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Does the removal of cementum facilitate bacterial penetration into dentinal tubules *in vitro*?

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Introduction: The importance of an intact layer of cementum on root surface in preventing bacterial penetration into radicular dentine has not been sufficiently investigated.

Purpose: The aim of this *in-vitro* study was to determine the effect of: 1) Absence of cementum from root surface; and 2) Length of infection period (2 or 4 weeks) on the maximum depth of bacterial penetration and percentage of sectors lined with bacteria.

Methods: Sound, single-rooted extracted teeth with closed apices were randomly assigned to either a control group (cementum present, CP) or an experimental group (cementum removed, CR). Each group was further divided randomly into two sub-groups: 2-week infection (CP2 and CR2) and 4-week infection (CP4 and CR4). Teeth were then artificially infected with *E. faecalis* and prepared for histology.

Results: A total of 107 teeth were available for histological examination, 25 teeth in CP2, 31 teeth in CP4, 27 teeth in CR2, and 24 teeth in CR4. Pairwise comparisons revealed statistically significant differences in the maximum depth of bacterial penetration for the following combinations; CP2-CR2, CP2-CR4, CP4-CR2 and CP4-CR4 (p-value <0.001). Pairwise comparisons also revealed statistically significant difference in the percentage lined-sectors for CP2-CR2, CP2-CP4 and CP2 - CR4 (p-value <0.001).

Conclusions: The results support the hypothesis that absence of cementum facilitates bacterial penetration into dentinal tubules. Results also suggest that the process of radicular dentine infection is time dependent and highlight the importance of early treatment of infected teeth, especially in situations where cementum discontinuation is suspected.

Biography

Asma Alyahya received her BDM certificate from Kuwait University, Faculty of Dentistry. She has done her Master's and Pediatric Dentistry Certification from Tufts University School of Dental Medicine. She is Board Certified by the American Board of Pediatric Dentistry and is currently an Assistant Professor in the Developmental and Preventive Sciences department at Faculty of Dentistry, Kuwait University.

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