Indications of In-Office Topical Fluoride Treatments: Varnish, Foam, and Gels

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Introduction
A study conducted in the 1990s, demonstrated a steady rate of decline of instances of coronal caries through the 1980s. This decline was attributed to an increase in oral health education regarding diet and oral hygiene, and an increased awareness about the benefits of applying fluoride-containing topical treatments such as dental sealants (i.e., varnishes), foams, or gels to the teeth of individuals of all ages in moderate-to-high-risk groups for caries. This article reviews the history, efficacy, and indications for three types of topical fluoride treatments.

Varnishes (Sealants)
Sodium Fluoride (NaF) varnish was first introduced in the United States in 1964. The first generation available was a yellow-colored resin considered the standard of care for 25 years. The next generation available was a whiter, tooth-colored resin, which was slightly more costly, but preferred by some patients. The third and most recent development was a clear/transparent variation, making varnishes viable for use with bleaching procedures.

The primary indications of varnishes are as part of a caries prevention program that includes other topical fluorides, such as toothpastes. However, in 1994 the Food and Drug Administration granted approval of fluoride varnish as a desensitizing agent and cavity liner. Varnishes are clinically proven to provide at least 25% caries prevention in moderate-to-high risk children, adolescents, and adults when applied between 2 and 4 times annually. Varnishes are...
There are several materials to choose from when it comes to the impressions for the whitening trays. In my practice we use both polyvinyl and alginate. What is very important is the detail that is captured in that impression. The whitening tray must seat and fit properly. Over the years, I have been asked to block out my model when fabricating a whitening tray. Is it necessary to cut the papilla to minimize tissue irritation? From my own experience in performing over 400 whitening procedures within the last 2 years, it has made no difference whether the block out or papilla has been removed from the tray. The choice is really up to the patient.

The type of varnish chosen depends largely on the patient’s age, setting in which they receive the varnish (i.e., public program or private dental practice), patient preference, and whether a whitening procedure is performed.

Profuorid Varnish (VOCO, Briarcliff Manor, NY) is an easy to apply version of the second-generation varnishes available in single doses. Also containing 5% sodium fluoride, this tooth-colored varnish is naturally sweetened with Xylitol. While the primary indication is treatment of sensitivity, it is equally effective in caries prevention. Profuorid Varnish adheres well to wet surfaces unlike most varnishes where teeth must be dry before application. It is a tooth shaded and available in four great tasting flavors: melon, cherry, mint and my favorite carmel. Comes in a blister pack containing a brush and the varnish.

Components and effect of VOCO Profuorid Varnish

Profuorid Varnish is a colophony-based varnish containing 5% sodium fluoride (22,600 ppm fluoride). The fluoride ion, together with the calcium ions accumulated in the tubules, causes a precipitation of calcium fluoride, which effectively seals the tubules. According to a user survey, over 85% of patients were completely free of pain after only one treatment with Profuorid Varnish. As well as rapidly sealing the dentinal tubules, Profuorid Varnish also causes calcium fluoride deposits to form on the tooth surface. These deposits protect the tooth from acid attacks, promote remineralization and contribute to the long-term formation of fluorapatite. Xylitol, which has a proven cariostatic effect in addition to its taste-enhancing properties, is also added to the varnish.

Clear 5% Sodium Fluoride Liquid Varnish’s

Profuorid L Varnish (VOCO, Briarcliff Manor, NY) is a clear liquid third-generation varnish specially formulated to not interfere with bleaching procedures. This varnish is indicated for a host of other applications as well and including sealing the surfaces of damaged teeth and has effective double protection of 5% sodium fluoride and calcium deposits. Effective double protection of 5% sodium fluoride and calcium deposits. The sodium fluoride works immediately while the calcium deposits store and release fluoride over time which makes it the perfect formula for immediate and long term results. The perfect formula for immediate and long term results. Profuorid L is free from colophony, glutaraldehyde, gluten colophony, or methacrylates. Profuorid L can be used after cleaning procedures, cervical hypersensitivity, periodontal treatment, after occlusal adjustments, sensitive margins, before provisional are seated, sensitivity from bleaching.

Foams

In 1993, Sodium Fluoride (NaF) foams were introduced to the United States market. These fluoride foams only underwent a short evolution and include acidulated phosphate foam (APF) for deep infiltration, and neutral fluoride foam for restorations or individuals sensitive to acidic fluorides. Neutral foams provide fluoride without damage to the surface of restorations and are a good alternative for acid-sensitive patients.

Indications for fluoride foams are similar to other topical fluorides (i.e., desensitization and cavity prevention), but they are most effective in primary
teeth and on the proximal surfaces. Recommended mainly for children, one study states that all ages can benefit from a 4-minute application of fluoride foam instead of a gel, since the foams are equally effective. These foams have been marketed as “minute-foams,” but just as with gels, a minimum 4-minute contact is recommended for adequate fluoride infiltration.

Examples of neutral foams available are Topex Neutral Fluoride Foam (Sultan Healthcare, Inc. Hackensack, NJ) and Kolorz Neutral Fluoride Foam (DMG America, Englewood, NJ). Acidulated phosphate fluoride foam is available in products like Denti-Foam Topical Fluoride Foam (Medicom USA, Augusta, CA). These foams claim deeper fluoride infiltration and lengthier fluoride retention in saliva after treatment.

Foams provide an average 25% caries reduction rate in adolescents and adults with moderate-to-high-risk for caries. Since foams are more effective on primary teeth, these rates can be much higher—up to 41%—in the children in moderate-to-high-risk populations.

Gels

Fluoride gels became available for use in the United States as early as the 1960s. Like foams, they are available in neutral and acidulated phosphate fluoride (APF) compounds. Gels are usually only recommended for use in older children, adolescents, and adults to reduce the risk of swallowing, but gels can be applied with a toothbrush instead of the standard tray method to further reduce this risk.

The indication for fluoride gel is limited to caries prevention or reduction. Many dental professionals prefer the highly acidic APF gels due to their supposed higher fluoride uptake and higher saliva retention after treatment. However, studies confirm that neutral fluoride gels are equally effective and do not have the ability to etch restorative materials like APFs do.

Examples of available fluoride gels include Zap Fluoride Gel (Sultan Healthcare, Inc. Hackensack, NJ), Phos-Flur Fluoride Gel (Colgate/Palmolive, New York, NY), and Sensodyne ProSchmelz Fluorid Gelee (GlaxoSmithKline Consumer Healthcare, Brentford, Middlesex, United Kingdom).

Fluoride gels provide an average 25% caries reduction rate in moderate-to-high caries risk groups, similar to foams and varnishes.

Conclusion

All three topical fluoride treatments—varnishes, foams, and gels—reviewed in this article provide at least 25% caries prevention in moderate-to-high-risk groups of all ages. This means that it is not a question of if patients at risk for caries should use topical fluorides, but how often and which type.

Dental team members can help their patients decide if topical fluoride application would be beneficial, acknowledging that patients with low-risk for caries most likely would not benefit.

References


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