

## Precancerous Lesions of Oral Mucosa: A Silent Warning Not to Be Ignored

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Oral cancer is one of the most common cancers globally, particularly in developing countries, where late diagnosis contributes significantly to morbidity and mortality. Yet, the disease rarely occurs without warning. **Precancerous lesions of the oral mucosa**—such as leukoplakia, erythroplakia, oral submucous fibrosis (OSMF), and oral lichen planus—offer a critical window for early intervention. Unfortunately, these silent warnings are often overlooked by both patients and healthcare providers.

### What Are Precancerous Oral Lesions?

Precancerous lesions are defined as morphologically altered oral mucosal areas with an increased risk of malignant transformation. The most commonly recognized types include:

- **Leukoplakia:** A persistent white patch that cannot be attributed to another diagnosable disease.
- **Erythroplakia:** A red lesion with a significantly higher rate of malignant transformation compared to leukoplakia.
- **Oral Submucous Fibrosis (OSMF):** A chronic fibrotic condition, strongly associated with areca nut use, leading to progressive restriction in mouth opening.
- **Oral Lichen Planus (OLP):** A chronic inflammatory condition, with the erosive variant having the highest risk for malignancy<sup>[1]</sup>.

Studies show that the malignant transformation rate of these lesions varies, with erythroplakia transforming in 14–50% of cases, leukoplakia in 1–5%, and OSMF in 7–13%<sup>[2]</sup>.

### The Silent Progression to Cancer

One of the biggest challenges with precancerous lesions is their **asymptomatic** and often subtle presentation. In most cases, lesions are discovered incidentally or when complications develop. This delayed detection leads to **diagnosis at advanced cancer stages**, which drastically reduces the five-year survival rate of oral squamous cell carcinoma (OSCC)<sup>[3]</sup>.

A recent review found that approximately **80% of oral cancers are preceded by visible mucosal changes**, yet these are often missed in routine examinations or ignored by patients themselves<sup>[4]</sup>.

### Behavioral and Environmental Risk Factors

The strongest risk factors linked to the development of oral precancerous lesions include:

- **Tobacco use** (smoked and smokeless)
- **Areca nut chewing**
- **Alcohol consumption**
- **Poor nutrition**
- **Chronic mechanical irritation**

The **synergistic effect** of tobacco and alcohol has been found to significantly increase the risk of malignant transformation in precancerous lesions<sup>[5]</sup>.

Areca nut, in particular, is classified as a **Group 1 carcinogen** by the IARC and remains a major contributor to OSMF in South Asian populations<sup>[6]</sup>. With growing evidence from recent epidemiological studies, even **non-smokers** who consume areca nut alone have demonstrated a measurable risk for developing OSMF and subsequent oral cancer<sup>[7]</sup>.

### The Case for Early Detection and Awareness

There is compelling evidence that **early diagnosis and intervention** significantly reduce the risk of malignant progression. Visual inspection during routine dental visits, coupled with **biopsy and histopathological confirmation**, remains the gold standard for diagnosing suspicious lesions<sup>[8]</sup>.

Adjunctive tools such as **toluidine blue staining, autofluorescence, and brush biopsies** are becoming increasingly accessible in clinical settings and improve early diagnostic accuracy<sup>[9]</sup>.

Public awareness, however, remains low. A 2021 cross-sectional study reported that fewer than 40% of individuals in high-risk communities were aware of oral precancerous conditions, and less than 25% had ever undergone an oral screening<sup>[10]</sup>.

### Public Health Imperatives

There is an urgent need for a **multi-tiered public health strategy** focusing on:

**Awareness campaigns** about early signs of oral lesions.

**Routine screening programs** integrated into primary healthcare.

**Training** of frontline healthcare workers and dental

professionals in early detection.

**Regulation** of tobacco and areca nut products, including mandatory pictorial warnings and advertising restrictions.

**Mobile health (mHealth) interventions**, including AI-powered screening apps and tele-dentistry, are also showing promise in extending reach to remote populations [11].

### Conclusion

Oral precancerous lesions serve as a **silent but crucial alarm bell**, offering a rare opportunity to intervene before cancer develops. As the incidence of oral cancer continues to rise, especially in low- and middle-income countries, **ignoring these early indicators is no longer an option**.

**Proactive surveillance, community education, and healthcare integration** are the pillars on which successful prevention can be built. It is time to transform silence into action—for early detection saves lives.

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