

Oral candidiasis

By

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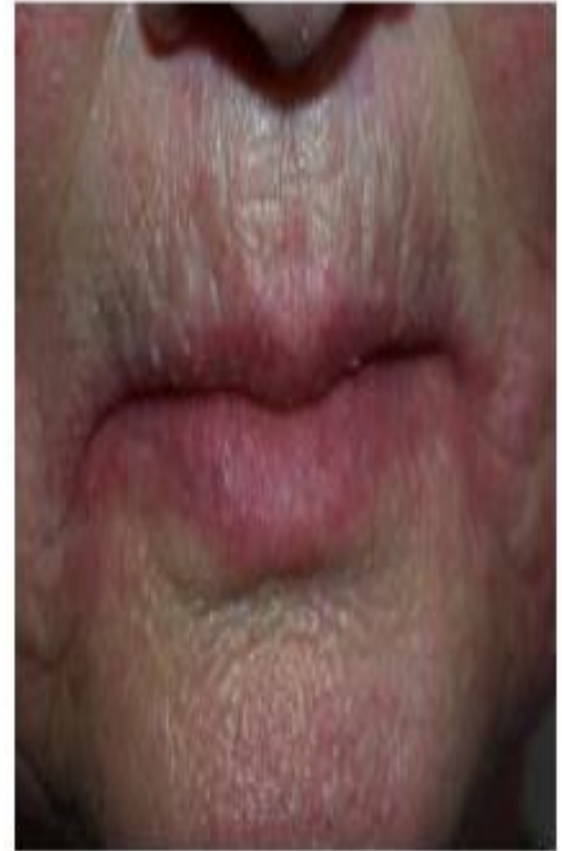
Oral candidiasis



Oral thrush



Oral candidiasis



Angular cheilitis

1. AETIOLOGY and PATHOGENESIS

Candidiasis is the most common fungal infection of the oral cavity and is caused by an overgrowth of commensal *Candida* species. *Candida albicans* (*C. albicans*) is the most commonly isolated species in both health and disease. Less common species include *C. glabrata*, *C. tropicalis*, *C. guilliermondii*, *C. krusei*, *C. parapsilosis*, and *C. kefyr*, and more recently, *C. dubliniensis* .

Colonization by *Candida* in the oral cavity does not necessarily equate to infection; a significant proportion of healthy individuals continuously harbor strains of *C. albicans*. Reported symptom-free oral carriage rate varies between 25-75%, depending on the population sampled and the sensitivity of the sampling technique . In oral cavity, *C. albicans* is most commonly isolated from the dorsum of the tongue followed by the palate and the buccal mucosa.

Candida species are harmless commensal members of the normal oral microbial flora just as they are in the skin, gastrointestinal tract and vagina. Whether the organism remains as a commensal, or proliferates and causes disease, is usually determined by virulence factors of the pathogen and predisposing factors of the host .

The transition from commensalism to disease may be associated with the virulence characteristics of Candida such as adherence, germ tube formation, dimorphism, phenotypic switching, toxins, and hydrolytic enzymes . However, it is widely accepted that predisposing host factors are of paramount importance in the development of the candidal infection

Who gets oral candidiasis?

Risk factors for developing oral candidiasis include:

- Infancy or old age
- In a newborn baby, maternal vaginal yeast infection
- Serious underlying diseases, such as cancer, primary immunodeficiency or infection with human immunodeficiency virus
- Candida infection elsewhere eg, in an infant, napkin dermatitis
- Dry mouth due to disease of the salivary glands or medications, eg antihistamines, diuretics
- Dentures, especially if they are not regularly cleaned or fit badly

- Smoking
- Injury to the mouth
- Broad-spectrum antibiotics
- Nutritional deficiency, for example, iron or B-vitamin deficiency
- Inhaled corticosteroids used to treat asthma, such as beclometasone, budesonide, fluticasone.

Oropharyngeal candidiasis is reported in hospitalised and asymptomatic COVID-19 patients.

