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OP34

Micro-shear bond strength of resin to Er-YAG laser treated dentin.

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Er:YAG laser is claimed to improve the bonding properties of dentin. It was tested if dentin adhesion is affected by Er:YAG laser. Ninety dentin disks were divided in groups (n=10): G1 - control; G2 - Er:YAG laser 150 mJ, 90o contact (38.8 J/cm2); G3 - Er:YAG laser 70 mJ, 90o contact (18.1 J/cm2); G4 - Er:YAG laser 150 mJ, 90o non-contact (1.44 J/cm2); G5 - Er:YAG laser 70 mJ, 90o non-contact (0.67 J/cm2); G6 - Er:YAG laser 150 mJ, 45o contact (37.5 J/cm2); G7 - Er:YAG laser 70 mJ, 45o contact (17.5 J/cm2); G8 - Er:YAG laser 150 mJ, 45o non-contact (1.55 J/cm2); G9 - Er:YAG laser 70 mJ, 45o non-contact (0.72 J/cm2). Then, bonding procedures were carried out and the micro-shear-bond test was performed. The adhesive surfaces were analyzed under Scanning Electron Microscopy. Two-way ANOVA revealed that the treatment of dentin surface with different parameters of the Er:YAG laser can influence micro-shear bond strength values. The Er:YAG laser constitutes an alternative tool for bonding procedures.

OP35

Changes in chemical composition and collagen structure of dentin tissue after erbium laser irradiation.

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The erbium laser light has a great affinity to the water molecule, which is present in great quantity in biological hard tissues. The objective of this work is to identify chemical changes by infrared spectroscopy of irradiated dentin by an Er:YAG - 2.94μm laser. The irradiation was performed with fluences between 0.365 J/cm2 and 1.94 J/cm2. For the infrared analysis a Fourier transform infrared spectrometer was used. After the irradiation were observed: loss of water, alteration of the structure and composition of the collagen and increase of the OH- radical. These alterations can be identified by a decrease of the water and OH- band between 3800-2800 cm-1, bands ascribed to collagen structure between 1400-1100 cm-1. The results show that the erbium laser changes the structure and composition of the organic matrix, OH-radical and the water composition in the irradiated dentin.

OP36

Conservative and minimal intervetion in caries lesions with Er:YAG and Er,Cr:YSGG lasers in Pediatric Dentistry.

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Pediatric and Restorative Dentistry/LELO- FOUSP.

The Er:YAG (2.94μm) and Er,Cr:YSGG (2.79μm) lasers wavelengths are highly absorbed in both water and hydroxyapatite, promoting effective ablation of caries and dental hard tissues in primary and permanent teeth. Previous studies showed efficient microbiological reduction of remains dentin, increase of acid resistance and potential reduction of secondary caries after removal of carious tissue and cavity preparation by laser. Restoratives clinical procedures were performed in children (3-9 years old) with active carious lesions from Pediatric Dentistry/LELO FOUSP, after inform consent and respected security rules, using Er:YAG (KaVo 3)(2Hz/150-250mJ/ 24ml/min air-water spray) and Er,Cr:YSGG (Millenium)-(20Hz/3-6W, air 40%, water 75%) lasers to minimal and selective caries tissues removal creating minimal cavities or conservative removal with decontamination and maintenance of dental substrate in extended lesions to atraumatic restorative treatment modified (ARTm) reducing possibility of accidental pulpal exposures. These procedures demonstrated noise reducing as vibration and pain, no contact, high acceptance and comfort by children during procedures. Conclude that Er:YAG and Er,Cr:YSGG lasers are useful and applicable to clinical procedure in Pediatric Dentistry, promoted ablation of carious tissues with minimal intervention, leading to conservative cavities and maintenance of hard tissues.

OP37

Imagin carious human dental tissue with three-dimensional optical coherence tomography.

Freitas, A.Z.; Zezell, D.M.; Ribeiro, A.C.; Gomes, A.S.L. ;Vieira, N.D..