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The Association Between Periodontitis and Respiratory Diseases: A Comprehensive Review

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Abstract

Periodontal disease is a significant factor in periodontal destruction, primarily initiated by a multi-bacterial infection that progresses through a cascade of chronic inflammatory responses. This persistent inflammation not only affects periodontal tissues but also has systemic implications, heightening the risk of various systemic diseases. Among these, respiratory diseases—which are closely linked to inflammatory processes, are of particular concern. Conditions such as asthma, pneumonia, chronic obstructive pulmonary disease (COPD), and lung cancer have been increasingly associated with the chronic inflammatory state induced by periodontitis. The aim of this review was to elucidate the mechanisms underlying the association between periodontitis and respiratory diseases. Chronic periodontitis creates a state of systemic inflammation that can disseminate through the bloodstream, impacting distant organs, including the lungs. Emerging evidence from recent studies highlights the role of periodontitis in both the initiation and exacerbation of respiratory diseases. Microbial pathogens associated with periodontitis, such as *Porphyromonas gingivalis*, can be aspirated into the lower respiratory tract, leading to either direct infection or modulation of the local immune response. This can increase susceptibility to respiratory conditions such as pneumonia and exacerbate pre-existing diseases like COPD and asthma. In summary, the relationship between periodontitis and respiratory diseases is complex and multifaceted, involving direct microbial interactions, systemic inflammation, and immune modulation. Understanding these connections is crucial for developing integrated therapeutic strategies that address both oral and respiratory health.

Keywords: inflammation, periodontitis, respiratory disease