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Ergonomically designed for the clinician's grip.

MORE ON PAGE 6



## \* COVER PRODUCTS

are chosen based on innovation or their perceived impact on improving patient care and practice efficiency.



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## DenMat

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More detailed, more accurate impressions. Find out how.

MORE ON PAGE 6



## SDI

### ILLUMINATE ABNORMALITIES →

Benefits of the diagnostic tip take this curing light to the next level.

MORE ON PAGE 6

## DENTAL IMPLANTS

# MORE THAN A NICE SMILE?

Be the doctor who delivers health and happiness to a patient base with evolving needs and expectations.



## FROM YOUR PEERS

### Reviews you can use

Doctor feedback on products from DEXIS and DenMat.

## TECHNIQUE

### ← How to achieve a simpler bond

Case study on the benefits of BISCO's eCement.

## → web exclusive

# MUST-WATCH VIDEOS

Patient advice, business tips and clinical step-by-steps—find it at [dentalproductsreport.com](http://dentalproductsreport.com).

# GrandioSO and Futurabond U

The Ultimate Combination for Restorative Success!

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Consultants' Comments
"Easy to dispense and place."
"Good radiopacity."
"The material has an excellent, non-sticky consistency."
"Heavy viscosity packs and sculpts well."
"Good shade match and final esthetics."
"I prefer a more translucent body shade."
"The unit-dose capsule has a wide tip."
"Make the packaging sturdier."



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## Description

GrandioSO is a light-curing, radiopaque nano-hybrid composite. It is indicated for Class I-V restorations, cosmetic restorations, splinting of loose teeth, repairing veneers, restoration of primary teeth, core build-ups, and composite inlays. GrandioSO is available in shades A1, A2, A3, VC A3.25, A3.5, A4, VC A5, B1, B2, B3, C2, D3 OA1, OA2, OA3.5, and Bleach (BL) in syringes and single dose capsules. The composite is compatible with all light-cured bonding agents. Curing times vary with shade selection. The kit evaluated contains 80, 0.25 g caps, 16 each in shades A1, A2, A3, A3.5 and B1; shade guide; product literature; manufacturer instructions; and MSDS. GrandioSO was evaluated by 31 consultants in 1054 uses. It received a 96% clinical rating.

## Product Features

GrandioSO composite is easy to dispense and place. It has a viscosity that is heavy enough to be packable and is suitable for both anterior and posterior restorations. Shade matching and final esthetics are very good. The opacity of the cured composite is beneficial for masking stained dentin, yet blends well with the surrounding enamel. Shade A3.25 was useful for the cases in which a patient's shade was between A3 and A3.5. The quality of the final polish was rated excellent. Fifty-five percent of consultants reported that GrandioSO was better than their current universal resin composite and 35% reported that it was equivalent. Eighty-one percent would switch to GrandioSO and 90% would recommend it.

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63 + MUST SEE  
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INSIDE





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**\*GNYDM Booth # 528, 1704, 5206**  
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SCAN:



**DENTSPLY Professional**

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**\*GNYDM Booth # 2600, 2800**  
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**\*GNYDM Booth # 4416, 5628**  
800-944-6365  
carestreamdental.com  
CIRCLE: RS NO. 6

SCAN:



**SDI North America**

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diagnostic tool**

The **Radii Plus Pro's** LED curing light offers peak output of 2100mW/cm<sup>2</sup> with a rechargeable battery that provides 1200 10-second cures. The device's diagnostic tip lights hard-to-see areas for identifying abnormalities, such as cracks in cusp and teeth, subgingival fractures, and interproximal caries. Both components twist 360°, while the LED light at the end of both tips emits energy only in the areas needed to ensure low heat emission throughout.

**\*GNYDM Booth # 4009**  
800-228-5166 ● sdi.com.au  
CIRCLE: RS NO. 7



SCAN:



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Find thousands of products at [products.dentalproductsreport.com](http://products.dentalproductsreport.com)

\* Head to **page 26** for DPR's full coverage of the must-see dental products at this year's GNYDM event.

*Our advertising policy*

DPR makes every effort commensurate with professional editorial and advertising standards to report manufacturer's product news accurately, but cannot assume responsibility for the validity of product claims. It is necessary for the editorial staff to remove itself from policing the content or images used in various ads or marketing campaigns. Any reader with a complaint should contact the manufacturer directly.

*Our editorial process*

The dental profession and the publications that cover it have no shortage of dental professionals ready to share their expertise. DPR sets itself apart with an editorial team comprised of journalists, not dentists. Each month, we reach out to a wide variety of voices to help tell the story of innovation in the dental profession. We don't assume we know all the answers; we are, instead, committed to asking the right questions and delivering unbiased, quality content. None of the articles you read are "paid for," but as a product-centric magazine, working closely with our manufacturing partners is an important part of the process.



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**Start spreading the news**  
Are you attending the GNYDM this year? We've put together a list of 33 must-see new products you'll want to check out during the show, set for Dec. 1-4. We tell you where to find them at the show and why they're worth checking out.

OUR MISSION

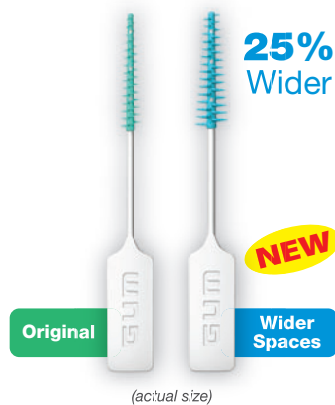
Dental Products Report provides dentists with comprehensive, accurate and unbiased information across the spectrum of specialties. In consultation with forward-looking clinicians and manufacturers, our staff supports dentists as they apply new products and technologies for excellence in patient care and practice development.

