

# Characteristics of adhesive bonding with enamel deproteinization

Ghada Abdelaziz Mahmoud<sup>1</sup>, Mohammed E. Grawish<sup>2</sup>, Marwa Sameh Shamaa<sup>1</sup>, Yasser Lotfy Abdelnaby<sup>1</sup>

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**Objective:** To evaluate the effect of using sodium hypochlorite (NaOCl) on the bond characteristics of orthodontic metal brackets bonded to enamel surface using three adhesive systems.

**Methods:** One hundred twenty premolars were selected and randomly divided into two equal groups of 60 teeth/ each (Groups I and II). The teeth of Group I were left untreated while those of Group II were exposed to 5.25% NaOCl for 1 minute. The teeth in either group were randomly subdivided into three equal subgroups of 20 teeth/ each (A, B and C), according to the type of adhesive system used to bond the brackets. In Subgroup A, phosphoric acid + Transbond XT primer and adhesive were used. In subgroup B, Transbond Plus self-etching primer (SEP) + Transbond XT adhesive were utilized. In subgroup C, phosphoric acid + SmartBond LC adhesive were used. The shear bond strength (SBS) and the degree of adhesive penetration to enamel surface were assessed. Data analyses were performed using ANOVA, post-hoc (LSD), t and chi-square test.

**Results:** Transbond XT had significantly higher SBS than SmartBond LC ( $p < 0.05$ ). Phosphoric acid provided significantly higher SBS and degree of adhesive penetration than SEP ( $p < 0.05$ ). NaOCl significantly increased SBS and degree of adhesive penetration in Subgroups B and C ( $p < 0.05$ ).

**Conclusion:** Adhesion quality of Transbond XT adhesive is better than SmartBond LC. Phosphoric acid is more effective than SEP. NaOCl enhances the bond characteristics.

**Keywords:** Orthodontic brackets. Sodium hypochlorite. Electron microscopy.

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<sup>1</sup>Mansoura University, Faculty of Dentistry, Department of Orthodontics (Mansoura, Egypt).

<sup>2</sup>Mansoura University, Faculty of Dentistry, Department of Oral Biology (Mansoura, Egypt).

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**Contact address:** Ghada AbdelAziz Mahmoud  
Department of Orthodontics, Faculty of Dentistry  
Mansoura University (Mansoura, Egypt)  
E-mail: hanahamdy87@yahoo.com