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Prevalence of *Porphyromonas Gingivalis* in Cardiovascular Samples in Periodontitis

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Objectives Our aim is to determine the prevalence of periopathogenic *Porphyromonas gingivalis* (*Pg*) in surgical samples of adults with various cardiovascular (CV) diseases needing surgical intervention compared to healthy vessel samples.

Methods We performed systematic search using the PRISMA guidelines. After full text selection and data extraction the proportion of patients with prevalence of *Pg* in CV surgical samples was calculated using random-effects meta-analyses. Multiple subgroup analyses were performed.

Results Twenty-five articles were included and subgrouped according to the study population presenting healthy periodontium, periodontitis or edentulousness. The articles specifying the presence of periodontitis in patients were further subgrouped to the surgery performed at different CV sites: heart, coronary artery, aorta, and carotid artery. The control group consisted of samples taken from healthy vessels. Our results show that *Pg* was found in CV lesions of patients with healthy periodontium in 11% (0.01-0.53) with 0% heterogeneity (I^2) and in periodontitis in 23% (0.13-0.36) with I^2 80%, which could be explained by the diversity of the sample size, the location of the CV lesion and the different sensitivity of the PCR techniques used in the studies. In the edentulous subgroups the number of articles was low and did not allow statistical analysis. In the coronary artery subgroup of patients with periodontitis the prevalence of *Pg* was 40% (0.23-0.60), the highest among the vessels. Followed by the aorta and the carotid artery with 18% (0.01-0.81) and 14% (0.02-0.56), respectively. The test for subgroup differences suggests a significant subgroup effect ($p < 0.001$). Heart sample number was not enough for statistics.

Conclusions Periopathogenic *Pg* can be found in CV samples, suggesting a role in the pathogenesis of CV diseases. Coronary arteries are more susceptible to *Pg* compared to other investigated arteries. These data call attention to the significance of oral hygiene and health for the prevention of life-threatening consequences.