

Effects of laser and acid etching and air abrasion on mineral content of dentin

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Abstract The aim of this study was to evaluate the mineral content of dentin prepared using an Er,Cr:YSGG laser at four different power settings, acid etching, and air abrasion. The study teeth comprised 35 molars which were randomly divided into seven equal groups. The occlusal third of the crowns were cut with a slow-speed diamond saw. The groups were as follows: group A, control group; group B, dentin etched with 35% buffered phosphoric acid for 30 s; group C, dentin abraded at 60 psi with 50- μ m aluminium oxide for 1 s; groups D–G, dentin irradiated with the Er,Cr:YSGG laser at 1.50 W (group D), 2.25 W (group E), 3.00 W (group F), and 3.50 W (group G). The levels of Mg, P, Ca, K and Na in each dentin slab were measured by inductively coupled plasma-atomic emission spectrometry (ICP-AES). Data were analysed by one way analysis of variance and Tukey HSD tests. There were no significant differences between the groups in the levels of Ca, P and Na, and the Ca/P ratio ($p>0.05$); however, there were significant differences in the levels of K ($p<0.001$) and Mg ($p=0.13$). In addition, the levels of Mg in the air abrasion group were higher than in the other groups ($p<0.01$). Etching with the Er,Cr:YSGG laser system, air abrasion and

acid etching did not affect the levels of Ca, P and Na, or the Ca/P ratio, in the dentin surface.

Keywords Er,Cr:YSGG laser · Air abrasion · ICP-AES · Mineral content

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