

## Use of a Fluoride Varnish to Reduce Decalcification

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Problems with patient cooperation in recent years have prompted the introduction of a number of new orthodontic treatment techniques. 1,2 Compliance with oral hygiene instructions, however, should be of equal concern to clinicians.3,4

Decalcification is a common consequence of orthodontics, with about half of patients developing white spots during treatment.5 Because toothbrushing can be unpredictable, many orthodontists prescribe home use of fluoride rinses. In one study, only 2% of the patients using a fluoride rinse developed white spot lesions.6 Still, only 13% of patients have been found to "fully comply" with directions for using rinses at home.7

Fluoride varnish is a viscous liquid consisting of 5% sodium fluoride in a base of natural colophony. A single application of a fluoride varnish has been shown to reduce decalcification in vitro by 50%.8 Compared to fluoride rinses, varnishes demonstrate a more sustained release of fluoride ions over a longer period of direct contact with the enamel.8-14 In Europe, where varnishes have become a popular alternative to in-office topical fluoride gels, they have reportedly been responsible for a 45-70% decrease in the incidence of dental caries.15-17

This article describes the clinical use of such a varnish.

### **Procedure**

A practice's customary bonding techniques can easily be modified to include the subsequent application of a fluoride varnish such as Duraflor (Fig. 1). Acid-etching of the enamel is mandatory before bonding. After the brackets have been placed, the lip retractors are left in place, and the teeth are air-dried15,18 (Fig. 2).

The varnish is painted in a thin layer onto the facial surfaces of the enamel, surrounding the brackets, with a small brush or sponge applicator (Fig. 3). Special attention should be paid to the areas gingival to the brackets.

An air syringe can be used to thin the varnish and begin the drying process. After the varnish has dried for five minutes, the retractors are removed.8

Upon contact with saliva, the varnish forms a brownish-yellowish waterproof coating on the enamel (Fig. 4). It will temporarily protect any exposed areas of etched enamel that were not covered by a bracket or adhesive. The patient should be instructed not to brush for four hours,8 but should be informed that the discoloration will disappear after a few weeks of normal brushing and eating.

Patients who demonstrate poor compliance with oral hygiene can receive reapplications of fluoride varnish every four months.8,17 No prophylaxis is required; normal toothbrushing is sufficient prior to reapplication, which is performed with the same procedure described above.19

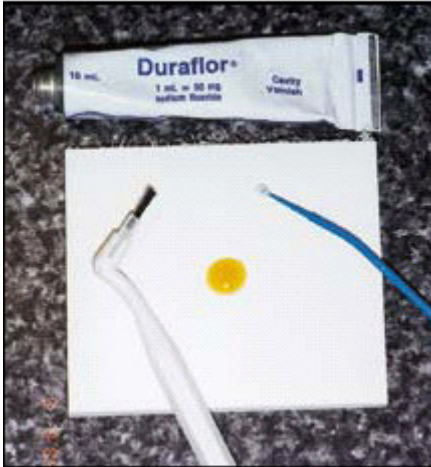
### **Conclusion**

Application of fluoride varnish can be readily incorporated into a practice's existing system of oral

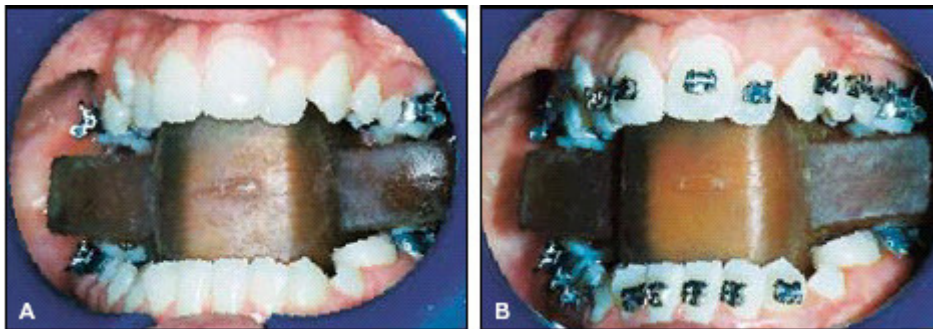
hygiene instruction, dietary advice, behavior modification and reinforcement, home care, and regular prophylaxis. Unlike many other methods, these varnishes do not depend on patient compliance for their effectiveness in reducing decalcification.

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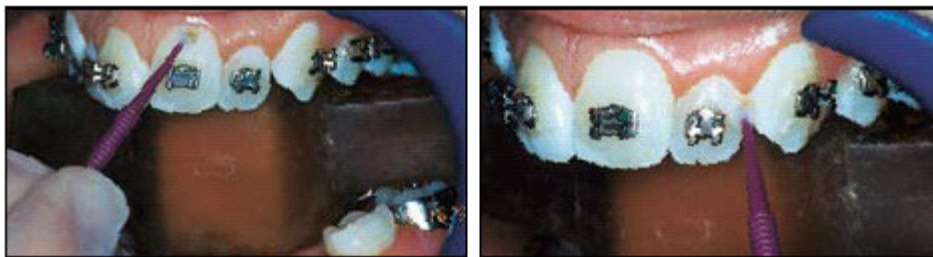
### FIGURES



**Fig. 1** Duraflor fluoride varnish, supplied in 10ml tubes.



**Fig. 2** A. Teeth after normal prophylaxis and acid-etching, prior to bonding. B. Cheek retractors are left in place after bonding of brackets, and teeth are air-dried prior to varnish application.



**Fig. 3** Thin layer of varnish painted onto enamel surfaces surrounding brackets.



**Fig. 4** Varnish sets into yellow-brown waterproof coating after contact with saliva. Discoloration

abrades away after several weeks of normal brushing and function.

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#### **FOOTNOTES**

**1** Registered trademark of Pharmascience Inc., Montreal, Quebec, Canada.