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In vivo confocal microscopy analysis of enamel defects after orthodontic treatment: A preliminary study.

Grassia V, Gentile E, Di Stasio D, Jamilian A, Matarese G, D'Apuzzo F, Santoro R, Perillo L, Serpico R, Lucchese A. Ultrastruct Pathol. 2016 Nov-Dec;40(6):317-323. Epub 2016 Oct 13.

ABSTRACT

After orthodontic treatment with fixed appliances, bonded brackets and residual adhesive must be removed. This procedure should lead to restitutio ad integrum of the enamel or, at least, restore the enamel surface as closely as possible to its pre-treatment conditions. The purpose of this study is the in vivo assessment at a microscopic resolution of enamel surfaces after bracket debonding while avoiding the tooth extraction. Nine orthodontic patients who had brackets removed at the conclusion of orthodontic treatment were enrolled. In vivo reflectance confocal microscopy imaging of dental enamel surface after debonding was performed for each patient. Eighteen upper incisors were analyzed, 10 in which the enamel demineralization appeared after the treatment and 8 in which the demineralization was present before the treatment. RCM analyses showed some speckled or roundish dark areas within the enamel. Moreover enamel alterations were detected at different levels of depth. The present in vivo microscopic study allowed for highlighting structural features in dental enamel, after debonding, at a microscopic resolution in real-time and in a non-invasive way, without the need for extraction or processing of the samples. **KEYWORDS:** Debonding; enamel; in vivo imaging; reflectance confocal microscopy PMID:27736278 DOI:10.1080/01913123.2016.1237603