عنوان مقاله:

Influence of CO۲ Laser Irradiation and CPP-ACP Paste Application on Demineralized Enamel Microhardness

محل انتشار:

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Abstract Introduction: It has been suggested that the application of casein phosphopeptide-amorphous calcium phosphate paste (CPP-ACP) and CO۲ laser irradiation on enamel could increase the resistance of enamel to caries and acid attacks. The aim of the current study was to compare the influence of CPP-ACP paste application and irradiation of CO۲ laser on microhardness of demineralized enamel.Methods: Thirty sound maxillary extracted premolars were selected. The crowns were cut at the cervical line and were split into facial and palatal halves. Specimens were mounted in self-cure acrylic blocks in such way that the enamel surface was exposed to ۴×۴ mm. After a pH cycling of the specimens, they were randomly divided into ۴ groups (n = ۱۵), as follows: CG: Control group, LAS: CO۲ laser, CP: CPP-ACP and LASCP: laser combined CPP-ACP treatment. The Vickers microhardness of the specimens was measured (۵۰۰ g load, ۵ seconds, ۳ points). Data were analyzed using one-way ANOVA and post hoc Tukey tests (α = ۰.۰۵).Results: The lowest mean Vickers microhardness value was observed in CG group (۱۹۲.۵۷±۵۰.۸۷ kg/mm۲) and the highest in LASCP group (۳۶۱.۸۶±۲۲.۲۲ kg/mm۲). There were significant differences between groups (P < ۰.۰۰۱). The pairwise comparison of the groups revealed that there were significant differences between these groups: CG versus LAS, CP, LASCP (P < ۰.۰۵) and LASCP versus LAS and CP (P < ۰.۰۵). No significant difference between LAS group versus CP group (P > ۰.۰۵) was observed.Conclusion: The results of the current study revealed that CO۲ laser and CCP-ACP were effective for improvement of enamel hardness value after demineralization. Incorporation of CO۲ laser irradiation and CCP-ACP paste application provides additional remineralizing potential for demineralized enamel. Keywords: CO۲ laser Casein phosphopeptide-amorphous calcium phosphate nano complex Enamel microhardness.

کلمات کلیدی:

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