2. CLINICAL MANIFESTATIONS

Oral candidiasis may present in a variety of clinical forms. The most commonly used classification

PRIMARY ORAL CANDIDOSIS

- **Acute forms**
 - Pseudomembranous
 - Erythematous
- **Chronic forms**
 - Pseudomembranous
 - Erythematous
 - Hyperplastic (nodular or plaque-like)
- **Candida-associated lesions**
 - Denture stomatitis
 - Median rhomboid glossitis
 - Angular cheilitis
- **Keratinized primary lesions superinfected with Candida**
 - Leukoplakia
 - Lichen planus
 - Lupus erythematosus

SECONDARY ORAL CANDIDOSIS

Oral manifestations of systemic mucocutaneous candidosis

2.1. PRIMARY ORAL CANDIDIASIS

Acute and Chronic Forms

1. Pseudomembranous candidiasis

This form of the disease is the most common in immunocompromised individuals such as infants, the elderly, those on corticosteroid or long term broad spectrum antibiotic therapy, those with severe underlying conditions such as poorly controlled diabetes mellitus, leukemia, and HIV infection/AIDS. It is characterized by whitish creamy plaques resembling milk curds on the tongue, palate and buccal mucosa. The lesions can be wiped away leaving behind an erythematous mucosal surface which may bleed slightly. The plaques consist of necrotic material, desquamated epithelial cells, fibrin, yeast cells and hyphae, food debris, and bacteria.



Figure 1: Pseudomembranous candidosis in a patient using steroid inhaler for management of asthma

2. Erythematous candidiasis

This variant, previously known as “antibiotic sore mouth”, is mainly associated with the chronic use of broad spectrum antibiotics. Broad-spectrum antibiotics lower the oral bacterial population and facilitate subsequent overgrowth of *Candida* by alleviating competitive pressures. Clinically, erythematous candidiasis is characterized by localized erythematous areas commonly on the dorsum of the tongue and palate, and less commonly on the buccal mucosa . Erythematous candidiasis is the only form of oral candidiasis that is consistently painful.

3. Hyperplastic candidiasis

Chronic hyperplastic candidiasis, occasionally referred to as “candidal leukoplakia”, appears as well-demarcated slightly elevated, adherent homogeneous or nodular white plaques that cannot be wiped away . The most common location is the commissural region of the buccal mucosa, and less frequently the dorsum of the tongue. Almost all patients with hyperplastic candidiasis are smokers. Recognition of such lesions is important, as the condition has been associated with varying degrees of dysplasia and malignancy .



Figure 2a&b: Denture stomatitis, showing localized erythema of tissues covered by dentures

3. Angular cheilitis

Clinically, angular cheilitis appears as erythematous, fissured lesions affecting the corners of the mouth . Facial skin folds and wrinkling along the labial commissures and nasolabial folds, especially in older individuals, may cause saliva accumulation and a moist environment that predisposes to angular cheilitis. This is seen commonly in denture-wearing patients with reduced vertical occlusal dimension. While nutritional factors, such as iron or vitamin B12 deficiency, have all been implicated in the development of these lesions, it is now accepted that most are caused by *Candida* species and/or *Staphylococci* and *Streptococci* .

Keratinized Primary Lesions Superinfected with Candida

Candida is usually present in non-homogeneous leukoplakias, and it is believed that the organisms are secondary invaders. In patients with oral lichen planus, the lesions are frequently infected by Candida .

2.2. SECONDARY ORAL CANDIDIASIS

Chronic Mucocutaneous Candidiasis

Chronic mucocutaneous candidiasis (CMC) is characterized by persistent or recurrent superficial candidiasis of the skin, nails, and mucosal membranes.

3. DIAGNOSIS

In most cases, the diagnosis of oral candidiasis is based on clinical signs and symptoms in conjunction with a thorough medical and dental history .When the clinical diagnosis is unclear, additional tests, such as exfoliative cytology, culture, or tissue biopsy, may be useful .Each additional test has specific advantages and disadvantages, and the decision about the test to be done depends on the nature of the lesion to be investigated