Definition
Leukoplakia
Leukoplakia is a clinical descriptive term for a white patch in the oral cavity or pharynx that does not rub off (Psora/ Sycosis). It is characterized by white plaques on the oral mucosa. It is a precancerous lesion, with malignant transformation occurring in 2 to 6% of patients (Psora/ Sycosis/ Syphilis). It has been noted in children with candidiasis (Pseudopsora) and some viral infections.

Incidence
The prevalence of premalignant or malignant transformation is variable but has been estimated at approximately 3.1%. Leukoplakia patches can occur at any time in life, but it is most common in senior adults.

Causes
It is often caused by chronic irritation (Psora) or infection but may also be a cancer (Psora/ Sycosis/ Syphilis). It is the mouth's reaction to chronic irritation of the mucous membranes of the mouth. If the leukoplakia has areas of redness, it is called erythroplakia (Psora/ Syphilis). Erythroplakia more often represents a cancer (Psora/ Sycosis/ Syphilis). On biopsy, the patient may be found to have a fungal infection (Psora/ Syphilis). Fungal infections of the oral cavity may often mimic a cancer both on gross appearance and sometimes even histologically.

In the larynx, leukoplakia, pachydermia and Reinke’s edema (polypoid degeneration) should be viewed as precursors to the development of carcinoma.
Leukoplakia patches can also develop on the female genital area, however, the cause of this is unknown.
The main causes may be concluded as below-
- Irritation from rough teeth, fillings, or crowns, or ill-fitting dentures that rub against your cheek or gum
- Chronic smoking, pipe smoking, or other tobacco use
- Sun exposure to the lips
- Oral cancer
- HIV or AIDS

**Symptoms**
Leukoplakia is defined as any white patch or plaque that cannot be characterized clinically or pathologically. It is purely a descriptive term with no histological correlation. Leukoplakia varies from a small, well-circumscribed, homogenous white plaque to an extensive lesion involving large surface areas of the oral mucosa. It may be smooth or wrinkled, fissured and vary in color depending on the thickness of the lesion. The patches tend to develop slowly over weeks to months and may be thick, slightly raised, and may eventually take on a hardened and rough texture. It usually is painless, but may be sensitive to touch, heat, spicy foods, or other irritation.

![Genital Leukoplakia](image1)

**Clinical classification**
The following subdivisions are recommended (WHO 1980)-

**Homogeneous**
Lesions that are uniformly white. These may be-
(a) Smooth
(b) Furrowed (fissured)
(c) Ulcerated
This type is usually otherwise asymptomatic.

**Non-homogenous**
Nodulo-speckled lesions in which part of the lesion is white and rest appears reddened. They have well demarcated raised white areas, interspersed with reddened areas.
The adjective non-homogeneous is applicable both to the aspect of color i.e. mixture of white and red changes (erythroleukoplakia) and to the aspect of texture i.e exophytic, papillary or
verrucous. These are often associated with mild complaints of localized pain or discomfort.

**Speckled leukoplakia**

This is a variation of leukoplakia arising on an erythematous base. It has the highest rate of malignant transformation.

![Speckled leukoplakia](image)

**Proliferative verrucous leukoplakia**

Proliferative verrucous leukoplakia (PVL) and verrucous hyperplasia (VH) are two related oral mucosal lesions. The terms, however, are not clinically or pathologically interchangeable. It is an aggressive form of oral idiopathic leukoplakia that has a considerable morbidity. Histologically, proliferative verrucous leukoplakia (PVL) may represent in three forms—

1. Verrucous hyperplasia (VH), a histologically defined lesion
2. Varying degrees of dysplasia, and
3. Three forms of squamous eel- carcinoma verrucous, conventional and papillary squamous cell carcinoma.

**Erythroplakia**

Erythroplakia is defined as any lesion of the oral mucosa that presents as a bright red plaque which cannot be characterized clinically or pathologically as any other recognizable condition. The lesions are irregular in outline and separated from adjacent normal mucosa. The surfaces may be nodular. These lesions occasionally coexist with leukoplakia.

![Erythroplakia](image)

**Hairy leukoplakia**

Hairy leukoplakia (Psora/ Sycosis) is caused by the Epstein-Barr virus and is characterized by elevated, corrugated white plaques usually on the lateral borders of the tongue and suggests
acquired immune deficiency syndrome. It consists of fuzzy, white patches on the tongue and less frequently, elsewhere in the mouth.

Hairy Leukoplakia of Tongue

It may resemble thrush, an infection caused by the fungus Candida which, in adults, usually occurs if immune system is not working properly. Thrush may be one of the first signs of infection with the HIV virus.

**Diffuse leucoplakia**

Diffuse leucoplakia of the bladder is premalignant and results in squamous bladder cancer.

**Preleukoplakia**

Preleukoplakia is defined as a low grade or very mild reaction of the oral mucosa, appearing as a grey or greyish-white, but never completely white area with a slightly lobular pattern and with indistinct borders blending into the adjacent normal mucosa.

