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# Oral mucosal lesions

The oral cavity is lined by a membrane composed of stratified squamous epithelium. This epithelium serves as a cover for the oral soft tissues as a barrier to the entry of external pathogenic factors. Depending on the intraoral site, the stratified squamous epithelium may be non-keratinized, orthokeratinized or parakeratinized.

Knowledge of clinical aspects of oral mucosal diseases must be correlated with oral anatomy. E.g. recurrent aphthous stomatitis occurs primarily on the nonkeratinized mucosa, whereas recurrent herpes simplex infections occur almost exclusively on the keratinized mucosa.

In general, oral mucosal lesions could be divided into:

* **Oral infections**

Viral

Bacterial

Fungal

* **Vesiculobullous diseases**
* **Ulcerative conditions**
* **White lesions**

To better describe the appearances of lesions and communicate these features to others, the clinician should be familiar with the following terms:

**Macule:**Focal area of color change which is not elevated or depressed in relation to its surroundings.

**Papule**: Solid, raised lesion which is less than 5 mm in diameter.

**Nodule:**Solid, raised lesion which is greater than 5 mm in diameter.

**Sessile:**Describing a tumor or growth whose base is the widest part of the lesion.

**Pedunculated:**Describing a tumor or growth whose base is narrower than the widest part of the lesion.

**Papillary:**Describing a tumor or growth exhibiting numerous surface projections.

**Verrucous:**Describing a tumor or growth exhibiting a rough, warty surface.

**Vesicle:** Superficial blister, 5 mm or less in diameter, usually filled with clear fluid. **Bulla:**Large blister, greater than 5 mm in diameter.

**Pustule**: Blister filled with purulent exudate.

**Ulcer:**Lesion characterized by loss of the surface epithelium and frequently some of the underlying connective tissue. It often appears depressed or excavated.

**Erosion:**Superficial lesion. Often arising secondary to rupture of a vesicle or bulla, that is characterized by partial or total loss of the surface epithelium.

**Fissure:**Narrow, slit like ulceration or groove.

**Plaque:**Lesion that is slightly elevated and is flat on its surface.

**Petechia:**Round, pinpoint area of hemorrhage.

**Ecchymosis:**Nonelevated area of hemorrhage, larger than a petechia.

**Telangiectasia:**Vascular lesion caused by dilatation of a small, superficial blood vessel.

**Cyst:**Pathologic epithelium-lined cavity often filled with liquid or semi-solid contents.

### Microscopical changes of oral mucosa:

**E pithelial changes:**

**Hyperkeratosis:**refers to an increase in the thickness of stratum cornium, which yields a white appearance of the oral mucosa clinically. This hyperkeratinizations can occur in keratinized area or abnormally in non-keratinized area. When the nuclei are lost from the surface the conditions is named (hyperorthokeratosis). When remnants of the nuclei persist the condition is named (hyperparakeratosis).

**Hyperplasia:**an increase in the thickness of the epithelium from surface to basal cell layer. An increase in the prickle cell layer is termed (acanthosis).

**Epithelial dysplasia** (dyskeratosis or epithelial atypia): an abnormal growth pattern of epithelial cells. Generally indicates a premalignant change.

 **Acantholysis:**loss of adhesion between the cells of prickle cell layer (spinous cell layer) the cells appear to fall apart, which lead to vesicle formation, e.g. pemphigus vulgaris.

**C onnective tissue changes:**

* Inflammatory infiltrate are common, as chronic inflammatory cells infiltration, e.g. gingivitis.
* Hyperplasia of connective tissue refers to an increase in the amount of collagen fibers.
* Ductal and glandular distension could be seen in many accessory mucous glands due to pressure and obstruction.

**Viral infections**

**Herpes simplex virus (HSVs) infections** occur in two forms—primary (systemic) and secondary (localized). Both forms are self-limited, but recurrences of the secondary form are common because the virus can remain within ganglionic tissue in a latent state. Physical contact with an infected individual or with body fluids is the typical route of HSV inoculation and transmission.

During the primary infection, only a small percentage of individuals show clinical signs and symptoms of infectious systemic disease, whereas a vast majority experience only subclinical disease. After resolution of primary herpetic gingivostomatitis, the virus is believed to migrate, through some unknown mechanism, to the trigeminal ganglion. Reactivation of virus may follow exposure to sunlight (“fever blisters”), exposure to cold (“cold sores”), trauma, stress, or immunosuppression causing a secondary or recurrent infection.

