COMMENTARY

INFLUENCE OF BLEACHING AGENTS ON SURFACE ROUGHNESS OF SOUND OR ERODED DENTAL ENAMEL SPECIMENS

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As the patient ages, the value of the tooth shade becomes lower, not only because of natural changes in the mineral composition of the tooth but also because of staining caused by food, beverages, and tobacco consumption. In addition, the current perception of esthetics tends to follow the "Hollywood style," which involves a harmonious smile with very bright teeth. In consequence, most patients seek alternatives for treatment that allow them to have a pleasant smile at a reasonable cost. Since 10% carbamide peroxide was introduced in the late 1980s for home bleaching,¹ tooth whitening has become a very popular treatment option within the population.

In order to guarantee the safety of this treatment option, the dental field has performed extensive research related to the effect of bleaching agents on the tooth structure, and existing direct and indirect restorations present in the patient's mouth. On this matter, several studies have evaluated the effect of the materials used for tooth whitening, hydrogen and carbamide peroxide of different concentrations, on the physical properties of a great variety of restorative materials, and opinions are diverse.^{2–6}

Other studies have evaluated the effect of bleaching materials on different cements commonly used for cementation of indirect restorations.⁷ The differences observed in surface roughness and depth of cement loss at the margin of cemented restorations, were concluded to be clinically insignificant. Bleaching agents have also been tested in relationship to their effect on the tooth tissues. According to the published literature, the material by itself does not alter the surface roughness of enamel⁸ even after multiple applications.⁹

The authors of the present in vitro study focused their attention on the effect on eroded dental enamel. They confirmed the results obtained by the previously mentioned studies, that the bleaching agents do not alter the surface morphology of the sound enamel; however, they did find that tooth whitening agents could increase the damage to enamel produced by erosive agents. From a clinical point of view, these results should cause us to be very cautious when a patient asks us about the possibility of tooth bleaching, even before suggesting it as a treatment option. We should consider that many of the food and beverages that we consume, such as juices, carbonated beverages, coffee, energy drinks and even bottled water, are acidic and can produce a significant erosive effect on dental enamel.^{10,11} It is very likely that the degree of dental erosion produced by acidic food and beverages will depend on the frequency and length of exposure to them. This means that our teeth are constantly exposed to erosive agents.

On the other hand, salivary factors like flow rate, buffering capacity, and neutralization capability may also influence dental erosion; however, the protective level of the saliva will depend on the patient's age.¹² In some patients, the erosive effect might be more evident than in others.

So far, the literature has proved that tooth bleaching is safe as long as it is utilized wisely and based on careful patient selection. Still, a red flag should be raised for those patients who already have evident erosive modifications of the enamel surface and must be warned about the possibility of exacerbating the existing damage to the tooth surfaces.

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