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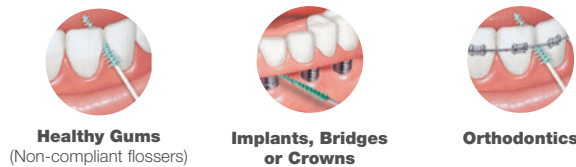
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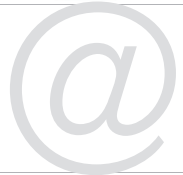


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## Clicks & Picks

What dentists were searching and savoring in October @DENTALPRODUCTSREPORT.COM



### 6 MOST-READ ARTICLES ONLINE

- 01** How to deal with a difficult patient [Video]  
DPR Editorial Staff
- 02** Obamacare: The effect of the Affordable Care Act on dental practices [VIDEO]  
by Michael Quirk
- 03** How to make your hygiene department profitable [VIDEO]  
by Jameson Management
- 04** Obamacare: 5 things every dentist needs to know about the Affordable Care Act  
by Michael Quirk
- 05** Free E-book: What you need to know about oral cancer detection  
DPR Editorial Staff
- 06** 4 ways to help your dental colleagues battle depression and mental illness  
by Kevin Henry

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## It's always our goal to deliver the best product information



In a recent readership poll, you told us what you like most about DPR. While we were thrilled with just how many of you liked a wide variety of the features and sections we offer in every issue of DPR, we also once again let our audience tell us what we already knew—that many dentists flip through these pages each month searching specifically for information on new products.

In our 40-plus years, it has always been the goal of DPR

to let you know about new product launches. This latest reader survey indicates that in addition to new launches, what many of you like most are step-by-steps on using new products, along with reviews, whether it be from The Catalyst Group or Contemporary Product Solutions, or from colleagues who tell their stories of product use in our Double Take features.

Over the years we've also attempted to bring trade show experiences to those who can't attend all the major trade shows, offering up videos, product news and show coverage in a variety of methods.

In this issue of DPR, you'll find new products, plenty of

**33** products **you'll want to see while attending GNYDM.**

Preview begins on Page 26

reviews and several how-to technique articles designed to inform you on how to best use some of the great new offerings and help you out in your efforts to deliver the best care possible to your patients and to make your daily work routines better.

What you'll also find is a section previewing more than 30 innovative products to look for at the Greater New York Dental Meeting, Friday, Nov. 29 through Wednesday, Dec. 4. Many of these products have

recently been featured on the covers of DPR and they are worth another look, so don't miss this section. In case you're attending the meeting, we've also included the booth numbers to help you map out your time on the trade show floor.

So keep letting us know how we can help you, and as always, feel free to let me know what else you'd like to see on the pages of DPR and at [dentalproductsreport.com](http://dentalproductsreport.com). ●

*Stan Goff*

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EDITOR IN CHIEF  
[sgoff@advanstar.com](mailto:sgoff@advanstar.com)

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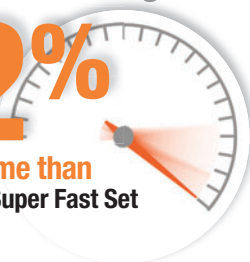
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## Imprint™ 4 VPS Impression Material

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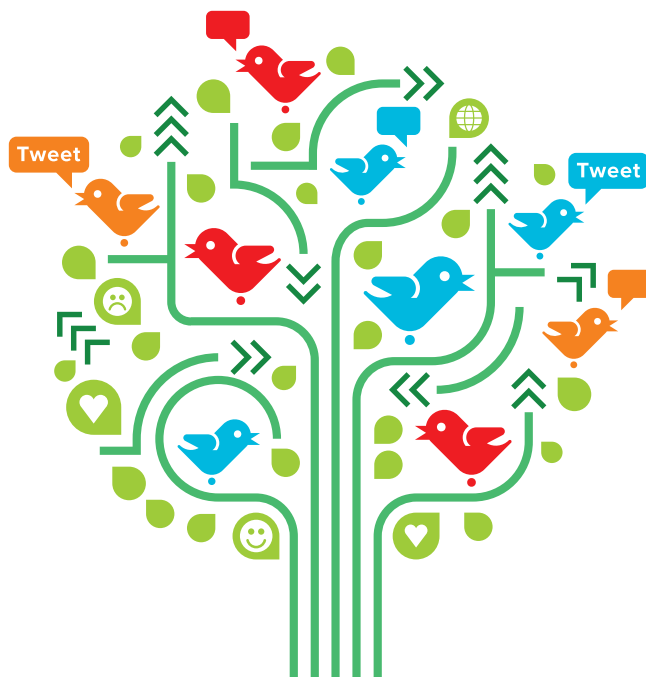
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## Top 5 REASONS YOU SHOULD GET SOCIAL\_>>>



**01** Your patients are into social media

Social media is a great way to connect with current and potential patients outside of your practice. Many of your patients are already on Twitter, Facebook and Google+, sharing and posting with their friends—so you should be there interacting and sharing practice updates, too.

**02** It's a great marketing tool

Just finished a successful, complex cosmetic case? Share before-and-after photos on Facebook and tag the patient (with permission of course). Tweet about special promotions. Use social media as another marketing tool to get the word out about the great things you're doing at your practice.

**03** You can interact with your community on a different level

Social media is all about engagement and connecting. It gives you the opportunity to share practice updates and photos, as well as interact with patients and community members. It also enables patients to share those updates with their friends and followers, expanding your reach.

**04** It's cost-effective

Not only does social media put you in front of your patients outside of the office, it does it for free!

**05** Use it as a leadership opportunity

If you're serious about using social media to your advantage, someone has to manage it. A static Facebook page or Twitter account won't do you much good. Assign social media management to someone in your office. It's a great leadership opportunity for a team member who has an interest in marketing and patient engagement. ●

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# A “Dual Digital” approach

With the availability of ultra-compact, low-cost, flexible phosphor sensor units like Air Techniques' ScanX® Swift, clinicians should try this approach.

by SCOTT BENJAMIN, DDS

For years I have been advising the dental profession to pursue a “dual digital” approach to radiography by using both digital options available to them: direct sensors and flexible phosphor sensors. Today, this approach makes more sense—and cents—than ever before, particularly with the availability of ultra-compact, low-cost, flexible phosphor sensor units like the ScanX® Swift.

Many practices use film in concert with their direct sensors to accommodate situations where a rigid direct sensor is impractical for use with certain patients. In my experience, however, it is much more beneficial to pair direct sensors with flexible phosphor sensors, which have numerous advantages over film:

## Image resolution

Most clinicians who have used both film and flexible phosphor sensors agree the image resolution with the latter is superior.

## Diagnostic enhancement

Flexible phosphor sensors allow the practitioner to conveniently analyze the images for diagnostic purposes with the same digital tools that are used with direct sensors, such as adjusting the

brightness, contrast, grayscale, size and sharpness.

