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Non-invasive analysis of bleaching effect of hydrogen peroxide on enamel by reflectance confocal microscopy (RCM): study of series of cases.

De Rosa A, Di Stasio D, Lauritano D, Santoro R, Marotta A, Itro A, Lucchese A. *Odontology*. 2019 Feb 27. doi: 10.1007/s10266-019-00416-8.

ABSTRACT

The aim of this study is to evaluate in vivo the effects of in-office tooth whitening hydrogen peroxide (HP) agent on enamel-microstructured surface by a reflectance confocal microscopy (RCM). Ten healthy volunteers assisted at the Dental School presenting teeth with vital pulp were selected. The 35% HP whiteness product was applied in two visits on discolored teeth, 1-week interval between, via 20-min applications. A commercially available hand-held RCM (Vivascope3000®, Lucid, Rochester, NY, USA) was used to image in vivo the dental surface of the selected tooth of each volunteer. Twenty upper central incisors' vestibular surfaces were imaged, before bleaching (T0), immediately after (T1) and 1 week later (T2). The peculiar structure of the enamel was seen at T0. After bleaching, white reflective circular bodies were found all over the teeth surfaces, which disappear 1 week later (T2). When the HP gel® was imaged, the same white circular areas were observed. Going deeper, the regular enamel architecture was preserved. Textural analysis of the images in T0 and T2 was performed: GLCM parameters were extracted. Mann-Whitney U test was performed to evaluate statistical differences between two groups of data ($p > 0.05$). Finally, 35 prisms were randomly selected from T0 and T2 image and diameters were measured; a paired t test was performed ($p = 0.381$). The RCM is a promisor tool for investigating the features of enamel in vivo, immediately after bleaching procedures, as well as longitudinally.

KEYWORDS: Bleaching; Confocal laser scanning microscopy; Hydrogen peroxide; Image analysis; In vivo imaging PMID: 30810841 DOI: 10.1007/s10266-019-00416-8 Share on Facebook Share on Twitter Share on Google+