

[Caries Res.](#) 2007;41(6):455-9. Epub 2007 Sep 7.

Caries-preventive effectiveness of a fluoride varnish: a randomized controlled trial in adolescents with fixed orthodontic appliances.

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Abstract

The aim was to evaluate the efficacy of topical fluoride varnish applications on white spot lesion (WSL) formation in adolescents during treatment with fixed orthodontic appliances. The study design was a double-blinded randomized placebo-controlled trial with two parallel arms. The subjects were 273 consecutive 12- to 15-year-old children referred for maxillary treatment with fixed orthodontic appliances. The patients were randomly assigned to a test or a control group with topical applications of either a fluoride varnish (Fluor Protector) or a placebo varnish every 6th week during the treatment period. The outcome measures at debonding were incidence and progression of WSL on the upper incisors, cuspids and premolars as scored from digital photographs by 2 independent examiners. The attrition rate was 5%. The mean number of varnish applications was 10 (range 4-20) in both groups. The incidence of WSL during the treatment with fixed appliances was 7.4% in the fluoride varnish compared to 25.3% placebo group ($p < 0.001$). The mean progression score was significantly lower in the fluoride varnish group than in the placebo group, 0.8 ± 2.0 vs. 2.6 ± 2.8 ($p < 0.001$). The absolute risk reduction was 18% and the number needed to treat was calculated to 5.5. The results from the present study strongly suggest that regular topical fluoride varnish applications during treatment with fixed appliances may reduce the development of WSL adjacent to the bracket base. Application of fluoride varnish should be advocated as a routine measure in orthodontic practice.

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