THE DENTAL ADVISOR™
Improving Patient Care Through Research & Education

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Preventive & Restorative Products

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RATINGS:
Excellent + + + + +
Very Good + + + +
Good + + +

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Guest Editorial

As a member of the editorial board and contributor to THE DENTAL ADVISOR, I have the opportunity to review products and learn of new developments throughout the year. A topic that I often speak about conferences is the subject of this particular issue in which we provide information on caries control with the use of preventive and restorative products, including topical and home fluorides. Perspectives on calcium and phosphate technologies and bioactive agents are provided as well. New products reviewed at THE DENTAL ADVISOR are also discussed. We hope these perspectives will be useful.

— Fiona M. Collins, B.D.S, M.B.A., M.A.

Strategies in controlling dental caries include in-office topical fluorides, fissure sealants, and twice-daily use of regular fluoride toothpaste. Home use products for patients at risk include 5,000 ppm fluoride paste/gel and fluoride rinses. Products containing calcium and phosphate are also available.

Preventing recurrent caries is a significant challenge. Careful consideration in selecting restorative materials and their application, luting agents, and ongoing preventive measures can help to prevent this.

New technologies have been introduced that contain calcium and phosphate in one of several forms, as well as other materials that contain ions represented in natural hydroxyapatite crystals.

Questions from the field . . .

THE DENTAL ADVISOR team receives questions when lecturing across the country from practicing dental professionals.

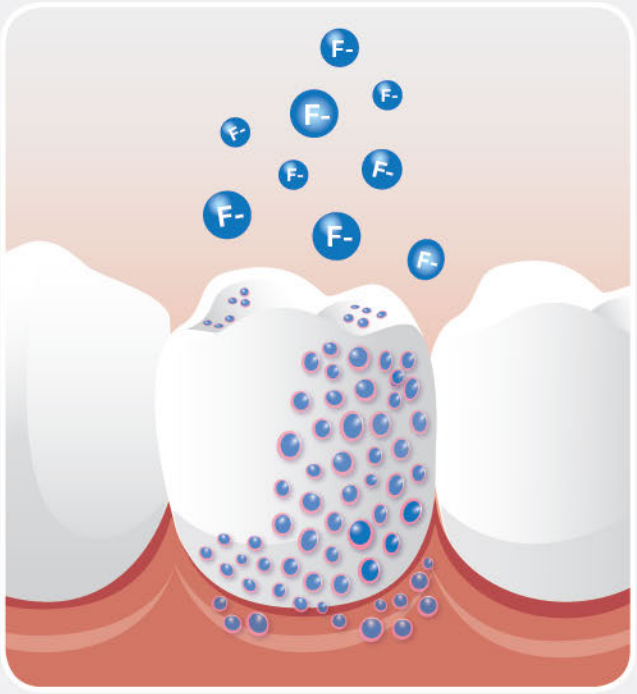
Q. I treat many elderly patients who have difficulty tolerating treatment and long appointments. What is the best restorative option for treating subgingival root caries with these patients?

A. Consider placing a resin-modified glass ionomer. Since the material is moisture tolerant and self-adhering, isolation is not essential. It will also release fluoride to help inhibit caries and to remineralize affected areas. Alternatively, consider using silver diamine fluoride to arrest dentinal caries and harden the affected dentin – this won't restore lost tooth structure; however, it is a rapid and easy treatment and may remove the need for a restoration.

Q. I prefer the esthetics of composites but value the fluoride release of RMGI materials. Are there any products that combine these two features?

A. You may want to consider a sandwich restoration. If the deeper layer is placed using a resin-modified glass ionomer and an open sandwich technique, this will be moisture tolerant during placement. The outer layer can then be the same composite and shade you used for adjacent teeth, removing any concerns about the shade match and esthetics.

In-Office Fluoride Topicals



How fluoride works

The application of topical fluoride results in the presence of fluoride ions intraorally, and calcium fluoride-like globules at the tooth surface. These act as fluoride reservoirs.

Advantages of topical fluoride:

- Calcium fluoride reservoirs release ions during acid attacks
- Inhibit demineralization
- Promote remineralization, with uptake of calcium, phosphate and fluoride
- Bactericidal at high concentrations

5% sodium fluoride varnish:

This in-office topical fluoride can be used for caries prevention for patients of all ages. Four-minute 1.23% APF gel is an alternative for patients age 6 and over. Almost all fluoride varnishes are now available in unit doses, a variety of flavors and white/clear shades.

- **Apply sparingly.** The recommended amount (unit dose) is enough. Focus on cervical, proximal and occlusal areas, and targeted areas (e.g., around brackets).
- **Prophylaxis optional.** Unless a thick layer of plaque is present, a prophy is not needed prior to application.
- **Fluoride release.** Occurs for hours after the varnish sets, bathing the area in fluoride.
- **Moisture tolerant.** No need to dry teeth. Start with application in the lower quadrant, where saliva tends to pool.
- **After application,** the varnish sets in the presence of saliva. No need to worry about air drying or isolation.