## Processing speed

With film, it can take 6 to 8 minutes to complete a full-mouth series, compared to less than 2 minutes with flexible phosphor sensors. With a compact unit designed for chairside use, such as the ScanX® Swift, it only takes 9 seconds to deliver an image to your operatory monitor.

## Cost savings, benefits

An all-digital approach to radiography also means saving the practice up to thousands of dollars currently spent purchasing chemicals each year.

Additional benefits include office space efficiency and staff productivity. Going filmless eliminates the need to devote a room or significant counter space to a chemical processor, or other precious space to chemical bottles and file cabinets containing film X-rays.

The flexible phosphor digital processor requires no routine cleaning or maintenance, which eliminates one of the staff's most dreaded tasks: maintaining the chemical processor. This helps with productivity and staff morale.

Replacing film with flexible phosphor sensors will make the practice compliant with the coming government mandate that all dental and medical offices use all-digital storage of patient data.

It also improves image access and recordkeeping. The practice's efficiency and productivity will benefit from the convenience of digital image access and paperless recordkeeping.

Practices employing a “dual digital” approach to radiography will find that flexible phosphor sensors complement rigid direct sensors by overcoming several of their shortcomings:

Identical sizes to film—Flexible phosphor sensors are available in the exact same sizes as film, unlike direct sensors.

Large, rigid direct sensors can be difficult, and sometimes impossible, to accurately position in the oral cavities of patients with large tori, small mouths,



With ScanX Swift, you can capture 100% of the images you want, ensuring complete diagnosis and helping your patients understand and receive the treatment they need.

gag reflexes, or the inability to open their mouths wide. With flexible phosphor sensors, this is simply not a problem.

The smaller, thinner size and softer edges of the flexible phosphor sensors, coupled with the lack of wires, make for a more pleasant patient experience.

## Image area/ workflow, low costs

Flexible phosphor sensors generally offer 17 to 38% greater image area than direct sensors, which means the clinician can more assuredly capture the complete coronal-to-apical length, get more mesial-distal information, rarely miss a root tip or distal cusp, and experience fewer retakes.

The fact that the workflow with flexible phosphor sensors is essentially identical to film means minimal time spent teaching a new protocol to the practice's staff.

Most flexible phosphor sensors cost only about \$40, a fraction of the cost of direct sensors, and can be reused hundreds and perhaps even thousands of times. In addition, there is no need for costly sensor insurance that is normally considered advisable for direct sensors.

When a practice uses both direct sensors and flexible phosphor sensors and one of the systems goes down, the practice will still have the other as a digital back-up. The “dual digital” approach also provides the practice a way to increase its revenues. When a patient struggles with the placement of a digital sensor, it is tempting to try to get by without the appropriate diagnostic information that would be provided by a radiograph. However, when the practice has the option of using a smaller, thinner, flexible phosphor sensor with such a patient, the necessary radiographic information can be captured without delay, compromise or lost revenue.

Practices that now rely solely on film radiography may find flexible phosphor sensors to be the easiest way transition into the digital world and avoid the larger financial commitment required with direct sensors.

Practices that are still using film radiography—either alone or in concert with direct sensors—will find that replacing film with flexible phosphor sensors can simultaneously enhance their patient care, office productivity and practice profitability. ●

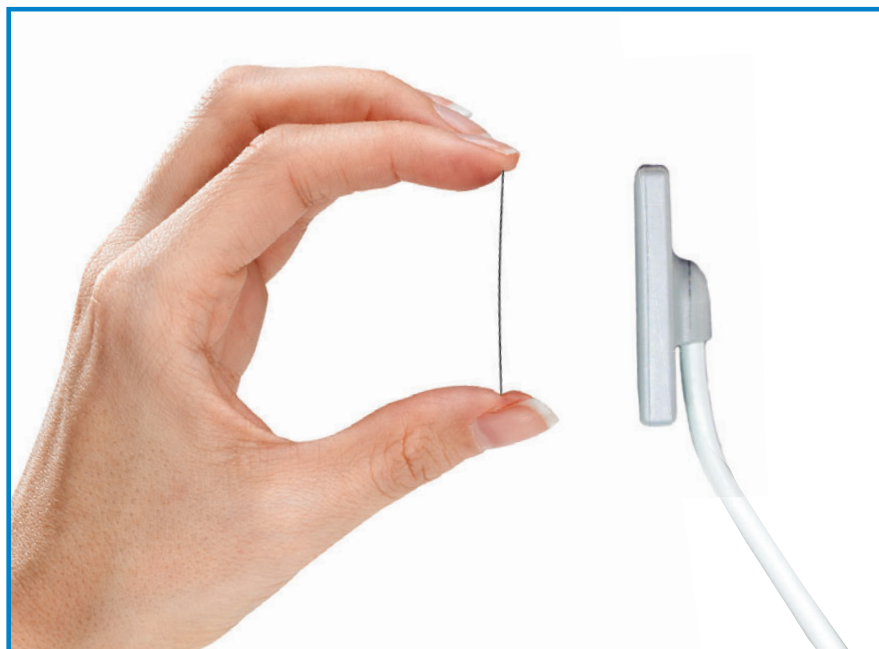


ScanX Swift's flexible phosphor sensors can offer 17 to 38% more image area than direct sensors.



# Fits Where Rigid Sensors Don't.

## scan>x swift™



“Let's practices take a 'dual digital' approach by providing a flexible digital option when direct sensors won't fit due to small mouths, large tori, gag reflexes or uncooperative patients.”



Scott Benjamin, DDS

### EXCELLENT DIGITAL RADIOGRAPHY

- Get 100% of the images you want, even for patients with small mouths, large tori, or gag reflexes.

### EXCEPTIONAL DIAGNOSTIC CLARITY

- Up to 38%\* more image area—capture every root tip (even on maxillary canines).

### UNMATCHED PATIENT COMFORT

- Flexible, cordless phosphor sensors for easy, comfortable placement, even for third molars.

### CONVENIENT CHAIRSIDE WORKFLOW

- Easy for your assistant; efficient for you.

### SMART INVESTMENT

- Less expensive than rigid sensors (and no insurance needed).

## scan>x swift™

Digital Imaging Without Limits

\*An Independent, non-profit, dental education and product testing foundation: Issue 9, September 2011

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# 48 PRODUCTS, AND A BIG APPLE PREVIEW



EDITOR'S CHOICE

The enhanced minimally invasive material is said to be well suited for direct restorations.

