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EVALUATION OF ENAMEL DEMINERALIZATION AROUND Er,Cr:YSGG LASER CAVITIES RESTORED WITH DIFFERENT MATERIALS AFTER AN ACID CHALLENGE

Navarro, R.S.; Bonifácio, C.C.; Mendes, F.M.; Zezell, D.M.; Oliveira, E.; Santos, G.M.S.; Guedes-Pinto, A.C.; Imparato, J.C.P.

Faculdade de Odontologia da Universidade de São Paulo (FOUSP)

The aim of this study was to evaluate the enamel calcium loss around cavities prepared by Er,Cr:YSGG laser and restored with different materials after an acid challenge. One hundred and twenty enamel samples obtained from third molars (4 x 4 mm) were randomly divided in 12 groups (n=10) using different techniques: G1- high-speed drill (HD); G2- Er,Cr:YSGG laser (3W, 20Hz, 53.05 J/cm2)(air 65% - water 55%); G3- Er,Cr:YSGG laser (4 W, 20 Hz, 70.74 J/cm2); G4- Er,Cr:YSGG laser (5 W, 20 Hz, 88.43 J/cm2). Each experimental group was divided in subgroups, according to the restorative material: 1 - glass ionomer cement (GIC), 2 - resin modified GIC (RMGIC), 3 - adhesive system and composite resin (C). Samples were submitted to an acid challenge (4.8 pH) for 7 days. The demineralizing solutions were analyzed in relation to the calcium ion contend (ppm/mm2), in different times (1, 3 and 7 days), under atomic emission spectrometry. ANOVA and LSD tests were performed (α=5%). There were significant difference between Technique and Restorative Material on Total Time. The lower average values of calcium loss were observed on G2 GIC, G2 RMGIC, G1 RMGIC groups; the higher values were observed on G1 C, G4 GIC, G4 C. Neither the techniques nor the restorative materials used were able to prevent the enamel demineralization; composite showed higher demineralization than RMGIC and GIC; Er,Cr:YSGG lased cavities (53.05J/cm2) restored with GIC or RMGIC or conventional drill with RMGIC promoted effective reduction of enamel calcium loss after the acid challenge, showing a potential in preventing secondary caries