ProGuard 5% Fluoride Varnish®

Crosstex International

- Convenient, easy-to-apply, single-dose packaging
- Minimal set-up and clean-up time
- Smooth consistency with excellent flow characteristics
- Efficient fluoride release with high substantivity
- Sets fast, even in the presence of saliva
- Dries to a clear finish
- Available in mint and melon flavors
- Free of soy, milk, eggs, gluten, aspartame and saccharin

WHAT'S NEW:

Silver diamine fluoride is proven effective for arresting dentinal caries in both permanent and primary dentition. After treatment, the affected dentin hardens and collagen degradation is prevented. Silver diamine fluoride (SDF) is a great option in cases where restorative care is difficult, or the patient cannot tolerate treatment, especially in pediatric and geriatric patients. In the United States, 38% silver diamine fluoride is available in one product, ***Advantage Arrest*** *(Elevate Oral Care).*

The following considerations should be taken when using this product:

- **Apply sparingly.** Only a drop is required to treat the area.
- **Avoid applying to soft tissue.** The liquid will temporarily cause a dark stain.
- **Staining.** Inform parents/patients that SDF will appear as a black stain on areas of decay. This is generally not problematic if SDF is placed in areas that are not visible.

Advantage Arrest™

Elevate Oral Care

Advantage Arrest™ is available in, 8 mL bottles in both clear and a new blue-tinted formulation, making targeted application easier.

Clear ***Advantage Arrest*** is available in unit-dose ampules, 30 to a box along with applicators. Each ampule contains enough material to treat up to five sites.

Pit and Fissure Sealants, Home Fluorides

Current recommendations support the use of glass ionomer and resin-based pit-and-fissure sealants.

Glass Ionomer (GI) sealants are moisture tolerant and self-adhering. They offer significant advantages when moisture control is difficult, as well as fluoride release and recharge. Resin-based sealants (RBS) offer a higher shear bond strength, while traditionally they did not contain fluoride or released a minimal amount. Sealants are now available that release calcium and phosphate ions, including a Glass Ionomer sealant with amorphous calcium phosphate nanofillers (***riva protect,*** *SDI)* and a new RBS that releases fluoride, calcium and phosphate from semi-permeable microcapsules (***BioCoat,*** *Premier Dental Products).*

Glass ionomer (GI) sealants

- (+) Moisture tolerant
- (+) Self-adhering
- (+) Excellent when moisture control is difficult
- (+) Some release calcium and phosphate ions
- (+) Release and recharge fluoride
- (-) Low wear resistance

VS

Resin-based sealants (RBS)

- (+) High bond strength
- (+) Some release calcium and phosphate ions
- (-) Most require separate etching step
- (-) Requires light curing (additional step)

Product	Color	F^- release	F^- replenishment	Calcium and phosphate release	Calcium and phosphate replenishment	Clinical rating
Glass ionomer sealants						
Fuji Triage (GC America)	White/Pink	Yes	Yes	No	No	88%
riva protect (SDI)	White/Pink	Yes	Yes	Yes	No	84%
Resin-based sealants						
Beautiseal (Giomer) (SHOFU)	White	Yes	Yes	No	No	96%
Conseal f (SDI)	Clear/light grey	Yes	No	No	No	93%
Ecuseal (DMG)	Opaque	Yes	No	No	No	81%
Embrace WetBond (Pulpdent)	Off-white, natural	Yes	Yes	Phosphate	Phosphate	91%
Grandio Seal (VOCO)	Opaque	No	No	No	No	92%
Helioseal, Helioseal Clear (Ivoclar Vivadent)	White/clear	No	No	No	No	92%

Home Fluorides:

For at-risk patients, the following options are available:

- **Prescription level 5,000 ppm fluoride** pastes and gels
- **Pastes and gels** (prescription, dispensed and OTC) containing fluoride, calcium and phosphate
- **Sodium fluoride rinses** 0.2% (weekly), 0.05% (daily) and 0.02% (twice-daily) sodium fluoride rinses
- **Acidulated sodium fluoride or phosphate fluoride rinses** 0.044% (daily) and 0.02% (twice-daily)
- **Stannous fluoride rinse** (0.63%, diluted to 0.1% for rinsing)

Note: **Fluoride rinses and 5,000 ppm fluoride are contraindicated** for children under age 6 years unless recommended.

Enamelon Preventive Treatment Gel

Premier Dental Products

Enamelon uses the clinically proven active ingredient, stabilized stannous fluoride (970 ppm F), optimized with calcium and phosphate ions into a non-abrasive formula for daily use. Dental professionals can prescribe it to patients as a multi-faceted solution for several conditions. ***Enamelon*** physically occludes tubules with ACP and fluoride, unlike the leading sensitivity prescription or non-prescription products, which use potassium nitrate to mask the pain. ***Enamelon*** also helps to prevent caries, gingivitis and provides relief for the discomfort of dry mouth tissues. Specially formulated to deliver 3x greater protection against acid challenges and provides over 2x more beneficial fluoride with merely one-fifth the amount in the 5000 ppm fluoride alternative. Safe for patients of all ages, contains no SLS, gluten or dyes.