## Exceptional handling and shade matching

**Glaslonomer FX-II Capsule** is formulated to demonstrate high fluoride release and rechargability, with compressive strength in equal adherence to enamel and dentin to offer a strong marginal seal. Additionally, it improves working time by removing conditioners and allowing for immediate use after mixing, offering a set time of two minutes and 30 seconds. Other features of FX-II include high radiopacity, and low solubility and acid erosion levels, plus its thermal expansion properties are said to be similar to natural teeth and provide less stress on the restoration.

**Shofu Dental Corp.**

800-827-4638

shofu.com

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SCAN:



## ➔ MORE GREAT PRODUCTS YOU WON'T WANT TO MISS...



### GNVDM Products

#### WHAT TO SEE IN NEW YORK

Check out these great new products at the Greater New York Dental Meeting.

26



### Special Report

#### FAST, ACCURATE IMPRESSIONS

A close look at 3M ESPE's new Imprint 4 VPS impression material.

40



### Benchmark

#### UNIVERSAL COMPOSITE

The Catapult Group presents its review on DENTSPLY Caulk's TPH Spectra.

54



This upgraded software makes it easy to train people just learning how to use the scanner.

**Scanner software**

**Updated software**

Version 4.1 software for the **3M True Definition Scanner** is said to improve the scanning handpiece's focal range, allowing for easier full-arch scans and improved capture of challenging areas of the oral anatomy. Practitioners who tested the software in a clinical setting reportedly praise its enhanced scan speed and the ease with which it captures incisal edges and interproximal spaces, providing greater user control and less chair time for the patient. The new software will be automatically installed on all 3M True Definition Scanners.

**3M ESPE**  
 800-634-2249  
 3M.com/TrueDef  
 CIRCLE RS NO. 23



**Alginate**

**Cost-effective, accurate impression material**

Dust-free **IMAGE Alginate** is a cost-effective option for detailed, accurate impressions. Green-colored, mint-scented and biodegradable, Fast Set IMAGE Alginate sets in 2 minutes, while Regular Set takes 3 minutes. When sealed in a plastic bag to delay the impression pour, both versions offer 100 hours of dimensional stability. It is available in one stand-alone 500g pouch, or in a Fast Set starter pack that contains one 500g pouch of alginate, one mixing canister, a powder scoop and a water vial.

**DUX Dental**  
 800-833-8267  
 duxdental.com  
 CIRCLE RS NO. 25



**Abutments**

**Abutments for provisional restorations**

**HI-TEC IMPLANTS new abutments** are available in engaging or non-engaging versions. These abutments, designed for the fabrication of acrylic provisional screw-retained restorations, are said to be compatible with most major implant systems.

**HI-TEC IMPLANTS**  
 800-452-0582  
 hitec-implants.com  
 CIRCLE RS NO. 24



**Laser handpiece**

**All-tissue ablative scanning handpiece**

The **X-Runner** digital laser scanning handpiece for the LightWalker AT dual-wavelength dental laser offers automated all-tissue ablation capabilities, and allows users to adjust cutting area size and shape. It is well suited for precise, deep or wide cuts in hard or soft dental tissues. The handpiece can be used for a variety of treatments, such as standard cavity and veneer preps, as well as surgical and implant procedures. Practitioners can use the same parameters and settings that are available with the LightWalker AT's standard handpieces.


**Lasers4Dentistry, a division of Technology4Medicine**  
 949-276-6650  
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## Start spreading the news

There will be plenty of new dental products to see inside the Javits Center during the upcoming Greater New York Dental Meeting. The exhibit hall is open from December 1st to the 4th and, to help you navigate the aisles and booths in the Big Apple, DPR has highlighted 33 products that should be on your GNYDM must-see list. Each of the products has launched since the 2013 Chicago Midwinter Meeting, so take a look at the latest and greatest products that could make their way into your practice in the very near future.



### PatientActivator®

Introducing a redesigned dashboard at GNYDM, this patient communications and online marketing solution delivers the next generation in automated appointment reminders, online reviews, marketing promotions, and social media integration.

**1-800-DENTIST**  
888-463-7468  
1800dentist.com/patientactivator  
CIRCLE RS NO. 31

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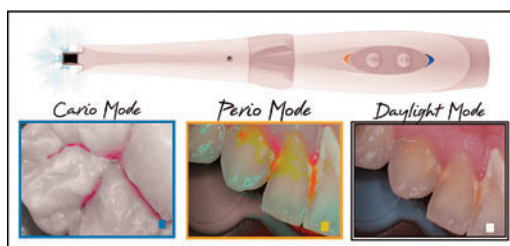


### Imprint™ 4

Billed as the fastest impression material on the market, this VPS impression material reportedly sets in just 75 seconds. Also, Imprint 4 VPS provides the same setting time of Imprint 3 VPS, but speeds up the set time with an active self-warming feature developed specifically for this product.

**3M ESPE**  
800-634-2249 | 3MESPE.com/Imprint4  
CIRCLE RS NO. 28

Booth  
#4018



### SOPROCARE

Using autofluorescence and chromatic amplification, this prophylaxis camera reveals caries, new and old plaque, as well as gingival inflammation. Three modes provide comprehensive information and tools necessary to perform complete and efficient oral examinations.

**ACTEON North America**  
800-289-6367 | acteonusa.com  
CIRCLE RS NO. 29

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#3809



### ScanX Swift

By uniting thin, flexible wireless sensors with a fast image scanner, this phosphor-plate imaging system sends images to a monitor just as quickly as rigid sensors. Additionally, ScanX Swift's sensors are said to deliver high-quality images and to be 10 times thinner than rigid sensors, which reportedly improves patient comfort.

**Air Techniques**  
800-AIR TECH | airtechniques.com  
CIRCLE RS NO. 30



Booth  
#4004



**Lubricare**

This handpiece maintenance device offers sprays specifically designed for separate phases of the maintenance cycle: Spraynet, for dissolving impurities and cleaning; and Lubrifluid, for lubrication of instruments. The device holds up to 4 instruments per cleaning cycle, while cycles take 25 seconds per instrument with two choices of cleaning and lubrication modes.

