs at the floor of the mouth around 40% followed by sub-lingual region 30% and the lower lip. [7-8]

WHO recommended to change the term “precancerous lesion to potentially malignant disorder” (PMD) in 2005 sticking to the fact that oral squamous cell carcinoma is the growth of already existing precancerous lesion [9] Lichen planus, leukoplakia, oral submucus fibrosis, erythroplakia, actinic keratosis, palatal lesion and discoid lupus erythematosus are the potentially malignant disorder which may develop due to tobacco usage. [10-11] These lesions pose highest affinity towards the malignancy than other oral pathologies. It is observed that the research in progress and evolution of new therapies is not providing such benefit to the health community that increases the survival rate of the patients. It becomes a challenge for medical community to work on this very tough field to provide better strategies towards the health care management and treatment plan. [12]

The aim to design this study was to review the published literature on OSCC to assist dentist/oncologist and health care providers towards the better approach.

## Discussion

Oral cancers originate from the squamous epithelium due to neoplastic growth upon exposure to stimulating agents such as tobacco, alcohol and other risk factors giving rise to squamous cell carcinoma. [13] It is a type of malignancy that tends to metastasize in the regional as well as distant lymph nodes and poses different levels of differentiation. [14]

The oral cavity is easily accessible during clinical assessment, however even to that reality, the majority of the OSCC are being analyzed at late stages. Lack of awareness, late presentation and delayed referral by medical professionals are major causes for its delayed diagnosis resulting in poor prognosis. [15] The late finding radically decreases the pace of endurance in spite of the fact that the expansive potential strategies for treatment. The most critical danger factors for OSCC, with a pace of over 90% are the long haul over utilization of alcohol and tobacco. [16]

**Betel quid and Areca nut chewing**

In the South Asian areas Areca nut and Betel nut are the most commonly used material having properties of oral carcinogenesis. Thus, being the fourth most frequently used substances internationally. Consumption of these substances for long term result in high risk of developing oral squamous cell carcinoma and these substances are commonly used with powdered tobacco and gutka. The utilization of both areca nut and tobacco in betel quid has been found to expand the odds of oral malignancy to around 4-overlay. Biting of betel quid prompts the creation of ROS which is unsafe to oral mucosa and can be legitimately associated with the start of tumor either by event of a transformation or by making the mucosa defenseless against BQ poisonous parts. ROS is generated under stress state conditions seen in the auto-oxidation of areca nut (AN) polyphenols, in the spit of BQ chewer. [17]

**Tobacco**

Smoke of tobacco contains 3 groups of synthetic compounds, for example, nitrosamines, benzopyrenes and fragrant amines which accelerate malignant growth. Smokers have a 3 times higher danger for building up an OSCC contrasted with nonsmokers. However in case of nonsmokers, the smoking accordingly from the general climate may increase the opportunity of creating OSCC in 87% contrasted with the individuals who have not been in that climate. Likewise, smoking not just diminish the resistance of the oral cavity, it additionally advances gum disease, periodontitis and obviously OSCC. [17-18]

**Alcohol**

Is also known as Ethanol and negatively affects the living being. This impact follows up on the nearby level by permitting higher porousness into the oral mucosa, dissolving lipid particles of the epithelium and prompting epithelial decay by and large. On the foundational level, it has a mutagenic impact which prompts a more modest salivary stream, diminished liver skill to manage cancer-causing synthetic compounds and in the long run lead to debilitation of the invulnerability framework. This weakness results an expanded danger for contaminations and new unusual development of tissue. [19-21]

**Genetic Alterations:**

Various modifications at the hereditary level have been accounted for during OSCC movement which is extraordinarily impacted by hereditary inclination and other ecological components (counting liquor abuse, smoking, contaminations and so on) in a numerous progression cycle. These hereditary adjustments causing genomic unsteadiness prevalently to influence the tumor silencer qualities and oncogenes. Single or multigenic changes, loss of heterozygosity or epigenetic adjustments incorporating methylation may result in either inactivation or over articulation of oncogenes and tumor silencer genes.[17] Moreover, hereditary transformation specifically; p 53, NOTCH1, Cip2a, Fat1, sisEGFR/erB, RETN quality alongside intracellular signal transducers (raf, ras); record factors (fos, jun, myc c-myc) variables of apoptosis restraint (bax, bcl-2) and components of cell cycle guideline (cyclin D1) are additionally related with improvement of oral malignant growth.[22]

**Other Risk Factor**

More uncommon yet conceivable danger variables might be lacking dental cleanliness, hereditary propensity, persistent mechanical injury by a sharp article, for example, a tooth or a dental replacement, biting of areca nut which happens generally in indo-asian populaces, age, diet, socioeconomic status, poor oral hygiene, human papilloma virus infection (HPV) which as indicated by the International Agency for Research on Cancer (IARC) the HPV16 is responsible for the diseases of the tonsils, pharynx and oral pit while HPV18 is accountable for oral malignancy. Likewise, bright radiation (UV) which is generally identified with lip disease, different infections, for example, hepatitis C and Epstein-barr infection (EBV) might be additionally identified with OSCC. [3, 23]

**Carcinogenesis**

Oral carcinogenesis is an exceptionally complex cycle which relies upon numerous variables. During this cycle, epithelial cells are affected by hereditary changes which in the long run lead to a few neoplastic targets everywhere in the oral cavity; those areas may create throughout the years to the type of OSCC. As a rule, if an oral mucosal injury doesn't improve following three weeks, it must be considered as an exceptionally compromising condition which will require biopsy and further histopathological examination. [24-25]

