

IV. PERIODONTAL DISEASE

Luck, bad if not good, will always be with us. But it has a way of favoring the learned, and showing its back to the ignorant. John Dewey (1859–1952)—American, educator, pragmatist philosopher, psychologist.

A SUBVERSIVE ENEMY:

Patients are often not aware of a dangerous condition until it is much too late.



Periodontal disease, including chronic adult periodontitis, in the U S had affected approximately 70 million adults in 2009. 2012 and 2015 studies showed, nearly 50% of Americans still suffered from the disease. Some periodontal disease was present in 60% of all children over the age of fifteen, and is even greater among minority adolescents, having already begun in up to 95% of African-Americans and Puerto-Rican-Americans, 81% of Mexican-Americans, and 72% of Cuban-Americans.¹ Though less prevalent today than a generation ago,² expenditures for periodontal services, alone, totaled \$14.3 billion, with \$9.8 billion expended on “preventive” procedures.³ *Three in four* American adults have experienced various degrees of gum disease at some time, and among those, aged 65 to 74, 26% have lost *all* their natural teeth.

Even in healthy mouths, many types of bacteria are present. With poor hygiene, certain types of organisms multiply excessively to form a soft film of colonies (plaque) surrounding teeth. If this plaque is not removed, harder, coral-like, bacterial colonies (tartar, calculus) form at and below the gum tissues, enabling disease migration into the blood stream.

Early-stage periodontal disease is called “gingivitis,” an often reversible inflammatory process that is *confined to the gum tissues*. Periodontitis is a more advanced inflammation, that begins a *process of destruction of the bone*, which supports the teeth. When successfully treated, these disease processes can be arrested, and their early detection often prevents extensive, irreversible damage. Unfortunately, periodontal disease may often go undetected by patients for many years, and the

longer it goes untreated, the greater the danger for complications and permanent structural damage.

Just below the gum line, each tooth is surrounded by a “periodontal ligament attachment” at the base of a “periodontal pocket.” This periodontal pocket is a crevice-space formed by a circular tissue “flap” between the tooth and its surrounding gum area. This crevice-like space is also known as the “gingival sulcus” and has a depth from 1mm to 3mm when healthy (see: Tooth Anatomy diagrams, page 25.)

Seven in ten Americans have detectable tartar below the visible gum-line. Forty percent of the population has periodontal ligament loss of at least 3mm. Of note, deep gum “pocketing” of greater than 4mm is considered a significant problem. Nine in ten elderly persons have periodontitis, with more than one third experiencing moderate to severe periodontal disease or at least one site with periodontal “ligament” loss and “sulcus pocket-depth” of 6 mm or greater: The larger and deeper the “crevice/flap,” the easier microorganisms may hide and remain undisturbed by the toothbrush or by dental floss.

Any gum or tooth infection is more serious when it includes tooth, supporting gum tissue, and supporting bone. Whenever supporting bone is involved, the infection is said to include an “osseous component.” If this gingival sulcus is not kept small or is not soon reduced when enlarged, progressive periodontal-pocketing infection can cause a loss of supporting bone that can later be followed by tooth mobility and tooth loss.

In spite of its intricacies and the covert quality of gum disease, an understanding of the disease and its specific early warning signs will permit a knowledgeable patient to monitor his own condition as well as bring about more suitable and timely professional attention. The early warning signs for periodontal disease are easily recognizable. Patients should be alerted to the more obvious signals of gum infection or inflammation:

- Gums that become reddened, puffy and swollen
- Large amounts of “tartar” (“calculus”) around teeth and gums.
- Continued bad breath.
- Sore, bleeding gums.

Healthy gums do not tend to bleed when one is properly brushing and flossing. If you notice bleeding gums while brushing or even flossing, be aware that breakdown of tooth-supporting gum and bone will follow.

Another cause for close attention is persistent, unexplained bad breath, which may also be a result of gum-tissue disease and food debris trapped around teeth and gums, and inside the gum sulcus itself. Other diseases of the body may also promote bad breath, gum injury and bleeding,^{*} but these are most often a direct result of the body's own immunologic response, within the periodontal structures, to bacterial tissue-infection. Several factors^{**} have been directly linked to periodontal disease, and most dental researchers tend to agree that "periodontitis" (a more advanced inflammation than gingivitis) is primarily the result of and a response to "calcified bacterial plaque" or "calculus formation."