**Bien-Air USA Inc.**  
800-433-BIEN | [bienair.com](http://bienair.com)  
CIRCLE RS NO. 32

Booth  
#600,  
5037,  
5327



**NewTom VG3**

Offering a dynamic, single-rotation field of view, the VG3 is said to be an important contribution to the high-performance field of view offered by its predecessor, the VGi. A modular hybrid 2D/3D system, the VG3 can start as a 2D system that is upgradable at any time to include a cephalometric sensor or 3D cone beam computed tomography with an 11" x 8" field of view.

**BIOLASE**  
888-424-6527 | [biolase.com](http://biolase.com)  
CIRCLE RS NO. 33

Booth  
#1200



**eCEMENT™**

eCEMENT offers a light-cure and dual-resin cement to ensure lithium disilicate restorations provide long-term retention of single or multiple restorations, as well as shade stability. Additionally, the radiopaque cement offers easy placement of lithium disilicate veneers, onlays, crowns, three-unit bridges and inlays.

**Bisco**  
800-247-3368 | [bisco.com](http://bisco.com)  
CIRCLE RS NO. 34

Booth  
#5206



**Perfectemp 10**

This material's 10:1 automix formula results in a minimal oxygen-inhibited layer for better handling and polishability, plus it provides high compressive and flexural strength. 3.4% shrinkage is said to offer an accurate fit and marginal integrity, while the material's multiple uses make it well suited for a wide range of highly esthetic restorations.

**DenMat**  
800-4DENMAT | [denmat.com](http://denmat.com)  
CIRCLE RS NO. 35

Booth  
#2600,  
2800



**TPH Spectra™ Universal Composite**

This composite provides the handling preference of choice, while a reduction in shades allows for carrying less inventory in the office. Plus, it is said to provide confidence that the chameleon shading ability of the composite will blend into the surrounding tooth structure, making the restoration indistinguishable.

**DENTSPLY Caulk**  
800-532-2855 | [tphspectra.com](http://tphspectra.com)  
CIRCLE RS NO. 36

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#2600,  
2800

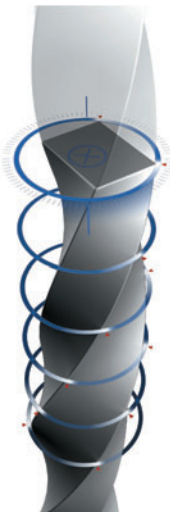


**Midwest® Automate™**

This 4-port automated handpiece maintenance system reportedly offers accurate and consistent cleaning, lubricating and expelling. Plus, all-steel construction is said to offer durability for a longer life, while a dedicated chuck cleaning port cleans and lubes the handpiece chucking mechanism for simpler insertion and extraction of cutting instruments.

**DENTSPLY Professional**  
800-989-8825 | [professional.dentsply.com](http://professional.dentsply.com)  
CIRCLE RS NO. 37

Booth  
#2600,  
2800



**ProTaper NEXT®**

These rotary files feature variable taper performance as well as an off-centered, rectangular cross-section for enhanced file strength. A rectangular core also adds greater strength as the file tracks down the canal. The axis of rotation differs from the center of mass, and as a result, only two points of the rectangular cross-section touch the canal wall at a time.

**DENTSPLY Tulsa**  
800-662-1202  
tulsadentalspecialties.com  
CIRCLE RS NO. 38

Booth  
#3424



**DEXIS go®**

This companion app to DEXIS Imaging Suite 10.0.5 and higher is an engaging way for dental professionals that use iPads to communicate with patients. Designed to offer a visual patient experience around image presentation, the app's new graphical environment models its parenting program to allow it to function as an imaging hub via a practice's Wi-Fi network.

**DEXIS LLC**  
888-883-3947 | dexis.com  
CIRCLE RS NO. 39

Booth  
#815



**Constic**

This self-adhesive flowable composite is reportedly engineered for multiple clinical procedures, offering etching, bonding and filling in a single step. Also, Constic saves clinicians treatment steps and reduces the risk of error, providing one of the strongest bonds to tooth structure in comparison to other leading brands.

**DMG America**  
800-662-6383 | dmg-america.com  
CIRCLE RS NO. 40

Booth  
#4027



**E4D NEVO Scanner & Design Center**

Outfitted with E4D's blue laser technology, the E4D NEVO scanner offers high quality, powder-free image capture, plus exceptional video-rate speed and ease of use. The Design Center offers rapid processing and alignment of scans by providing more energy and double the bandwidth of USB 3 connections.

**E4D Technologies**  
877-293-4945 | e4d.com  
CIRCLE RS NO. 41

Booth  
#434,  
3012



**G-CEM LinkAce™**

This self-adhesive resin cement's chemical initiator system reportedly provides high polymerization in self-cure mode, while phosphate monomers offer high bond durability to zirconia restorations. The resin cement shows low water sorption and is HEMA-free, which is said to offer exceptional color stability.

**GC America**  
800-323-7063 | gcamerica.com  
CIRCLE RS NO. 42

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\*As compared to competitors; data on file

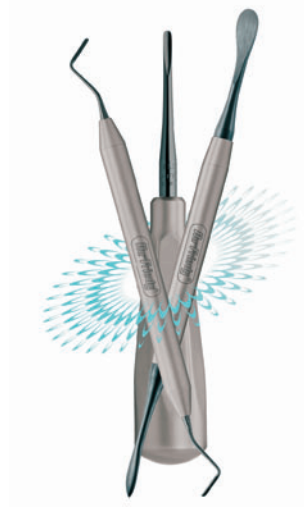
†Patent pending



**Sultan** Healthcare

[sultanhealthcare.com](http://sultanhealthcare.com)

Booth  
#1400



**Black Line Surgical Instrument Collection**

The 51 instruments in this collection feature a specially engineered coating that reportedly enhances contrast and decreases light reflection for better clinical outcomes. Additionally, the instruments' black finish is said to offer visual acuity at the surgical site and underlying tissue.

