The Angle Orthodontist: **Vol. 61, No. 1, pp. 31–34.**

The effect of pretreatment with fluoride on the tensile strength of orthodontic bonding

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ABSTRACT

White spot decalcifications and caries occurring adjacent to bonded orthodontic brackets have long been a concern to orthodontists. One procedure suggested to overcome this problem is fluoride treatment prior to bonding. The purpose of this study was to compare the tensile bond strength of orthodontic self-cured resin from Concise on teeth rinsed 4 minutes in 1.23% APF with untreated controls. Measurements were made on an Instron machine. Debonding interfaces were observed with a scanning electron microscope and energy dispersive x-ray spectrometry. Distributions were calculated. The tensile bond strengths of the fluoride-treated teeth and the untreated teeth were not significantly different. The debonding interfaces between resin and bracket base, within the resin itself, and between enamel and resin were similar in the two experimental groups. However, greater enamel detachment was seen within the fluoride pretreatment group. So while fluoride pretreatment does not significantly affect tensile bond strength, it may cause enamel detachment after debonding.

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KEY WORDS: Topical fluoride, Bond strength, Etching enamel, Orthodontic bonding.