**A modified classification and staging system for oral leukoplakia**

A proposal for a modified classification and staging system for oral leukoplakia (OLEP) has been presented by van der Waal et al 2000 in which the size of the leukoplakia and the presence or absence of epithelial dysplasia are taken into account. Altogether four stages are recognized.

**L Size of leukoplakia**

L1 - size of leukoplakia is < 2cm

L2 - size of leukoplakia is 2 - 4 cm

L3 - size ofleukoplakias>4cm

Lx - size ofleukoplakia is not specified.

**P - Pathology**

PO - No epithelial dysplasia

P1 - Distinct epithelial dysplasia

Px - Dysplasia not specified in pathology report

**OLEP Staging System**

Stage I - L1 PO

Stage II - L2 PO

Stage III - L3 PO or L1 L2 PI

Stage IV - L3 P1

It has yet to be shown whether such staging system may also be helpful in providing guidelines
for the management of oral leukoplakias.

Differential Diagnosis

<table>
<thead>
<tr>
<th>Disease</th>
<th>Clinical features</th>
<th>Causes</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukoderma</td>
<td>Common uniform opacification of buccal mucosa bilaterally.</td>
<td>Unknown</td>
<td>Remains indefinitely. No ill effects.</td>
</tr>
<tr>
<td>White sponge nevus</td>
<td>Asymptomatic bilateral, dense, shaggy, white or gray, generalized opacification, primarily buccal mucosa affected, but other membranes may be involved</td>
<td>Hereditary, autosomal dominant (keratin 4 and/or 13)</td>
<td>Remains indefinitely, no ill effects.</td>
</tr>
<tr>
<td>Hereditary benign intraepithelial dyskeratosis</td>
<td>Asymptomatic, diffuse shaggy white lesion of buccal mucosa, as well as other tissues, eye lesion – white plaque surrounded by inflamed conjunctiva, rare</td>
<td>Hereditary, autosomal dominant, duplication of chromosome 4q35</td>
<td>Remains indefinitely</td>
</tr>
<tr>
<td>Follicular keratosis</td>
<td>Keratotic papular lesions of skin and, infrequently, mucosa; lesions are numerous and asymptomatic</td>
<td>Genetic, autosomal dominant, mutation in ATP2A2 gene</td>
<td>Chronic course with occasional remissions</td>
</tr>
<tr>
<td>Condition</td>
<td>Description</td>
<td>Cause</td>
<td>Prognosis</td>
</tr>
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<tr>
<td><strong>Focal (frictional) hyperkeratosis</strong></td>
<td>Asymptomatic white patch, commonly on edentulous ridge, buccal mucosa, and tongue; does not rub off; common</td>
<td>Chronic irritation, low-grade trauma</td>
<td>May regress if cause eliminated</td>
</tr>
<tr>
<td><strong>White lesions associated with smokeless tobacco</strong></td>
<td>Asymptomatic white folds surrounding area where tobacco is held; usually found in labial and buccal vestibules; common</td>
<td>Chronic irritation from snuff or chewing tobacco</td>
<td>Increased risk for development of verrucous and squamous cell carcinoma after many years</td>
</tr>
<tr>
<td><strong>Nicotine stomatitis</strong></td>
<td>Asymptomatic, generalized opacification of palate with red dots representing salivary gland orifices; common</td>
<td>Heat and smoke associated with combustion of tobacco</td>
<td>Rarely develops into palatal cancer</td>
</tr>
<tr>
<td><strong>Solar cheilitis</strong></td>
<td>Lower lip—atrophy epithelium, poor definition of vermilion-skin margin, focal zones of keratosis; common</td>
<td>UV light (especially UBV, 2900–3200nm)</td>
<td>May result in squamous cell carcinoma</td>
</tr>
<tr>
<td><strong>Idiopathic leukoplakia</strong></td>
<td>Asymptomatic white patch; cannot be wiped off; males affected more than females</td>
<td>Unknown; may be related to tobacco and alcohol use</td>
<td>May recur after excision; 5% are malignant and 5% become malignant; higher risk of carcinoma if dysplasia present</td>
</tr>
<tr>
<td><strong>Hairy leukoplakia</strong></td>
<td>Filiform to flat patch on lateral tongue, often bilateral, occasionally on buccal mucosa; asymptomatic</td>
<td>Epstein-Barr virus infection</td>
<td>Seen in 20% of HIV-infected patients; marked increase in AIDS; may occur in non–AIDS-affected immunosuppressed patients and rarely in immunocompetent patients</td>
</tr>
<tr>
<td><strong>Hairy tongue</strong></td>
<td>Elongation of filiform papillae; asymptomatic</td>
<td>Unknown; may follow antibiotic, corticosteroid use, tobacco habit</td>
<td>Benign process; may be cosmetically objectionable</td>
