

The role of the dentist in the early detection of oral cancer

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All patients, and especially high-risk patients, visiting their dentist should receive a thorough examination for the presence of potentially malignant disorders or early oral cancer. It is well documented that early detection significantly improves the 5-year survival rate of patients with oral cancer (90% for early and as low as 20% for late, diagnosis).

HIGH-RISK PATIENTS

These are patients older than 40 years, all patients with a history of tobacco and/or alcohol use, patients who chew betel quid, and those who have had several oral sex partners. All forms of tobacco use are included, including the hookah (hubbly bubbly).

HIGH-RISK ANATOMICAL AREAS

It is important for the dentist to systematically examine the lips (especially the lower lip), oral cavity, and oropharyngeal area for the presence of any suspicious lesion. The oropharyngeal area includes the palatine tonsillar areas, soft palate, base of tongue and posterior pharyngeal wall. Special attention should be given to the high-risk areas namely the floor of mouth, lateral borders of the tongue and soft palate/retro-molar areas.

CLINICAL APPEARANCE

The clinical appearance of oral cancer varies from a potentially malignant disorder (leukoplakia or erythroplakia) to a fungating, ulcerated indurated lesion. Some tumours have a predominantly exophytic appearance, while others may be endophytic in nature. Oral squamous cell carcinoma is usually painless unless secondary infected. In advanced cases, patients may present with trismus or impaired tongue move-

ment. Cancers of the tongue may also present with ear-pain due to involvement of the glossopharyngeal nerve.

POTENTIALLY MALIGNANT DISORDERS

Potentially malignant disorder (PMD) is a new term proposed by a working group of the WHO to replace the older terms of premalignant lesions and premalignant conditions. This new terminology reflects our understanding that not all "precursor" lesions described under the older terminology transform to cancer. It implies also that some lesions have an increased potential for malignant transformation and, more importantly, that PMD of the oral mucosa indicates possible risk of carcinomas that may develop in clinical normal oral mucosa of the upper aero-digestive tract. PMDs include leukoplakia, erythroplakia, erythroleukoplakia and oral submucous fibrosis.

Two main clinical types of leukoplakia exist, namely homogenous and non-homogenous. These definitions are based on clinical features only.

Homogenous or smooth leukoplakia is characterised by a uniform white appearance that may vary between vague to a definite white appearance. It may be a leathery thickened lesion.

Non-homogenous leukoplakias include:

- **Nodular:** leukoplakia that present with a granular or nodular appearance characterised by surface irregularities.
- **Verrucous:** characterised by an exophytic growth and a "wart" or wrinkled appearance.
- **Speckled:** combination of erythroplakia (red lesions) and leukoplakia but with a predominantly white character.



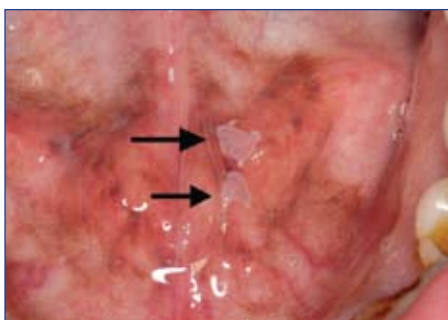
Special attentions should be given to the lateral borders of the tongue and floor of mouth.



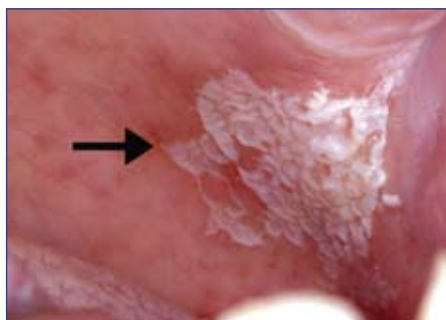
Advanced exophytic squamous cell cancer of the tongue.



