

# Oral Disease and Systemic Implications

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Barasch A. Oral Disease and Systemic Implications. *Dentist Case Rep* 2018;2(1):13.

## COMMENTARY

As the humorous wisdom in dental academia goes, to every tooth there is a patient attached. That is, oral disease (and treatment) may have significant consequences beyond the confines of teeth and gums. While the long-standing theory of disease compartmentalization has been abandoned a while ago, the evidence of association between oral disease and oral pathogens with cardiovascular disease (CVD) and cancer has become robust and leaves little doubt that a long, healthy life must include oral care.

Three recent publications have forcefully driven home the fact that periodontal disease (PD) and/or its putative factors have a strong correlation with systemic disease. One article adds to the extant evidence of the association of PD with CVD, in particular, stroke (1), while the other two articles show a clear epidemiologic correlation between PD and various non-head and neck malignant diseases.

In the first study, the periodontal status of dentate patients enrolled in the Atherosclerosis Risk in Communities (ARIC) study was evaluated (N=6736). Patients were divided into seven PD levels based on typical periodontal assessment measures, and were then followed for 15 years. The more severe the PD burden, the higher was the risk of stroke. Moreover, patients who had regular dental care showed a negative association with stroke. This finding is very important as it shows that dental treatment may be preventive for CVD. Prospective studies will have to confirm this hypothesis (1).

In a separate ancillary study to ARIC, the same cohort of patients was examined prospectively for cancer risk factors (2). After an average 7.9 year follow-up, the hazard ratios for a diagnosis of malignancy was significantly higher (24%;HR-1.24) among patients with severe periodontitis as compared to those who had mild disease or a healthy mouth. The strongest associations were found for lung and colorectal cancer and were observed mostly in men. A correlation of cancer mortality with severe PD was also identified. In a similar study (3), Finnish researchers analyzed data on more than 68

thousand adults followed for an average of 10.1 years. The risk of death from cancer was significantly higher among those with a diagnosis of PD while the risk of death from pancreatic cancer doubled in that population. This study was limited to data analyses and no clinical examinations were performed.

While certain limitations associated with epidemiologic studies must be acknowledged, these three studies were performed with rigorous methodology and benefited from large, heterogeneous populations. Their conclusions add to the growing body of literature describing associations between oral/dental disease (particularly PD) and systemic morbidity and mortality. Importantly, the first study has also shown an inverse relationship between stroke and regular dental care. While postulated mechanisms suggest that systemic effects of oral disease may be due to circulating inflammatory cytokines and/or periodontal pathogens, the exact mechanism by which PD affects CVD and malignancy remains obscure. Further research must concentrate on defining these mechanisms and showing prospectively that interventions in the oral cavity can affect risk factors and/or outcomes in systemic disease. Nevertheless, these epidemiologic studies leave little doubt that oral disease must be regarded as a risk factor for systemic conditions, and a healthy mouth may be associated with overall health and longevity.

## REFERENCES

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Received: February 2, 2018, Accepted: February 10, 2018, Published: February 21, 2018



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