#### Clinical Features

Primary Herpetic Gingivostomatitis. Primary disease is usually seen in children, although adults who have not been previously exposed to HSV may be affected. The vesicular eruption may appear on the skin, vermilion, and oral mucous membranes. Intraorally, lesions may appear on any mucosal surface. This is in contradistinction to the recurrent form of the disease, in which lesions are confined to the lips, hard palate, and gingiva. The primary lesions are accompanied by fever, arthralgia, malaise, anorexia, headache, and cervical lymphadenopathy.

After the systemic primary infection runs its course of about 7 to 10 days, lesions heal without scar formation. By this time, the virus may have migrated to the trigeminal ganglion to reside in a latent form.

Secondary, or Recurrent, Herpes Simplex Infection. Secondary herpes represents the reactivation of latent virus. Antibodies to HSV are present in a large majority of the population (up to 90%), and up to 40% of this group may develop secondary herpes.

Patients usually have prodromal symptoms of tingling, burning, or pain in the site at which lesions will appear. Within a matter of hours, multiple fragile and short-lived vesicles appear. These become unroofed and unite to form maplike superficial ulcers. The lesions heal without scarring in 1 to 2 weeks and rarely become secondarily infected. Regionally, most secondary lesions appear on the vermilion and surrounding skin. This type of disease is usually referred to as herpes labialis. Intraoral recurrences are almost always restricted to the hard palate or gingiva.

**Herpetic Whitlow:** is a primary or a secondary HSV infection involving the finger(s). Before the universal use of examination gloves, this type of infection typically occurred in dental practitioners who had been in physical contact with infected individuals. Contact could result in a vesiculoulcerative eruption on the digit (rather than in the oral region), along with signs and symptoms of primary systemic disease. Pain, redness, and swelling are prominent with herpetic whitlow and can be very pronounced. Vesicles or pustules eventually break and become ulcers. The duration of herpetic whitlow is protracted and may be as long as 4 to 6 weeks.

**Histopathology:** Microscopically, intraepithelial vesicles containing exudate, inflammatory cells, and characteristic virus-infected epithelial cells are seen. Virus- infected keratinocytes contain one or more nuclear inclusions.

 **Treatment:** Symptomatic. In severe cases, systemic aciclovir or valaciclovir.

 **Varicella-zoster virus infection**

Primary varicella-zoster virus (VZV) infection is known as varicella or chickenpox; secondary or reactivated disease is known as herpes zoster or shingles. Varicella is believed to be transmitted predominantly through the inhalation of contaminated droplets. The condition is very contagious and is known to spread readily from person to person.

#### Clinical features

Fever, chills, malaise, and headache may accompany a rash that involves primarily the trunk and head and neck. The rash quickly develops into a vesicular eruption that becomes pustular and eventually ulcerates.

The infection is self-limiting and lasts several weeks. Oral mucous membranes may be involved in primary disease and usually demonstrate multiple shallow ulcers that are preceded by vesicles.

**Herpes Zoster:** is essentially a condition of the older adult population and of individuals who have compromised immune responses. The sensory nerves of the trunk and head and neck are commonly affected. Involvement of various branches of the trigeminal nerve may result in unilateral oral, facial, or ocular lesions. Involvement of facial and auditory nerves produces the *Ramsay Hunt syndrome*, in which facial paralysis is accompanied by vesicles of the ipsilateral external ear, tinnitus, deafness, and vertigo.

After several days of prodromal symptoms of pain and/or paresthesia in the area of the involved dermatome, a well-delineated unilateral maculopapular rash appears. This may occasionally be accompanied by systemic symptoms. The rash quickly becomes vesicular, pustular, and then ulcerative. Remission usually occurs in several weeks.

#### Histopathology: Essentially the same as those with HSV

#### Treatment: For varicella in normal individuals, supportive therapy is generally indicated. However, for immunocompromised patients, more substantial measures are warranted. These include systemically administered acyclovir, vidarabine, and human leukocyte interferon. Corticosteroids generally are contraindicated.

## Herpangina

is an acute viral infection caused by Coxsackie type A virus. It is transmitted by contaminated saliva and occasionally through contaminated feces.

**Clinical Features:** Herpangina is usually endemic, with outbreaks occurring typically in summer or early autumn. It is more common in children than in adults. Those infected generally complain of malaise, fever, dysphagia, and sore throat after a short incubation period. Intraorally, a vesicular eruption appears on the soft palate, faucial pillars, and tonsils and persists for 4 to 6 days. A diffuse erythematous pharyngitis is also present. No associated skin lesions are typically seen.