**TNM Stage Classification**

The most important and prescient factor which will decide the survival rate is the phase of the tumor during the determination. The TNM arrangement is an overall known strategy for oral malignant growths organizing which is utilized by medical services professionals, for example,

specialists, scientists, and disease enlistment offices. The initials, T represents tumor, N for lymph nodes and M for metastases, depending on the estimations of the extent of disease before therapy. The primary job is to give an anatomical characterization and to appropriately portray the improvement of the malignancy. Explicit portrayal is the key for the choice of a right technique for treatment, the conceivable result and restriction for certain activities. [26-27]

**Diagnostic Methods**

Analysis of a dangerous injury regularly starts with the customary oral assessment, which incorporates clinical assessment and palpation of the mucosa of the oral cavity under the lighting of the dental seat. [28] The capacity to make an analysis at a beginning phase of OSCC is significant to diminish the high pace of infection and passing among the patients. The most well-known strategies utilized for determination of PMDs and OSCC in a beginning phase are recorded underneath. [29]

**Indispensable Staining**

Strategies, for example, Toluidine blue (TB), Lugol's iodine staining, Methylene blue staining, Rose Bengal staining. Recoloring with TB is a known strategy for the distinguishing proof of precancerous and cancerous lesions, which is prescribed to be as a feature of the clinical assessment of tissue of oral mucosa, particularly in high-hazard patients. Those strategies are not costly, very simple to apply and successful. The staining executed by different sorts of stains over the mucosa so as to check the neoplastic cells, cells with a high conceptive movement and to demonstrate the particular territories for assessment and biopsy. [30]

**Light-based Detection**

To distinguish oral PMDs and OSCC in their underlying stage, a few light-based gadgets have been created. Those particular gadgets can emanate certain light which will mirror the anomalous tissue and improve the clinical assessment. [31]

**Histological Techniques**

Incisional and additionally excisional biopsies are the most precise demonstrative strategies and along with the histopathological tests, remain the most reliable techniques for OSCC diagnosis. Before the system of excisional biopsy, it is significant that the edges and profundity of the tissue will be checked of being free from the disease. The most prognostic indication of any threat is dysplasia of the epithelium. WHO have characterized the dysplasia as mild, moderate, and severe.

**Cytological Techniques**

Those are techniques that uses magnifying instrument like microscope as to assess the cells which were obtained from smears, scratching and needle goal over different depts of the mucosa. The basic discoveries are a run of the mill mucosal injury which from the outset sight looks typical, yet the readied example will introduce atypical cells. The cytological tests which have been taken from the oral depression may assist with recognizing and determine tissues to have a high-hazard or even threat. [32]

**Imaging Analytic Techniques**

Those strategies incorporate neighborhood dental radiographs, orthopantomogram (OPG), attractive reverberation imaging (MRI), figured tomography perfusion (CTP), C-arm CT, atomic medication, for example, single-photon discharge processed tomography (SPECT), ultrasonography and blend of barely any techniques, for example, PET, CT/MRI and SPECT/C. [33-34]

**Management**

The most widely recognized therapeutic strategies for oral malignancy can be noninvasive, for example, radiotherapy in a large portion of the cases or can be intrusive, for example, medical procedure, which is typically the primary alternative of therapy in spite of the way that radiotherapy endurance rate and control of the anatomical site are comparable. Those strategies can be given independently or as a blend. [35]

Radiotherapy might be furnished independently or as a blend with chemotherapy so as to treat the underlying tumor. It might be given as neo-adjuvant treatment, which will diminish the tumor size before the underlying medical procedure. Radiotherapy may likewise be given as adjuvant treatment, which will improve the effectiveness of the underlying treatment and by doing so will drag out the endurance rate, decline the difference in conceivable repeat and even improve the indications of a late stage oral disease. [36] Radiotherapy has some significant downsides, for example, xerostomia, osteoradionecrosis, mucositis and long length of treatment which in instances of closeness deep down as well as youthful patients are not ideal. The therapy techniques for oral disease, for example, medical procedure, radiotherapy and chemotherapy majorly affect the patient's personal satisfaction and considered as cruel because of the area and the prominent methods of therapy. [37] The point of OSCC treatment techniques are to treat the underlying tumor and to safeguard however much as could be expected the shape and capacity with an appropriate reclamation. [38]

**Prevention**

So as to decrease the OSCC mortality among everyone, scarcely any means ought to be advanced. To start with, if there should be an occurrence of patients with high danger, the mortality might be decreased by advancing way of life changes and applies clinical assessment as an aspect of a wide demonstrative program among the populace. [39] Second, an instructive program with the essential information with respect to the OSCC ought to be installed in the populace while successive expert demonstrative and pathologic information ought to be given to the medical services professionals. Third, the continuous and future investigates with respect to the OSCC must proceed so as to characterize the specific etiological components and biomarkers of the sickness. [40]

**Conclusion**

Clinical screening for OSCC patients requires further upgradation so doctors and oncologists might have the option to analyze oral malignant growth patients having unmistakable sores related with betel nut, liquor or tobacco utilization or HPV. Moreover, preventive measures are to be quickened so as to lessen the dreariness and death rates due to OSCC. Late genomic progressions have been effective to manage us about the improvement of novel treatments and new medication revelation. The significant effect of the microbiome dysbiosis and the related sickness, for example, OSCC has surely given us lead so as to locate a restorative answer for the issue. Notwithstanding, one needs to comprehend the multifaceted subtleties and the basic complexities regarding system to oversee and treat OSCC patients.

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