

PerioDontaLetter



I. Stephen Brown, D.D.S., *Periodontics & Implant Dentistry*

Winter

From Our Office to Yours...

Two new large studies provide strong evidence that periodontal disease increases the risk of heart attack and stroke.

Researchers in Sweden found that the type of periodontal disease may predict the degree of risk for heart attack, stroke and heart failure.

In Taiwan, researchers found that dental patients who had their teeth cleaned and scaled professionally had reduced risks of heart attack and stroke.

These studies were presented recently to the American Heart Association scientific sessions in Orlando, Florida.

*This current issue of **The PerioDontaLetter** discusses the results of these studies and their impact on the way dentistry is practiced.*

As always, we welcome your comments and suggestions.

Evidence Grows Stronger: Periodontal Disease Increases the Risk of Heart Disease and Stroke

The body of evidence that periodontal disease may increase the risk of heart attack and stroke as well as a host of other systemic diseases has been growing for the past 15 years.

Now two new large studies strengthen that evidence and have underscored the benefits of having your teeth cleaned to reduce those risks.

In a Swedish study, nearly 8,000 patients with periodontal disease in Sweden were evaluated. Those with a higher number of deep pockets

had a 53% increased risk of heart attack. Those with the highest incidence of bleeding gums had more than twice the risk of stroke.

In the second study, more than 100,000 patients in Taiwan were followed for seven years. Those who had their teeth professionally cleaned and scaled at least once a year had a 24% lower risk of heart attack and a 13% reduced risk of stroke compared to those who had their teeth cleaned and scaled only once or not at all in two years.



*Figure 1. We are
the gatekeepers --
maybe saving lives
by saving smiles.*

The Swedish Study

The Swedish study also found that specific types of gum disease predict an increased risk for heart attack, congestive heart failure and stroke in different ways and to different degrees.

After adjusting for age, gender, smoking and education level, the results showed that participants with fewer than 21 teeth had a 69% higher risk of heart attack compared to those who had the most teeth, indicating the loss of teeth is correlated to periodontal disease and consequent systemic disease.

Participants with the most infection (the highest number of deep periodontal pockets adjacent to the tooth roots) had a 53% higher risk of heart attack compared to those with the least infection (the fewest number of pockets). Participants with the fewest number of teeth had 2.5 times the risk of congestive heart failure compared to those with the most teeth.

Those with the highest incidence of bleeding gums had 2.1 times the risk of stroke compared to participants with the lowest incidence.

Researchers Holmland and Lars concluded: "Markers of periodontal disease predict future common cardiovascular events in different ways, suggesting that they are risk indicators for different cardiovascular disorders."

The Taiwanese Study

The Taiwan study examined data on over 51,000 adults who had received at least one full or partial tooth scaling from a dentist or dental hygienist over a seven year period and a similar number of matched controls who had never had their teeth professionally cleaned.

Scientists considered tooth scaling frequent if it occurred at least two or more times in two years, and occasional if it occurred once in two or more years.

None of the participants had a history of stroke or heart attack. The data came from Taiwan National Health insurance records, and the researchers ran statistical tests to compare the cardiovascular event rates between the two groups for an average follow-up of seven years.

Researchers found that participants who had their teeth professionally scaled frequently (at least twice or more in two years) had a 24% lower risk of heart attack and a 13% lower risk of stroke compared to those who did not.

Researcher Chen, a cardiology fellow at Taipei Veterans General Hospital, concluded: "Protection from heart disease and stroke was more pronounced in participants who got tooth scaling at least once a year." She suggested that professional tooth scaling removes inflammation-causing bacteria thus causing a reduction in the pathogens which in turn can lead to heart disease and stroke.

Gum Disease is a Proven Risk Factor for Heart Disease

As you have probably heard, the American Heart Association (AHA) recently published an article in their journal, *Circulation*, that reviewed 537 studies addressing the relationship between periodontal disease and cardiovascular disease.



Figures 2 and 3. In many cases, gingival inflammation is obvious. Periodontal therapy not only improves gingival health, but improves the patient's systemic health. In this case, it was scaling and root planing which allowed the gingival tissues to begin to heal.

Concluding remarks from this analysis were as follows: "Observational studies to date support an association between periodontal disease and asymptomatic vascular disease independent of known cofounders. They do not, however, support a causative relationship."

The first AHA news release about this article issued in April of this year appeared to de-emphasize the relationship between gum disease and heart disease and resulted in media coverage declaring there is no link between gum disease and heart disease.

To clarify its views on the relationship between periodontal disease and atherosclerotic vascular disease in the wake of this misleading coverage, the AHA issued a second statement in May that studies have found there is "an association between the two diseases that cannot be explained by the common risk factors."

The August edition of the *Journal of the American Dental Association* featured a guest editorial by two of the authors of the AHA article, Dr. Panos Papapanou, a periodontist, and Dr. Maurizio Trevisan, a cardiolo-

gist, exploring what is known about the association between the two diseases. They state as a matter of fact that "periodontitis is associated with increased risk for atherosclerosis; the association is independent and cannot be attributed to shared risk factors."