**Hu-Friedy**  
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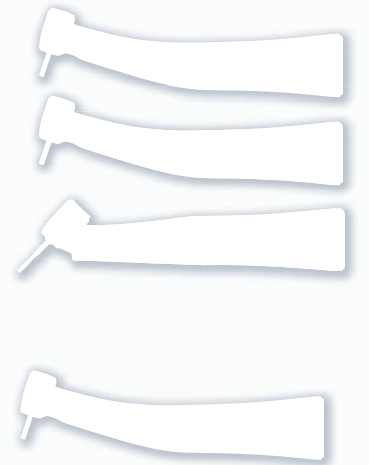
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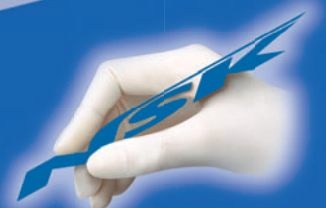


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# The total technology solution

How three technologies from Biolase—WaterLase iPlus, NewTom VGi and the 3Shape TRIOS—have positioned Golan Family Dentistry as a leading-edge practice that puts optimal patient care and comfort first.

by RENEE KNIGHT



**DR. HOWARD GOLAN**

graduated from the University of Michigan School of Dentistry and completed a general practice residency at North Shore University Hospital in New York. Dr. Golan also trained two years in the Implant Surgery and Advanced Prosthetic Fellowship Program at NSUH.

About three years ago, Dr. Howard Golan decided it was time the atmosphere at his practice reflected the high-tech, leading-edge dentistry he offers.

He practices with his father, Dr. Marshall Golan, who first opened Golan Family Dentistry about 40 years ago. Dr. Howard Golan came on as his partner in 1998, and since then they've worked together to create a practice that focuses on treating the mouth as part of the body, not just individual teeth. They offer their patients minimally invasive, preventative dentistry and all the high-tech products that make that kind of care possible, but until recently they practiced in the basement of a house. While it was a nice space, the father/son team began to outgrow it, and knew it was time to create a new, modern practice that would wow



**The father/son team** Drs. Marshall (left) and Howard (right) Golan have worked together since 1998, and are proud to offer their patients the most up-to-date technologies and the most minimally invasive dentistry possible.

their patients and better reflect the type of dentistry they offer.

After some searching, they found the right space to build their dream practice in Willston Park, N.Y., a space they could use to really showcase their technology and better do the type of dentistry they love. After working with an interior designer to create the look and feel they wanted, they moved into their new practice a year and a half ago. Today, the team couldn't be happier with the

modern atmosphere they were able to create.

"Patients who have been with us for many years are in shock," Dr. Golan said. "It's pretty amazing. I don't feel self-conscious any more when a new patient comes in looking for technology. Our office now matches what we do."

**The importance of high-tech**

The right technology is essential to any dental practice, Dr. Golan said, and that's why it is so important to him that his practice reflects that high-tech philosophy of care. Dr. Golan has built his reputation on making technology and advanced treatment a big part of what they do at Golan Family Dentistry. Patients know he's a high-tech dentist and that he offers the products that will make their time in the chair less stressful and more comfortable. Beyond that, using high-tech products in his practice keeps him passionate about his work.

"For me it's essential. It makes my life easier. It makes

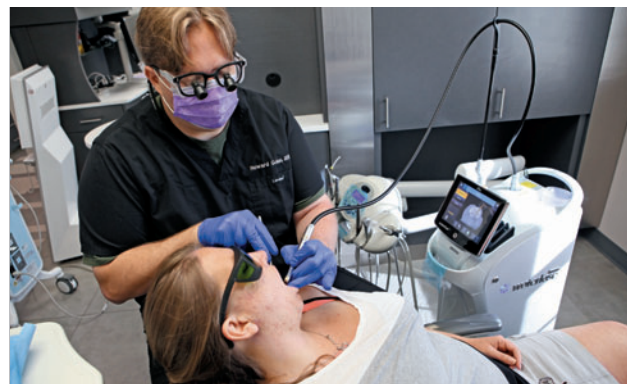
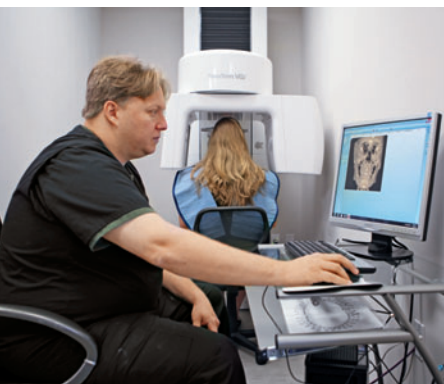
me enjoy what I do more," he said. "I've never been a 'drill and fill' guy. I call that pot-hole dentistry. That kind of dentistry can make you a lot of money but it didn't work for me. I needed something different."

Dr. Golan's love of technology started with the laser, then expanded to cone beam technology and digital impression taking. Thanks to products from Biolase—the WaterLase iPlus, NewTom VGi and the 3Shape TRIOS—Dr. Golan has the complete technology solution for diagnosis and treatment.

**Laser dentistry**

Dr. Golan first began using Biolase's WaterLase in 2004, and is amazed every day by what he can do with it. He now uses the latest version, the WaterLase iPlus, and even teaches courses about laser dentistry and what it can do for a practice. Laser dentistry is an amazing technology, he said, and more dentists need to understand just how valuable it is.

"It's built this practice. People ask for it. They look for it.



**Products make the difference**

Dr. Howard Golan and the team at Golan Family Dentistry have the complete technology solution with the WaterLase iPlus, the NewTom VGi and the 3Shape TRIOS—a fact that puts them on the leading edge in dentistry and makes them stand out to current and potential patients.



They're amazed by it. They're excited by it," Dr. Golan said. "And it's not just the patients; it's me. What I can do with laser dentistry wows me every day. It's hard for a dentist to find a reason every day to say 'wow that was cool.' We're doing that every day because of what we can do with lasers."

The benefits laser dentistry bring patients go far beyond the wow factor they experience when they first see it displayed in the practice. It's a minimally invasive technology that reduces the bleeding and pain normally experienced with a variety of dental procedures, from cavity preps to soft tissue management to root canals, Dr. Golan said. The benefits have been tremendous over the years, attracting new patients to Golan Family Dentistry.

### Cone beam imaging

About two years ago, Dr. Golan added the NewTom VGi to his technology mix. It seemed like the next natural extension, he said, and adding cone beam technology into his practice has improved diagnosis.

"It was to the point where the WaterLase had forced me to get better at diagnosing and understanding why things happen," Dr. Golan said. "There's a limit to what 2D film can give you. I got tired of the 'wait and see' approach. Cone beam technology allows us to see things we couldn't see before."