</tr>
<tr>
<td><strong>Geographic tongue (erythema migrans)</strong></td>
<td>White annular lesions with atrophic red centers; pattern migrates over dorsum of tongue; varies in intensity and may spontaneously disappear; occasionally painful; common</td>
<td>Unknown</td>
<td>Completely benign; spontaneous regression after months to years</td>
</tr>
<tr>
<td><strong>Lichen planus</strong></td>
<td>Bilateral white striae (Wickham’s); asymptomatic except when erosions are present; seen in middle age; buccal mucosa most commonly affected, with lesions occasionally on tongue, gingiva, and palate; skin lesions occasionally present and are purple pruritic papules; forearm and lower leg most common skin areas</td>
<td>Unknown; may be precipitated by stress; may be hyperimmune condition mediated by T cells</td>
<td>May regress after many years; treatment may only control disease; rare malignant transformation</td>
</tr>
<tr>
<td><strong>Dentifrice-associated slough</strong></td>
<td>Asymptomatic, slough of filmy parakeratotic cells</td>
<td>Mucosal reaction to components in toothpaste</td>
<td>None</td>
</tr>
<tr>
<td><strong>Candidiasis</strong></td>
<td>Painful elevated plaques (fungus) that can be wiped off, leaving eroded, bleeding surface; associated with poor hygiene, systemic antibiotics, systemic diseases, debilitation, reduced immune response; chronic infections may result in erythematous mucosa without obvious white colonies; common</td>
<td>Opportunistic fungus—Candida albicans and rarely other Candida species</td>
<td>Usually disappears 1–2 weeks after treatment; some chronic cases require long-term therapy</td>
</tr>
<tr>
<td><strong>Mucosal burns</strong></td>
<td>Painful white fibrin exudate covering superficial ulcer with erythematous ring; common</td>
<td>Chemicals (aspirin, phenol), heat, electrical burns</td>
<td>Heals in days to weeks</td>
</tr>
<tr>
<td>Submucous fibrosis</td>
<td>Areas of opacification with loss of elasticity; any oral region affected; rare</td>
<td>May be due to hypersensitivity to dietary constituents such as areca (betel nut), capsaicin</td>
<td>Irreversible; predisposes to oral cancer</td>
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<tr>
<td>Fordyce's granules</td>
<td>Multiple asymptomatic, yellow, flat or elevated spots seen primarily in buccal mucosa and lips; seen in a majority of patients; many consider them to be a variation of normal</td>
<td>Developmental</td>
<td>Ectopic sebaceous glands of no significance</td>
</tr>
<tr>
<td>Ectopic lymphoid tissue</td>
<td>Asymptomatic elevated yellow nodules &lt; 0.5cm in diameter; usually found on tonsillar pillars, posterolateral tongue, and floor of mouth; covered by intact epithelium; common</td>
<td>Developmental</td>
<td>No significance; lesions remain indefinitely and are usually diagnostic clinically</td>
</tr>
<tr>
<td>Gingival cyst</td>
<td>Small, usually white to yellow nodule; multiple in infants, solitary in adults; common in infants, rare in adults</td>
<td>Proliferation and cystification of dental lamina rests</td>
<td>In infants lesions spontaneously rupture or break; recurrence not expected in adults</td>
</tr>
<tr>
<td>Parulis</td>
<td>Yellow-white gingival swelling caused by submucosal pus</td>
<td>Periodontitis or tooth abscess</td>
<td>Periodic drainage until primary cause is eliminated</td>
</tr>
<tr>
<td>Lipoma</td>
<td>Asymptomatic, slow-growing, well circumscribed, yellow or yellow- white mass; benign neoplasm of fat; occurs in any area</td>
<td>Unknown</td>
<td>Seems to have limited growth potential intraorally; recurrence not expected after removal</td>
</tr>
</tbody>
</table>

**Treatment**

Homoeopathy is the only method of treatment.

**Rubrics related with Leukoplakia in various repertories**

| MOUTH - LEUKOPLAKIA | 3 |

**Repertorization**

| borx. | ign. | nit-ac. |

**Main remedies for Leukoplakia**

- Alum. alumn.
- Arg-n. ars.
- Atro.
- Aur.
- Bar-c. Bell.
- borx.
- brom.
- bry.
- calc-f.
- calc.
- Cann-xyz.
- carb-an.
- Carb-v.
- carc.
- Caust.
- chin.
- clem.
- con.
- cupr.
- Ferr.
- gamb.
- hydr.
- HYOS.
- ign.
- kali-chl.
- kali-i.
- Lach.
- Lyc.
- mag-m.
- merc-d.
- merc-i-r.
- Merc.
- Mez.
- mur-ac.
- nit-ac.
- NUX-M.
- petr.
- ph-ac.
- Phyt.
- Puls.
- Semp.
- sep.
- SIL.
- sul-i.
- Sulph.

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