

Original Article

Influence of resin infiltration pretreatment on the microleakage under orthodontic bracket (an *in vitro* study)

Abstract

OBJECTIVES: In order to assess the changes in tooth orthodontic adhesive interface microleakage after applying a caries resin penetrated to the sound enamel tooth surface in different storage media.

MATERIALS AND METHODS: A total of 60 human maxillary first premolars (orthodontic extraction) were collected by random separation of the teeth into two equal groups. The control group was classified into three subgroups (n = 10) (control in deionized water, control in milk, and control in energy drink), while the experimental one (treated with ICON) was categorized into three subgroups (n = 10) (ICON in deionized water, ICON in milk, and ICON in energy drink) incubation phase lasted three weeks in total.

RESULTS: A one-way analysis of variance (ANOVA) yielded a significant difference between all experimental subgroups (ICON in deionized water, ICON in milk, and ICON in energy drink) and control subgroups (control in deionized water, control in milk, and control in energy drink). The control group in the energy drink subgroup had the highest mean microleakage value when compared to the other subgroups, whereas the resin-infiltrated group in deionized water had the lowest mean value. According to the results of the T-test, ICON pre-treatment tooth samples had significantly lower mean values of microleakage than non-ICON tooth samples.

CONCLUSIONS: The adhesive system (control group) revealed that a resin infiltrate on a sound enamel surface prior to orthodontic bracket bonding reduced bracket tooth interface microleakage in all examined samples. The ICON-infiltrated surface was discovered to provide a secondary preventive strategy against white spot lesion development by reducing microleakage under brackets.