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Original Articles

Effectiveness of Pit and Fissure Sealants in Reducing White Spot Lesions during Orthodontic Treatment

A Pilot Study

Adam W. Benham^a, Phillip M. Campbell^b, and Peter H. Buschang^c

Abstract

Objective: A pilot investigation was performed to test the null hypothesis that highly filled (58%) resin sealants do not prevent white spot lesions in patients undergoing active orthodontic treatment.

Materials and Methods: A split-mouth design was applied to 60 healthy patients, with the sealant randomly allocated to either the right or the left side of each jaw. The sealant was applied to the incisors and canines from the gingival surface of the bracket to the free gingival margin. The contralateral teeth had the same type of bracket with no sealant. Sealants were placed on the experimental teeth 2 weeks to 3 months after initial bonding and were removed after 15 to 18 months. Intraoral photographs, visual assessments, and DIAGNOdent (KaVo Dental Corporation, Lake Zurich, Ill) measurements were used to assess white spot lesions after sealant removal.

Results: Six lesions on the teeth with sealants were identified visually, compared with 22 lesions on the teeth without sealants. The teeth without sealants had 3.8 times the number of white spot lesions than were noted on the sealed teeth. These sealants showed no visible signs of discoloration. The DIAGNOdent measured statistically significant differences between sealed and unsealed teeth in the maxilla ($P < .001$) and in the mandible ($P = .010$). DIAGNOdent measurements also showed a difference between sealed and unsealed teeth after the 28 teeth with visible lesions were excluded.

Conclusion: The hypothesis was rejected. Ultraseal XT Plus clear sealant (Ultradent Products, South Jordan, Utah) produced a significant reduction in enamel demineralization during fixed orthodontic treatment and should be considered for use by clinicians to minimize white spot lesions.

Keywords: [Demineralization](#), [White spot lesions](#), [Pit and fissure sealants](#), [Prevention](#)

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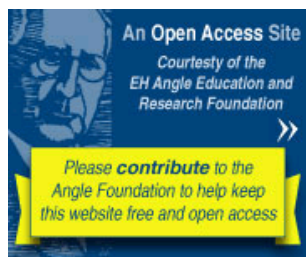
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