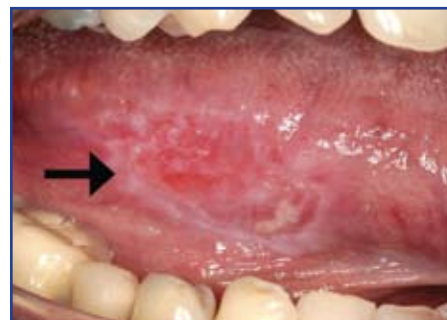
Squamous cell carcinoma with an endophytic appearance.



Small areas of homogenous leukoplakia on the floor of mouth.



Nodular leukoplakia in the tuberosity area.



Erythroleukoplakia on the lateral border of the tongue.

- **Proliferative verrucous leukoplakia (PVL):** a recently described entity, seen predominantly in females. The diagnosis is usually a retrospective one based on the clinical progression of leukoplakia lesions. It usually begins as a smooth lesion with changes to a more verrucous appearance as the lesion progresses.

Erythroplakia is characterised by a well-demarcated erythematous area with a velvet-like consistency.

Oral sub-mucous fibrosis is characterised by mucosal fibrosis of the upper aero-digestive tract. It is associated with the use of areca nuts (with or without tobacco) and betel leaves. It is frequently seen in the Indian community.

MANAGEMENT

In contrast to previous literature that considered leukoplasias to be a clinical diagnosis, the working group of the WHO has recommended that it be changed to a **clinico-pathological** diagnosis. When a patient presents with a white lesion on the oral mucosa it should be considered as a “white patch”. If it cannot be clearly diagnosed as any other white lesion or disorder (e.g. frictional keratosis, morsicatiobuccarum, chemical injury, lichenoid reaction) after clinical examination, a provisional diagnosis of leukoplakia is made. *A biopsy is mandatory.* A definitive diagnosis of leukoplakia is then made by the pathologist if other disorders are excluded microscopically. The pathologist should always comment on the presence or absence of epithelial dysplasia.

The selection of the biopsy site is very important. Biopsies should always be taken in the “worst” areas of the lesion, and not where it is easiest or most convenient for the operator, e.g. in the red area of an erythroleukoplakia or in the irregular area of a nodular leukoplakia (this is different from ulcerative lesions where the margin of the lesion is more

important). Multiple biopsies of large lesions must be taken as the histological diagnosis may vary from a squamous cell carcinoma to no dysplasia in areas 1cm from each other. Different visual aids are available to help with the selection of biopsy sites, namely:

Toluidine blue mouth rinse can be used to help select a biopsy site if there are no clinical indicators to assist the clinician:

- The patient rinses the mouth for 20 seconds with a 1% acetic acid solution to remove mucous and cellular debris.
- The patient then rinses and gargles with 10ml of a 1% toluidine blue solution for 60 seconds after which it is expectorated.
- The patient rinses again for 20 seconds with a 1% acetic acid solution followed by a further water rinse to decolourise excessively stained areas. This step must not be over-done.
- The oral cavity is then examined and stained sites should be included in biopsies taken.

Autofluorescence (Velscope) is another aid to help select the biopsy sites. Any area showing loss of fluorescence in a PMD lesion should be considered for inclusion in the biopsy site.

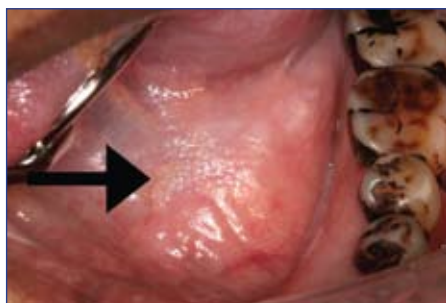
TREATMENT AND PROGNOSIS

Patients must be advised to stop any tobacco usage and minimize alcohol consumption. No hard rules exist regarding the treatment of leukoplakia. Certain features are seen more often in PMD that are associated with the development of oral squamous cell carcinoma than in those without cancer development namely:

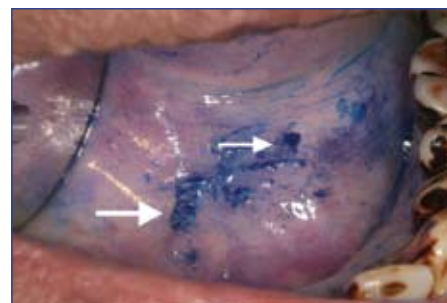
- **Age/duration:** Older patients and lesions that have been present for a longer duration are associated with an increased risk of cancer development.



