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Fluid Emerging from Etched and Unetched Dentin Surface under Carious Lesions in Primary Mandibular Second Molars

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Abstract

Background: Only a limited number of reports existed about fluid flow through dentin in primary teeth, none of them were studied in carious dentin *in vivo.*

Objectives: To study the dentinal fluid flow on both etched and unetched dentin surfaces beneath carious lesions of vital primary mandibular and second molars by using impression and replica technique.

Materials and Methods: Thirty primary lower second molars were included in this study. They were divided into 3 groups according to the depth of the carious lesions. The teeth were anesthetized with 3% plain mepivacaine. Caries was removed with standard procedure. A silicone impression material was then used to record the floor of the cavities before and after acid etching. Replicas were made by casting the impressions with epoxy resin and examined under scanning electron microscope.

Results: Fluid droplets, round and ovoid in shape, were discovered on the replica of un-etched dentin surfaces while porous surfaces were shown on etched dentin surfaces. One-way ANOVA statistical analysis showed significant differences in the diameters of dentinal tubules, the numbers of dentinal tubules/mm^2 among the 3 different cavity depths in the etched groups, the diameter of fluid droplets and the numbers of fluid droplets among the 3 cavity depths in the un-etched groups.

Conclusions: Fluid droplets were found on the replicas of un-etched dentin surfaces while the openings of dentinal tubules were found on the replicas of etched dentin surfaces. Both fluid droplets and dentinal tubules increased in diameters when cavity depth increased.

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Key words: *carious dentin; dentin depth; dentinal fluid; fluid droplet; primary teeth; replica technique*

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