And with this technology, his patients see the benefit right away, Dr. Golan said. The 3D scans really enable them to see what's happening in their mouth, giving them a better understanding of why they need certain treatment. The 3D scans create accurate renderings that labs can use to create restorations that fit, and

they can do it in less time. It's also great for his patients who are concerned about radiation dose levels.

"The NewTom is spectacular because it has safety features on it. It has five fields of view, which allows me to only expose patients to what I need then," Dr. Golan said. "If I just need to look at a single tooth, I can do a 6X6 cm Field of View, or if I'm doing an orthodontic case I can do a 15X15 cm FOV. It has SafeBeam Technology. Every patient gets a different dose; the computer decides the dose. It takes scout images at a basic, very low dosage to make sure positioning is right, and then the machine calculates the necessary dosage to get what it needs. A child is different than a teenager, who is different than an adult."

### Introducing an intraoral scanner

CAD/CAM has been part of Golan Family Dentistry for about seven years now, but they just added the 3Shape TRIOS intraoral scanner to the mix about eight months ago, taking it to the next level. The TRIOS has enabled them to cut down treatment times while offering even more accurate impressions. Patients love it because they don't have to deal with the "goop" so often associated with impressions, and if Dr. Golan needs a re-take, it just involves a simple scan rather than four more minutes of impression material in their mouth. That also means less chair time for busy patients.

"Patients are amazed by it," he said. "I had a patient I had to give nitrous oxide and topical anesthetic to just to do an impression, and now there's no issue. We had to get my son an orthodontic appliance, but he's

## FEATURED PRODUCTS



### WaterLase iPlus [biolase.com](http://biolase.com)

The dual-wavelength WaterLase iPlus all-tissue laser is said to deliver more power, control and versatility for experienced laser dentists. Reportedly able to cut hard tissue twice as fast as current laser systems, without the discomfort or risk of cross contamination associated with conventional drills, iPlus creates an optimal bonding surface. The unit also features an intuitive applications-based user interface with a large, high-resolution touch screen programmed with more than 50 factory-loaded procedure presets. The iPlus with the proprietary 2780 nm YSGG technology is available in a dual-wavelength configuration with an integrated iLase 940 nm diode laser, or as a stand-alone unit. The completely wireless iLase will enhance the capabilities of the YSGG by providing a diode laser that can be used for unexpected soft-tissue cases in an adjacent treatment room, better control of bleeding, and the freedom to move around with no foot pedals or cords.



### NewTom VG3 [biolase.com](http://biolase.com)

Newly launched under the NewTom banner, the NewTom VG3 takes an image at every degree of rotation, 360° rotation = 360 images, increasing the range of possibilities for image manipulation. A revolutionary flat panel X-ray detector produces the clearest, sharpest images possible. NewTom VG3 features an adjustable Field of View, which allows the operator to irradiate just the right volume, depending on the required clinical application.



### 3Shape Trios 3D Intraoral Scanner [biolase.com](http://biolase.com)

Featuring Ultrafast Optical Sectioning technology, TRIOS® uses up to 1,000 3D pictures to create geometries based on real data. The scanner captures more than 3,000 2D images per second and does not require dentists to apply spray to coat the patient's teeth, making scanning fast, accurate and comfortable for patients. Dentists can preview 3D lab designs on the TRIOS screen, evaluate and agree on margin lines, access virtual diagnostic wax-ups and generally discuss cases with labs and patients when convenient.

a mouth breather and a gagger. I couldn't get an impression on him. He was great with this and had no issues. That's a big, big change."

### The right products

Dr. Golan and the team at Golan Family Dentistry know how important product decisions are to the success of their practice. When Dr. Golan looks at a new technology, he asks himself if it will change the way he practices. Will it make his job easier, and his patients

more comfortable. While ROI is an important factor, it's not the only factor and not always the most important; finding products that improve the care he and his team provides is.

"Those three technologies have really been robust in changing how we deliver dentistry and how patients perceive us and where we're going from here," Dr. Golan said.

Not only that, Dr. Golan looks for products that will keep him excited and passionate about dentistry, products

that make him look forward to coming to work every day. He's found that with these three Biolase products, his total technology solution.

"It's also about what it's going to do for the patient and what it's going to do for you, if it has a value for me to do better work, or to do more work and be excited about what I do every day," Dr. Golan said. "When I use these three technologies, it really makes me happy. That's really what it all boils down to."

●

Don't just read about it—watch! Go to [dentalproductsreport.com/dental/GolanFamilyDentistry](http://dentalproductsreport.com/dental/GolanFamilyDentistry)

# New VPS material creates fast, accurate impressions

New 3M ESPE Imprint 4 VPS Impression Material cuts setting time in half, while still offering adequate working times and accurate impressions that lead to restorations that fit—and happy patients.

by RENEE KNIGHT

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## ABOUT THE AUTHOR

Renee Knight is an award-winning journalist who has been part of the DPR team since 2007. She now serves as managing editor and enjoys writing, editing and planning content for both DPR print and online. She holds a BSJ from Ohio University and an MSJ from Northwestern University. She can be reached at [rknight@advanstar.com](mailto:rknight@advanstar.com) or via her Twitter handle, [@ReneeKnight1](https://twitter.com/ReneeKnight1).



**DR** Ben Miraglia has used 3M ESPE's Imprint VPS impression materials in his practice for as long as he can remember:

He's relied on Imprint 3 to create accurate impressions for years, and with a 95 percent success rate on first impressions, the material has done its job. But now, with the introduction of the new Imprint 4 VPS impression material, Dr. Miraglia expects to see that success rate reach 97 or 98 percent.

He's used the newly released Imprint 4 in his practice for a few months now and, not only has he not had to do any retakes, his patients are enjoying the faster set times this new impression material offers. Depending on which impression material you use from

the Imprint 4 portfolio, set times range from 2 minutes to a mere 75 seconds with the Super Quick option.

"That's a huge advantage. There's always been a 4 minute set time with these types of impression materials, and a 4 minute set time feels like a week to a patient," Dr. Miraglia said. "To be able to take a VPS impression in 1 minute and 15 seconds is just incredible. Everybody benefits. It saves chair time and saves patients that inconvenience of waiting 4 minutes."