Dense fibrous band associated with oral submucous fibrosis.



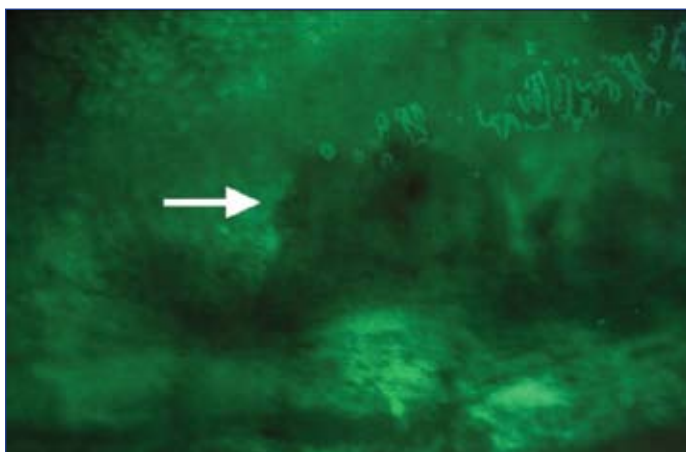
Patient presents with a relatively large leukoplakia in the floor of mouth. Toluidine blue stain was performed to help with the selection of a biopsy site.



Biopsy should include areas of high toluidine blue uptake (arrows).



Young patient with a history of oral squamous cell carcinoma presents with this lesion on the lateral border of the tongue.



Veloscope examination shows the corresponding loss of fluorescence that should help to determine a biopsy site.

- **Gender:** Females are at higher risk compared with males.
- **Site:** Leukoplakias in the high-risk areas (floor of mouth, lateral border of the tongue and soft palate complex) are associated with increased risk of oral cancer development.
- **Clinical appearance:** Homogenous leukoplakia has the lowest risk of carcinoma development followed by nodular and speckled leukoplakia. PVL is problematic as the reported risk of eventual malignant change is higher than 70%.
- **Size:** Large lesions, especially lesions extending into more than one anatomical site, have a higher chance to develop oral squamous cell carcinomas.
- **Idiopathic leukoplakias:** Leukoplakias with no obvious aetiological factor (like tobacco) have a significantly increased risk of carcinoma development. Most leukoplakias are however tobacco-associated.

- **Presence of dysplasia:** The presence of high-risk dysplastic features (moderate and severe dysplasia) is associated with a higher risk of oral cancer development.

Although PMD do not precede all oral cancers, and not all these lesions develop into a malignancy, the presence of these lesions presents an opportunity for preventive action. Regular follow-up of these patients is indicated.

OROPHARYNGEAL CANCER

About a third of oropharyngeal carcinomas (OPC) can be attributed to human papilloma virus (HPV) infection. The vast majority (90-95%) of these OPCs are attributable to HPV16. The mechanism of HPV carcinogenesis has been well documented. The prevalence and risk factors for oral HPV infection in the general population have not been studied extensively. Initial research, however, suggests that oral HPV infection is sexually transmitted with the odds of infection linked to the number of oral sex partners. Oral HPV prevalence is linked to male gender and is higher in HIV positive individuals. Several case-control studies have reported strong trends between the odds of OPC and the number of oral sex partners implying oral-genital contact as the principal means of acquiring oral HPV infection. Men and women who reported having six or more oral-sex partners during their lifetime had a nearly nine-fold increased risk of developing OPC, while those infected with HPV16 were 32 times more likely to develop OPC compared with those who were HPV16 negative. It has been reported that HPV associated cancers occur mostly in patients who have no other identifiable risk factors and who have pursued a healthy lifestyle, avoiding tobacco and excessive alcohol use. It is not known if this also applies to the South African scenario.

RECOMMENDED READING

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