

# Periodontal Diseases



Periodontal diseases are disorders of the gums, or gingiva, and other tissues around the teeth. Periodontal diseases vary in severity, from the reversible, recurring mild inflammation called gingivitis that affects many people, to the sometimes irreversible, severe, chronic periodontitis that badly erodes the bone and other supporting structures of the tooth, possibly leading to tooth loss. An estimated 8 to 10 percent of American adults have some form of periodontal disease. Smoking contributes significantly to the risk of having periodontitis. The risk is also higher in individuals with diabetes.

## Yesterday

- In the 1950s, tooth loss was extremely common, largely because of rampant tooth decay and untreated periodontal diseases.
- The primary research focus was on oral bacteria. Periodontal diseases were thought to begin when chalky white deposits called calculus accumulated near the gingiva, along the base of the tooth. Many believed it served as an irritant and wedge that opened a small pocket between the tooth and gingiva, allowing bacteria to freely enter and progressively erode the bone and the other supporting structures of the tooth.
- Periodontal disease was viewed as a linear process that started with gingivitis progressing to loosening of teeth and loss of bone holding the teeth. Without proper treatment, people were told their gingivitis would inevitably progress to periodontitis, advanced disease, and ultimately tooth loss. All people were thought to be susceptible to severe periodontitis, especially as they aged.

## Today

- The most recent survey of the nation's oral health, released in 2005 (National Health and Nutrition Examination Survey) ([www.cdc.gov/nchc/nhanes](http://www.cdc.gov/nchc/nhanes)), showed a continued decline in periodontal disease among American adults and an associated reduction in

tooth loss. According to the survey, Americans age 20 and older have on average about 24 of their natural teeth. Without research on the causes and treatment of periodontal disease, that number would be much lower.

- The fundamental role of the immune system in causing periodontal diseases was largely overlooked just a generation ago. Research has established that periodontal diseases arise when specific oral bacteria infect gum tissue, triggering a complex immune response and progressive inflammation that play a major role in causing periodontitis.
- Periodontal diseases are no longer viewed as an inevitable result of aging. Even though moderate disease affects a majority of adults, severe periodontitis affects only five to 15 percent of adults.
- Some individuals appear to be more susceptible to severe periodontitis than other people. Scientists are making progress to understand how a person's genes and environment make him or her more likely to have advanced forms of periodontal disease. (For example, a study entitled "Molecular and population genetics of periodontal pathogens" is in progress in 2010.)
- Gingivitis and more severe periodontal diseases are recognized as distinct conditions. Researchers know that gingivitis does not necessarily lead to severe disease and tooth loss.
- This greater understanding has helped dentists provide better treatment for their patients. In addition to improved consumer dental products to help prevent periodontal disease, increased awareness exists about those at greatest risk who might benefit from more regular periodontal care. These include smokers, people with diabetes, and those taking certain types of anti-seizure medications, cancer drugs, oral contraceptives, and some calcium channel blockers. For example, a study entitled "Neutrophils and periodontitis in diabetes" is currently underway.

## Tomorrow

- Scientists now know that the bacteria in our mouths exist as a complex, multi-layered community termed oral biofilm. Scientists already are in the process of dissecting the dynamics of these bacterial communities. This research may give dentists the tools to target their treatment specifically to the bacteria that trigger periodontal disease. At the same time, because biofilms form throughout the body and nature, research advances may have broad applications in medicine and environmental studies.
- For those who develop advanced periodontal disease, researchers are working to regenerate the damaged or lost bone and restore the tooth support to its natural state.
- Oral bacteria shed from chronic periodontal infections enter the circulatory system and may contribute to diseases of the heart and other organs. The role of periodontal diseases in causing or contributing to other serious conditions is the subject of ongoing laboratory and clinical research. As this research unfolds in the coming years, it may be that a trip to the dentist not only could have benefits for your oral health but also help reduce your chances of developing related systemic conditions.

***For additional information contact: NIDCR Office of Communications and Health Education at (301) 496-4261.***

***National Institute of Dental and Craniofacial Research (NIDCR):***

***[www.nidcr.nih.gov](http://www.nidcr.nih.gov)***