



## Detection of Periodontal Bacteria in Carotid Arterial Plaque

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**Title:** Detection of Periodontal Bacteria in Atheromatous Plaques by Nested Polymerase Chain Reaction.

**Authors:** Figuero E, Sanchez-Beltran M, et al.

**Overview:** The aim of this study was to detect periodontitis-associated bacteria from carotid artery atheromatous plaques recovered from patients receiving an endarterectomy (surgical removal of atheromatous plaque), providing evidence of a causal association between periodontal disease and cardiovascular diseases.

### Summary:

- 42 atheromatous plaques analyzed
- Carotid artery plaque samples scraped and homogenized
- Bacterial DNA extracted from samples

### Results and conclusions:

- All samples positive for at least one target bacteria
- Most common bacterial species was Pg, followed by Aa, Tf, Ec and Fn.
- Presence of DNA from periodontitis-associated bacteria in carotid artery atheromatous plaques retrieved by endarterectomy was confirmed in this study.

### Key take-aways:

All of the bacterial species identified in the carotid arterial plaques are perio pathogens, including highly virulent species such as Pg, Aa and Tf. This study did not evaluate whether the perio pathogens were causative or coincidental; in other words if they are involved in the development of these arterial plaques or if they were carried there by the circulation, in a macrophage or by some other mechanism. This study emphasizes the critical importance of periodontal disease diagnosis, effective treatment and biofilm control practices to minimize the population of perio pathogens.

### Implementation Strategies:

As the body of evidence investigating the relationship between perio pathogens and heart diseases comes full circle, we can now say with confidence: “*We now know* that periodontal pathogens are indeed found in the arteries of patients with cardiovascular diseases.” In addition, there is research that indicates the involvement of periodontal pathogens in cardiovascular disease independent of active periodontal infection.

**Richard Nagelberg, DDS & Kim Miller, RDH, BSDH, RDHMP**  
531 West Germantown Pike Suite 104  
Plymouth Meeting, PA 19462



Based on this evidence, wouldn't it make sense to test the saliva of every patient with a personal or family history of cardiovascular disease, with or without signs of periodontal disease? I am that patient. I am also a patient you would never have tested for periodontal pathogens since I have no active gum disease and no pockets greater than 4mm. However, I do have an impressive family history of CVD, an inflammation driven condition. Doesn't it make sense to reduce all levels of inflammation and / or pathogens anywhere in the body to reduce overall risk? Yes, of course it does, so here's my treatment plan. Full mouth disinfection & comprehensive periodontal charting which translates to full mouth ultrasonic instrumentation to remove biofilm from every root surface and in every pocket, sub-gingival irrigation with chlorhexidine, laser bacterial reduction (LBR, if you have a laser), gargle and rinse at the beginning and end of the procedure for 1 min with chlorhexidine then start on the recommended antibiotics from the DNA-PCR lab report. Once the antibiotic therapy is completed, take EvoraPro for 30 days to reestablish good oral pathogens. Return to the office for an 8-week periodontal reevaluation (full mouth disinfection & comprehensive periodontal charting) and another DNA-PCR to be sure pathogen levels have been eliminated or reduced to manageable levels. The last step is to be sure an appropriate short interval is established to keep oral health at an optimum for the CVD at risk patient.

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