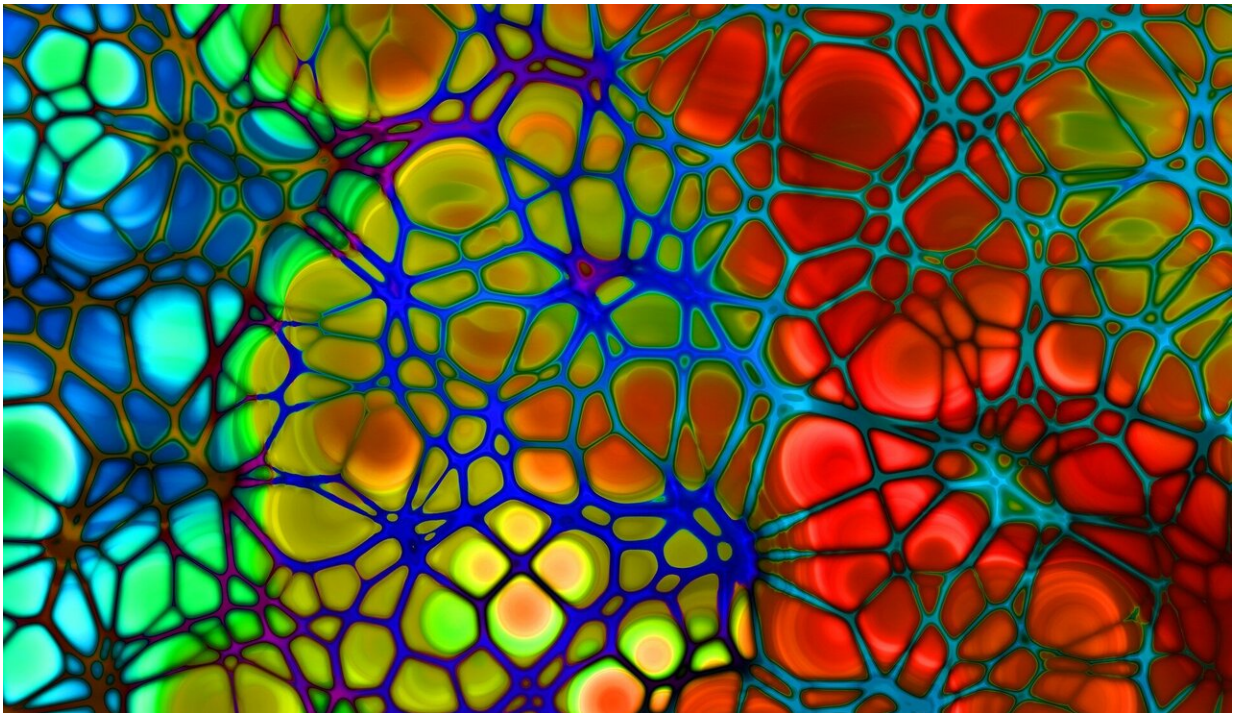


Oral radiography can reveal chronic coronary artery disease

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The calcification of the carotid artery is a sign of advanced arteriosclerosis, which may be associated with chronic coronary artery disease (CAD) and can lead to death. Such calcification can be seen in regular oral panoramic radiography.

Prior research has already shown that [carotid](#) artery calcification is detectable by panoramic radiography. Now, for the first time, researchers included coronary angiography in a study where [patients](#) were followed-up for 10 years. Furthermore, the patients' oral microbiota was examined and the quantity of antibodies to bacteria associated with oral infections was measured.

A total of 508 middle-aged patients who had been referred to coronary angiography due to cardiac symptoms in 2008-2018 were enrolled in the study. The study was carried out collaboratively by the University of Helsinki, the University of Oulu, the University of Eastern Finland and Karolinska Institutet. The findings have been published in the *International Endodontic Journal*.

"Carotid artery calcification was statistically directly linked with several stenosed [arteries](#) found in [coronary angiography](#), as well as with chronic coronary artery disease," says Docent Pirkko Pussinen from the University of Helsinki.

Calcification detected in one-fifth of study subjects

In the study, carotid artery calcification was found in 102 patients (20.7%), with 81 (16.4%) of the cases determined as moderate and 21 (4.3%) as severe. Calcification was considered severe when the deposit was more than 10 millimeters in diameter. In statistical analyses, the patients' age, gender, smoking habits, diabetes, disturbances of lipid metabolism (or dyslipidemia) and blood pressure were taken into consideration.

"The findings indicate that calcification was directly associated with not only chronic CAD, but also with apical periodontitis, root canal therapies, alveolar bone loss, the severity of periodontal inflammation, a high level of gram-negative bacteria in dental plaque and antibodies in

the saliva that bind with these bacteria. At the same time, the link between calcification and [acute myocardial infarction](#) was not statistically significant," Pussinen describes the results.

During the decade-long follow-up period, a total of 105 patients died (20.7%), with 53 deaths (10.4%) caused by cardiovascular diseases. Carotid artery calcification was diagnosed in 17.5% of the patients who were alive at the end of the follow-up period. Among the deceased patients, the prevalence of calcification was high: in patients who died of cardiovascular diseases, the percentage was 35.8%, while in patients who died of other causes it was 29.2%.

In the cases with severe carotid artery calcification detected in dental radiography, the risk of death caused by cardiovascular diseases was more than threefold.

"Oral infections are fairly common, but they are often latent and found only through radiography. Radiographs of the whole jaw conducted in conjunction with dental care can reveal a cardiovascular [disease](#) risk as an incidental finding. If carotid artery [calcification](#) is seen in the radiograph, the patient must be referred to further examinations and an assessment of the need for treatment," Docent Pussinen sums up.

More information: S. Paju et al, Carotid artery calcification in panoramic radiographs associates with oral infections and mortality, *International Endodontic Journal* (2020). [DOI: 10.1111/iej.13394](https://doi.org/10.1111/iej.13394)

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