Acquiring a dental awareness, with attention to the more serious warning signs, can better allow you to customize or maybe decrease the frequency of your professional hygiene visits. Of note, becoming more aware, visually and also with your tongue, of the sensation of calculus-free teeth, right after a thorough professional cleaning, will allow you to better monitor its effectiveness. Tracking calculus accumulation, particularly on the inside-back surfaces of your lower-front six teeth, where calculus most rapidly forms, can also help evaluate your home-care and need for professional hygiene treatments. It will allow you to establish a baseline sense of a "clean-mouth." With personal oral-hygiene diligence you could thus even reduce your overall short- and long-term dental spending.

1. "Healthy People 2010". (Hispanic Health & Nutrition Examination Survey [HHANES/1982-1984]). pp14-15, 01/2001. See: National Center for Health Statistics (NCHS). Public use data: cdc.gov/nchs/. Also see: healthypeople.gov.

2. Albander J M, Brunelle J A, Kingman A. Destructive periodontal disease in adults 30 years of age and older in the United States 1988-1994. *J Periodontol*;70:113-29, 1999.

3. Brown L J, Johns B A, Wall T P. The economics of periodontal diseases. *Periodontol* 2000; 29:pp223-34, 2002.

PERIODONTAL TREATMENTS:

Bad breath and sore or bleeding gums when brushing or flossing are most often likely signs of "periodontitis." While readily preventable, bacterial plaque, once allowed to absorb calcium and fully solidify to

*Leukemia is one example as reported in the *Journal of Periodontology* vol. 73 #6; 06/2002. Hemophilia is another more obvious example.

**Genetic risk factors have been implicated in periodontal disease and the presence of an 'Interleukin-1' gene (IL-1) has been more prevalent in patients with the more severe forms of periodontitis. Currently, a chemical analysis of oral fluids is possible in order to help predict such a patient's periodontal disease "risk factors."

form extensive calculus deposits, will usually need “professional” removal by a dentist or a hygienist. More than half of dentists employ dental hygienists who, along with dentists, should conscientiously pay close attention to extensive *patient education*.

Periodontal disease has previously been viewed as chronic or long-term in nature. In recent years, periodontal disease has often been characterized more as being “episodic” (short outbreaks). Rather than having a constant, linear progression, many people have periods of relative health punctuated by some intervals of increased periodontal-breakdown.

Extensive studies in various periodontal publications have identified specific disease risk factors. Likelihood of developing gum disease is increased by stress, which has also been linked to reduced oral hygiene, bruxism (tooth grinding), headaches, salivary changes, and a weakening of the body’s general ability to fight infection. The passing of a loved one, divorce, job loss, or severe illness, all have forms of stress-mediated disease potential. Successful treatment results are also affected by one’s dental anatomy and related “periodontal biotype” (PB).¹

Dental X-ray diagnosis and gum-pocket depth measurements are valuable in confirming the development and progress of various stages of periodontal health or structural disease. Periodontal evaluations can be tedious and time consuming; many patients may not have received a complete periodontal assessment in the past. Others may have been provided only minimal “cleanings” during their normal checkups.

Unaware of the benefits or rationale for more rigorous treatment, many patients have been skeptical about justifying the increased cost and effort. Ignorance or fear of pain has also allowed less than adequate dental “hygiene” treatments to go unnoticed by patients. This is unfortunate because a very considerable improvement in periodontal health can be achieved with these non-surgical procedures and with the proper maintenance of hygiene, nutrition, and consistent home-care.

In successful periodontal therapy, any holistic, antibiotic, chemical or invasive surgical options can only be evaluated when preceded by modest or aggressive basic dental “cleaning” techniques of “mechanical debridement,” known as “root planing” and “scaling” and/or “curettage.” These treatments involve the thorough use of dental instruments to remove “calculus” or hardened plaque from the teeth and from around and below the gum line.