



High Fluoride Toothpaste

Case Study

Case Study: Caries Prevention using High Fluoride Toothpaste in Adolescent Orthodontic Patients in Scandinavia

The effect of high fluoride toothpastes on caries prevention was evaluated in an *in situ* study of adolescents undergoing orthodontic treatment by comparing the effects on enamel demineralization and fluoride (F) retention of two different brushing–rinsing regimens . The investigators focused on two factors that play a role in the caries protective effects of toothbrushing; 1)the concentration of fluoride in the toothpaste and 2) rinsing after brushing. Twenty four orthodontic healthy patients were recruited and randomly assigned to one of two groups: a 5000 ppm fluoridated toothpaste or a 1450 ppm fluoridated toothpaste. Prior to banding, the teeth were cleaned using a rotary rubber cup and a non-fluoride containing pumice. Teeth, indicated for extraction, were then banded and extracted after 8 or 9 weeks. The test group was instructed to brush with the 5000 ppm toothpaste as a slurry with 30 seconds of rinsing and no post-brushing rinsing. The control group used a typical fluoride toothpaste containing 1450 PPM fluoride and were instructed to rinse three times after brushing for 10 seconds each. Saliva was collected during weeks 8 to 9 prior to brushing. Subjects were instructed to the use the same toothbrushing regimen as during the study period of 8-9 weeks. Whole saliva samples were then taken, as well as from under the orthodontic band, after brushing at 1, 3, 5, 10, 20 and 30 minutes. The fluoride content of saliva was analyzed using standard techniques using an ion specific electrode. The fluoride content in saliva under the bands of the test group were higher than those in the control group ($P < 0.001$).The banded bicuspid were then extracted for orthodontic reasons. Lesions in



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the control group demonstrated a larger average lesion area and increased average loss in fluorescence ($P < 0.05$). These findings indicate that the combination of using a 5000 ppm F toothpaste and no post-brushing water rinsing may have a greater likelihood of preventing caries than a usual toothbrushing regimen.

References:

Mulla AA, Karlsson L, Kharsa S, Kjellberg H, Birkhed K. Combination of high-fluoride toothpaste and no post-brushing water rinsing on enamel demineralization using an in-situ caries model with orthodontic bands. *Acta Odontologica Scandinavica*, 2010; 68: 323–328.