



**EVALUATION OF DIFFERENT SURFACE TREATMENT
METHODS ON SHEAR BOND STRENGTH OF ORTHODONTIC
BRACKETS ON DEMINERALIZED ENAMEL: (AN IN-VITRO
COMPARATIVE STUDY)**

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ABSTRACT

Background and Objective: One of the ordinary problems throughout orthodontic treatment is bracket debonding , which affect treatment course and results in increased treatment duration and more clinical time for rebonding of failed brackets This study aimed to evaluate the shear bond strength(SBS) of brackets bonded to demineralized enamel pretreated with fluoride varnish (3M),sodium hypochlorite NaOCl 5.2% and low viscosity Icon Infiltrant resin (DMG)and laser (Er,Cr: YSGG) with fluoride and evaluation of the adhesive remnant index (ARI) on the deboned bracket.

Materials and methods: Sixty-five sound human premolar samples were randomly assigned in to five groups (n=13). The surface of all groups was submitted to demineralized solution. The first groups was the demineralized group (left with no treatment), second and third groups(demineralized) were treated 5.2% sodium hypochlorite (NaOCl) and with fluoride varnish 5% (Clinpro White Varnish, 3m ESPE) , fourth and fifth group (demineralized) were treated with Infiltrate resin(Icon ,DMG) and laser (Er,Cr:YSGG laser ,Waterlase® iPlusTM).Shear bond strength(SBS) was evaluated by means of a universal testing machine and Stereomicroscope was used to determine (ARI) at x20 magnification. Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 22). Kruskal Wallis test was used to analyze the bond strength data and adhesive remnant index (ARI).

Results: Notable difference was observed in the shear bond strength of all groups. The bond strength of the demineralized group which treated by fluoride varnish 5% (Clinpro White Varnish, 3m ESPE) was significantly lower than the other groups, Also the group which was treated with 5.2% NaOCl showed the highest SBS than the other group. According to the (ARI) most samples in all groups show score 0 which means that the failure zone inside demineralized enamel surface

Conclusion: 5.2% NaOCl is the best solution to obtain the highest shear bond strength of brackets on demineralized enamel surface

Key word: Demineralization; shear bond strength(SBS); Adhesive remnant index (ARI)