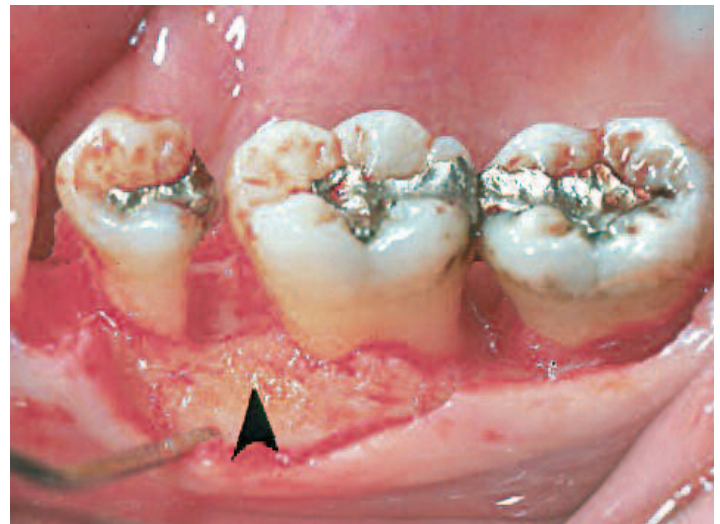
In summary, we know that there is a strong association between periodontal disease and cardiovascular disease and stroke. While we have no scientific evidence that it directly causes these diseases, the preponderance of evidence shows that periodontal disease is strongly associated with these diseases and many others, likely because of the common inflammatory pathway.

Evidence for the Connection with Other Systemic Diseases

In addition to these studies, there is scientific evidence for the connection between periodontal disease and 21 different systemic diseases. These include:

1. Heart disease
2. Infectious endocarditis
3. Carotid artery stenosis
4. Stroke
5. Diabetes
6. Rheumatoid arthritis
7. Mouth and throat cancer
8. Pancreatic cancer
9. Colon cancer
10. Kidney infection
11. Lung infection / COPD
12. Low fertility in men
13. Erectile dysfunction
14. Brain abscesses
15. Cognitive dysfunction / Alzheimer's
16. Infectious mononucleosis
17. Pre-term babies
18. Yeast infections
19. Multiple sclerosis
20. Osteoporosis
21. Congestive heart failure in dogs

Castillo et al demonstrated the presence of DNA from periodontal pathogens in blood samples of patients with severe periodontitis before and after scaling -- 19 percent before scaling and 55 percent after scaling. Geerts et al found endotoxin levels in



Figures 4 and 5. It is important to remember that after scaling and root planing the gingival tissues may appear healthy. However, flap reflection in an area with pockets greater than 5mm in depth usually reveal significant reverse osseous architecture with infrabony defects.

“Periodontitis is associated with increased risk for atherosclerosis; the association is independent and cannot be attributed to shared risk factors.”

*Panos Papanou, D.D.S., Maurizio Trevisan, M.D.
Co-authors, American Heart Association Scientific Statement
April 18, 2012; Updated May 15, 2012*

the blood stream increased fourfold after mastication in patients with periodontal disease and detected periodontal bacteria in atheromatous plaques which are associated with the thickening of vessel walls.

Buhlin et al found periodontitis was associated with angiographically-verified coronary artery narrowing in 506 patients.

Each year, 335,000 people suffer an acute plaque rupture from the center of plaque. Figuero et al found 100% of 42 atheromatous plaques from carotid arteries tested positive for one or more periodontal pathogens and correlated with the periodontal status of the patient. These ruptures result in

intracoronary thrombosis which are thought to account for most acute coronary events including heart attack and sudden cardiac death. Only 25,000 survive.

Six studies found brain abscess was associated with the periodontal pathogen *Aggregatibacter actinomycetemcomitans*. Noble found periodontitis was associated with a 200% increase in Alzheimer's disease.

Changing How Dentistry is Practiced

With physicians now acknowledging the link between periodontal dis-

ease and systemic diseases, dentists are changing the way they practice.

Realizing that saving teeth saves lives, they are more and more emphasizing to their patients the connection between periodontal disease and systemic diseases.

And they are striving to collaborate more closely with their patients, physicians and cardiologists to jointly prevent and treat these diseases which take so many lives each year.

Some health insurers are taking a more active role in helping members prone to complications from dental disease keep current on their office visits in the hope of preventing the need for costly medical care down the road.

Aetna's oral-health integration program is designed to identify members with chronic conditions such as diabetes who haven't had a recent dental visit. Aetna's nurses and health coaches telephoned more than 250,000 members: more than half of them resumed regular dental visits.

Many of Aetna's medical plans also cover certain periodontal treatments.

Many of Cigna's medical plans now cover treatment of gum disease for members who are pregnant, have cardiovascular disease, stroke, kidney disease, head and neck radiation, organ transplants and diabetes.

When factoring in potential costs related to medical treatment for illness resulting from poor oral hygiene, Miles Hall, chief clinical dental officer for Cigna in Dallas says: "If you treat and maintain gum disease, you can observe medical-cost savings on an annual basis."

And lives may be saved.



Figure 6. It is easy to be deceived by the clinical appearance of gingival tissues which may appear healthy on the surface, but which may have deep pockets which always have subgingival inflammation.

