Presentation Only

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Optical attenuation coefficients obtained through OCT correlates to microhardness in dental human enamel irradiated with Nd: YAG and submitted to demineralization in vitro (Conference Presentation)

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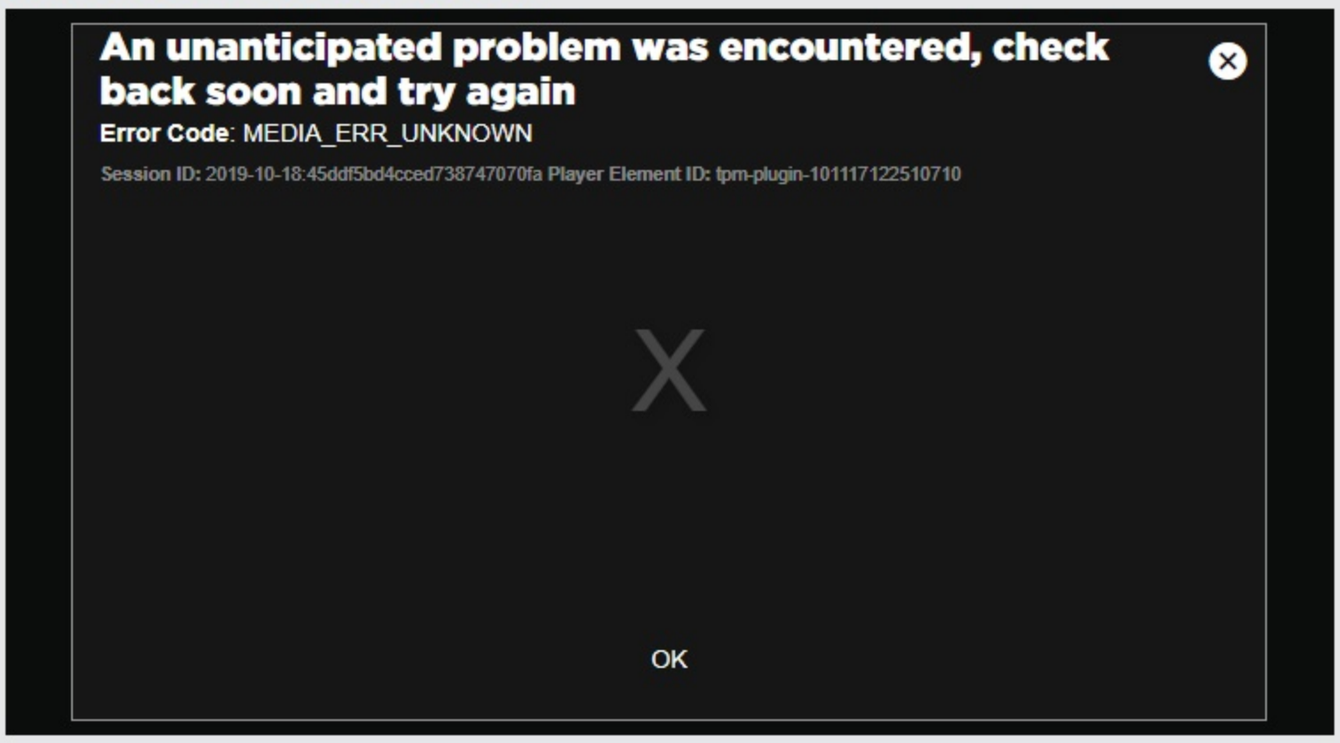
Abstract

This work aims was to correlate the changes in the optical attenuation coefficients obtained through the OCT technique with the values obtained in Knoop sectional microhardness tests over time in dental human enamel samples irradiated with the Nd: YAG laser and Acid Phosphate Fluoride (APF), aiming the prevention of caries lesions in vitro. After Ethical Committee approval, 160 enamel samples, obtained from 40 human tooth molars, were divided into 4 groups: Control group (where no treatment was performed); Fluoride group (APF - fluoride phosphate acidulated for 4 minutes); Fluoride-Laser group: APF followed by irradiation with Nd:YAG laser (DE = 84.9 J/cm2, contact mode, with the use of carbon paste as photoabsorver); Laser-fluoride group (irradiation with Nd:YAG laser followed by APF). The samples of all groups were subjected to pH cycling during 20 days. On days 5, 10, 15 and 20, 10 samples from each group were removed from the cycling for the Knoop sectional microhardness test. Two samples of each group, at each time, were randomly selected for the analysis with FTIR-ATR (Fourier transform infrared spectroscopy associated with attenuated total reflection technique). The analysis by ATR-FTIR showed changes in the chemical composition of the samples of the irradiated groups in relation to Control and Fluoride group. There was correlation between the values of sectional microhardness tests and the measured optical attenuation coefficient by OCT in irradiated dental enamel, showing that the association between fluoride application and Nd:YAG laser irradiation is an important tool for the prevention of tooth enamel demineralization.

Conference Presentation



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Citation

KEYWORDS

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Optical coherence tomography

Signal attenuation

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