

DEVELOPMENT OF ORAL CAVITY PATHOLOGIES IN IMMUNODEFICIENCY CONDITIONS

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Abstract The oral cavity is a vital indicator of systemic health and often reflects early signs of immune dysfunction. In individuals with immunodeficiency—whether congenital, acquired, or iatrogenic—oral manifestations such as candidiasis, herpetic lesions, periodontitis, and mucosal ulcers are common. These lesions not only compromise oral health but also serve as portals for systemic infection. This paper reviews the types, prevalence, and pathophysiology of oral diseases in patients with immunodeficiency and highlights the importance of early diagnosis and multidisciplinary management.

Keywords: oral pathology, immunodeficiency, candidiasis, oral ulcers, HIV, immunosuppression, mucosal lesions, oral-systemic health

The oral cavity hosts a complex ecosystem of microorganisms and is continuously exposed to antigens, making it particularly sensitive to changes in immune function. In immunocompetent individuals, innate and adaptive immunity maintain microbial balance. However, in cases of immunodeficiency—whether due to **HIV/AIDS**, chemotherapy, organ transplantation, autoimmune disease, or congenital disorders—this balance is disrupted.

As a result, patients may develop a variety of oral pathologies, including:

- **Oral candidiasis** (especially *Candida albicans*)
- **Recurrent aphthous stomatitis**

- Herpes simplex virus infections
- Hairy leukoplakia
- Necrotizing ulcerative gingivitis and periodontitis
- Kaposi's sarcoma (in AIDS patients)

These oral manifestations often precede systemic symptoms, making **oral screening a critical tool** in early detection and patient management.

This article is a narrative review based on:

- 52 peer-reviewed articles from PubMed, Scopus, and WHO databases (2015–2024)
- Clinical guidelines for managing oral complications in immunocompromised patients
- Case studies of HIV/AIDS, chemotherapy, and immunosuppression-related oral lesions

Key topics were categorized into three groups:

1. Oral manifestations in primary immunodeficiency
2. Oral diseases in secondary/acquired immunodeficiency
3. Strategies for diagnosis and management

1. Prevalent Oral Conditions in Immunodeficient Patients

Condition	Associated Immune Defect	Clinical Features
Oral candidiasis	T-cell deficiency, neutropenia	White plaques, burning, dysphagia
Herpes simplex virus (HSV)	T-cell suppression (HIV, chemo)	Painful vesicles and ulcers
Periodontitis (aggressive form)	Neutrophil dysfunction	Rapid bone loss, tooth mobility
Oral ulcers	Autoimmune conditions (e.g., lupus)	Recurrent painful mucosal erosions
Kaposi's sarcoma	AIDS	Purple-red lesions, palate or gingiva

2. HIV/AIDS and Oral Health

- 60–80% of HIV-positive patients develop at least one oral lesion.
- Oral candidiasis is the most common opportunistic infection.

- Oral lesions often correlate with **CD4+ T cell counts** and **viral load**.

3. Immunosuppressed Cancer Patients

- Chemotherapy and radiotherapy lead to mucositis in 40–70% of cases.
- Secondary fungal or bacterial infections may follow due to mucosal barrier disruption.

Oral manifestations of immunodeficiency are not merely local problems but **reflect systemic immune compromise**. Their appearance should prompt further medical evaluation and may help in staging diseases such as HIV or leukemia.

Dentists play a key role in early identification and referral. Regular oral examinations, especially in high-risk groups (HIV patients, transplant recipients, cancer patients), can help detect infections before systemic complications develop.

Challenges include:

- Limited awareness among general dentists about immune-related oral signs
- Underdiagnosis of atypical presentations
- Resistance to antifungal/antiviral medications in chronic cases

Management strategies:

- Use of topical and systemic antifungals (e.g., nystatin, fluconazole)
- Antiviral therapy for HSV (acyclovir, valacyclovir)
- Chlorhexidine rinses and antiseptic gels
- Nutritional support and improved oral hygiene
- Close collaboration between dentists, immunologists, and infectious disease specialists

Oral pathologies in immunodeficient patients are early and important clinical indicators of systemic disease. Their identification and treatment require **interdisciplinary collaboration**, early screening, and patient education. Enhancing the role of dental professionals in immune-compromised care pathways can improve both **oral and overall patient outcomes**.

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