Signs and symptoms are usually mild to moderate and generally last less than a week.

 **Treatment:**Because herpangina is self-limiting, is mild and of short duration, and causes few complications, treatment usually is not required.

## Hand-Foot-and-Mouth Disease

HFM disease is a highly contagious viral infection that usually is caused by Coxsackie type A16 or enterovirus 71. The virus is transferred from one individual to another through airborne spread or fecal-oral contamination.

**Clinical Features:** This viral infection typically occurs in epidemic or endemic proportions and predominantly (about 90%) affects children younger than 5 years of age. After a short incubation period, the condition resolves spontaneously in 1 to 2 weeks.

Signs and symptoms are usually mild to moderate in intensity and include low- grade fever, malaise, lymphadenopathy, and sore mouth. Pain from oral lesions is often the patient’s chief complaint.

Oral lesions begin as vesicles that quickly rupture to become ulcers. Lesions can occur anywhere in the mouth, although the palate, tongue, and buccal mucosa are favored sites, while the lips and gingiva are usually spared. Multiple maculopapular lesions, typically on the feet, toes, hands, and fingers, appear concomitantly with or shortly after the onset of oral lesions. These cutaneous lesions progress to a vesicular state; they eventually become ulcerated.

 **Histopathology:** The vesicles of this condition are found within the epithelium because of obligate viral replication in keratinocytes. Eosinophilic inclusions may be seen within some of the infected epithelial cells

**Treatment:** Because of the relatively short duration, generally self-limiting nature, and general lack of virus-specific therapy, treatment for HFM disease is usually symptomatic.

### Measles (Rubeola) and German measles (Rubella)

**Measles** is a highly contagious viral infection caused by a member of the paramyxovirus family of viruses. Typically, oral eruptions consist of early pinpoint elevations over the soft palate that combines with ultimate involvement of the pharynx with bright erythema.

German measles, or rubella, is a contagious disease that is caused by an unrelated virus of the togavirus family. It shares some clinical features with measles, such as fever, respiratory symptoms, and rash. However, these features are very mild and short lived in German measles.

**Clinical Features:** After an incubation period of 7 to 10 days, prodromal symptoms of fever, malaise, coryza, conjunctivitis, photophobia, and cough develop. In 1 to 2 days, pathognomonic small erythematous macules with white necrotic centers appear in the buccal mucosa, these lesion spots, known as Koplik’s spots. Koplik’s spots generally precede the skin rash by 1 to 2 days. The rash initially affects the head and neck, followed by the trunk, and then the extremities.

**Histopathology:**Infected epithelial cells, which eventually become necrotic, overlie an inflamed connective tissue that contains dilated vascular channels and a focal inflammatory response. Lymphocytes are found in a perivascular distribution. In lymphoid tissues, large characteristic multinucleated macrophages, are seen.

**Treatment:** No specific treatment for measles is known. Supportive therapy of bed rest, fluids, adequate diet, and analgesics generally suffices.

# Human immunodeficiency virus (HIV) infections and AIDS

The oral manifestation of HIV infection are numerous and have been divided into three groups based on the strenght of their association with HIV infection. the main lesions in each group are listed in table below:

### Group 1- Lesions strengthly associated with HIV infections:

###  Candidiasis

Erythematous Hyperplastic

Pseudomembranous

**Hairy Leukoplakia (EB virus)**

**HIV associated periodental disease**

 HIV gingivitis, Necrotizing ulcerative gingivitis, HIV associated periodontotis

Necrotizing stomatitis **Kaposis sarcoma**

**Non-Hodgkins lymphoma**

**Group 2- Lesions less commonly associated with HIV infections:**

 **Atypical ulceration**

**Idiopathic thrombocytopenic purpura Salivary gland disorders**

Dry mouth, decreased salivary flow rate

Unilateral or bilateral swelling of major glands **Viral infection other than (EB virus)**

Cytomegalo virus Human papilloma virus Varicella zoster virus

**Group 3- Lesions possibly associated with HIV infection:**

**Bacterial infections other than gingivitis/periodontitis Fungal infection other than candidiasis**

**Melanotic hyperpigmentation**

**Neurologic disturbances:** Facial palsy,Trigeminal neuralgia.