Fluoride-Releasing Restorative Products

Ionolux (VOCO)

Resin-Modified Glass Ionomers (RMGI)

Advantageous properties:

(RMGI) are stronger than traditional glass ionomers (GI). Current RMGIs offer improved strength, resistance to water sorption and wear, and esthetics. Both materials offer features that are advantageous for caries control.

- **Setting.** GIs set through a chemical reaction. RMGIs set through a chemical reaction and limited polymerization required only for the resin strands embedded in the material.
- **Self-adhering.** Do not require etching or an adhesive system, although conditioner may be used.
- **Fluoride release.** Helps to inhibit recurrent caries at margins, affected dentin under restorations.
- **Fluoride recharge.** Ensures on-going fluoride availability.
- **Moisture tolerant.** Aids placement for challenging clinical cases.

Riva Glass Ionomers™ *SDI*

SDI is a world leader in Glass Ionomer Technologies. All of SDI's riva materials utilize SDI's proprietary ionglass™ filler developed by their glass technologists. ionglass™ is a radiopaque, high ion-releasing reactive glass and releases substantially higher fluoride to assist with remineralization of the natural dentition. All riva materials are BPA-free.

riva light cure + riva light cure HV A multi-year award winner at THE DENTAL ADVISOR, ***riva light cure*** and ***riva light cure HV*** (high-viscosity) are light-cured, resin-reinforced glass ionomer restorative materials. ***riva HV*** is designed for easy shaping and contouring.

riva self cure & riva self cure HV offer similar properties and the same indications as riva light cure and light cure HV, except that they are self-curing only.

riva silver is a silver-reinforced, silver-shaded glass ionomer with very high radiopacity and high early strength. It is indicated for pediatric posterior restorations and core build-ups.

riva luting is a conventional glass ionomer, indicated for final cementation of metal based restorations.

riva luting plus is resin-reinforced and indicated for final cementation of metal, PFM and resin crowns, bridges, inlays and onlays plus ceramic inlays and crowns. Both are self-curing.

riva protect is a self-curing, high fluoride-releasing glass ionomer. It also contains ACP nanotechnology which releases calcium and phosphate. riva protect is available in white and pink shades and indicated as a sealant, liner and surface protector.

Bioactive Cements

Luting cements have evolved in the last 20 years from glass-ionomer based to the more recent bioactive cements. Unlike traditional luting cements, bioactive cements respond to changes in pH with the release of calcium and phosphate ions to stimulate appatite formation and remineralization at the cement-tooth interface. This provides a better seal and protection from bacterial invasion at the margin.

Material Evolution: Luting cements

Glass Ionomers	RMGI	Bioactive
Fuji Plus (GC)	*FujiCem 2* (GC)	*Ceramir* (Doxa)
riva luting (SDI)	*riva luting plus* (SDI)	*Activa Cement* (Pulpdent)
		TheraCem (Bisco)

TheraCem®

Bisco

TheraCem® is a dual-cured, calcium and fluoride-releasing, self-adhesive resin cement indicated for luting crowns, bridges, inlays, onlays and posts (prefabricated metal/non-metal and fiber posts). Providing a strong bond to zirconia and most substrates along with easy clean-up and high radiopacity, ***TheraCem*** offers clinicians an effortless, reliable and durable cementation of indirect restorations. ***TheraCem*** also exhibits a high degree of conversion ensuring a higher physical strength and uniquely transitions from acidic to alkaline pH in minutes.

Orthodontic White Spots: Prevention & Treatment

DID YOU KNOW? *Orthodontic white spots have been shown to start developing in as little as 1 month after placement of fixed orthodontic appliances (FOAs).*

Prevention First!

- **5% sodium fluoride varnish or 1.23% APF gel** applied in-office two to four times per year will help prevent demineralization and promote remineralization
- **Home use 5,000 ppm fluoride gel or paste** (e.g., ***ClinPro 5000**, 3M; **Colgate PreviDent 5000**)*
- **Home use fluoride gel/paste** containing calcium and phosphate based technologies *(**Enamelon Preventive Treatment Gel,** Premier Dental Products, **MI Paste Plus,** GC America, **Remin Pro,** VOCO)*
- **Xylitol products,** used minimum twice daily, total dose 6 to 10 grams
- **More frequent visits during orthodontic treatment** for prophy and monitoring

Treating Orthodontic White Spots

Several options are available to treat white spots and to help them blend with the adjacent tooth structure.

Options
CPP-ACP and fluoride (***MI Paste Plus**, GC America*), microabrasion (***Prema**, Premier Dental*) [1,2]
CPP-ACP and fluoride (***MI Paste Plus**, GC America*), toothwhitening [1,3]
Hydroxyapatite and fluoride *(**Remin Pro**, VOCO)*, toothwhitening [1,3]
Toothwhitening and microabrasion [2,3]
Microabrasion and fluoride treatment [1,2]
Resin infiltration (***Icon**, DMG*) [4]

[1] To help remineralize white spots
[2] Safely removes microscopic enamel layer
[3] Helps to blend in white spots
[4] Infiltrates white spot, making the area denser