Dr. Miraglia has used Imprint 4 to take impressions for a variety of cases, from crowns and bridges to Invisalign, and said patients have noticed a difference in how long they're waiting in the chair for the mate-

rial to set. Patients don't look forward to having what many see as "goop" in their mouth, so the fact that an accurate impression can be taken in half the time is something patients really appreciate. And Imprint 4 is able to offer these faster set times with the same working time dentists are used to, making this impression material an exciting development for both dentists and their patients.

## The idea behind Imprint 4

The team at 3M ESPE began working on Imprint 4 about four years ago, said Dr. Julia Farr, Scientific Affairs Manager, Global Indirect Solutions Business Team, and the idea to create an impression material with a faster set time came from their customers. Dentists wanted a material with a faster set time to improve patient comfort as well as to reduce the chance for mistakes. They also wanted something hydrophilic in the unset state to ensure precise reproduction of details in the oral environment, which leads to accurate impressions and restorations that fit.

"You have the same working time, which is important because you need time to syringe around the teeth to capture all the details, but you can remove the material from the mouth faster," Dr. Farr said. "When the material is setting in the mouth, distortions can occur. When the patient moves or the dentist moves, distortions can occur. With this material the time to set is much shorter, which can lead to better impressions. We have the super hydrophilicity in the unset stage, which is important to capture detail. It is more moisture tolerant to saliva and blood."

As Global Technical Services Advisor for 3M ESPE Prosthodontic Business Team, Mack Rivas is part of that team that talks with dentists and assistants to get a feel for what they really want and need in a product (in this case, impression materials). Once Rivas and his group gathered this informa-



**3M ESPE's new Imprint 4 VPS impression material** offers a fast set time thanks to its patent pending self-warming mechanism as well as accurate, predictable impressions. For more details visit [3MESPE.com/Imprint4](http://3MESPE.com/Imprint4) or circle RS No 80.



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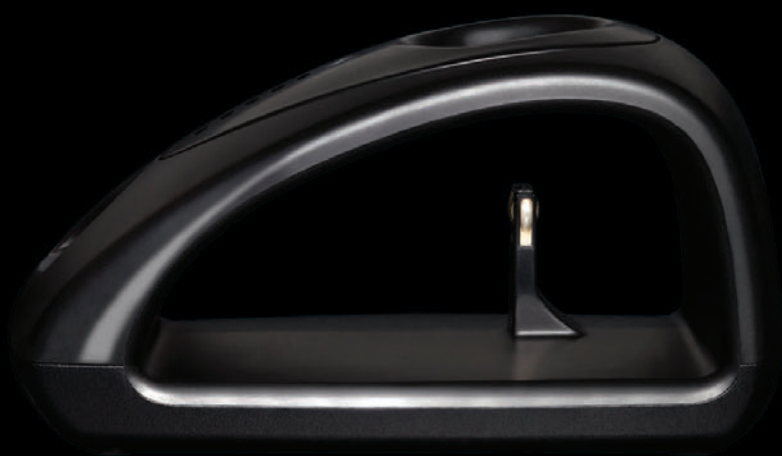
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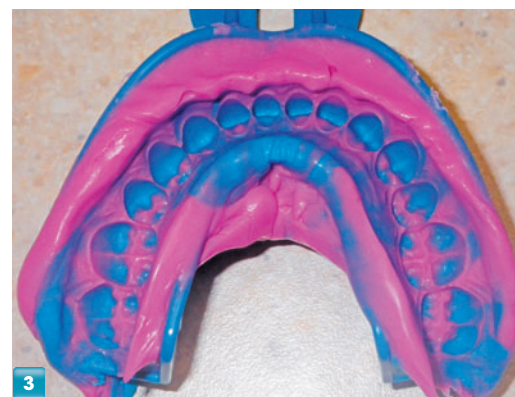
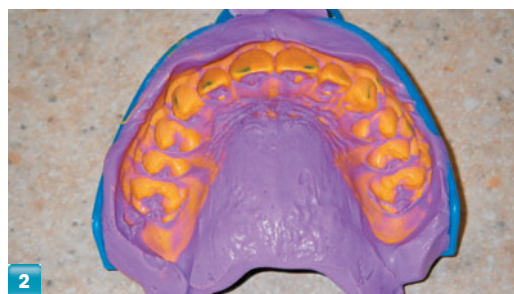
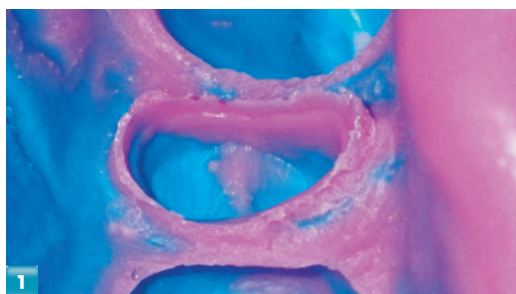
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**Figs. 1-3** Crown impression using Imprint 4 Heavy and Light impression material (Fig. 1). Invisalign impression using Imprint 4 Super Quick impression material (Fig. 2). Invisalign impression using Imprint 4 Heavy and Light impression material (Fig. 3).

## The benefits

3M ESPE's new Imprint 4 offers many benefits, including:

- Short intraoral setting times without compromising working times
- Demonstrates super-hydrophilic behavior in the unset state, which is crucial to capturing the finest details in the moist oral environment
- Creates accurate impressions for precise fitting restorations
- Makes the experience more comfortable for patients, especially gaggers, and leaves less room for error
- The material features a pleasant mint taste
- New fresh colors make the margins easy to read
- Imprint 4 VPS is available in Heavy & Super Quick Heavy, Light & Regular, Super Quick Light & Regular, and Putty formulations to meet a variety of needs

tion, or voice of customer, for what became Imprint 4, they sent it on to the Research and Development department as well as the company's engineers, who from there began thinking about how to develop a product that would meet those needs.

No matter the product, input from dental professionals is key to product development at 3M ESPE, from the very beginning until the product is released, Rivas said.

"3M ESPE's new product introduction process is a very structured way of product development and commercialization," said Dr. Peter Osswald, who is part of the R&D team at 3M ESPE. "This process includes several reviews to demonstrate performance, safety, regulatory requirements, manufacturability and commercialization aspects of a new product. The customer is always in the center of our products. In the beginning, we define the basic product features based on the customer feedback and develop prototype formulations, which meet exactly these requirements in lab tests. After biocompatibility testing and regulatory approval, the customer feedback obtained from application tests in several countries is the key decision factor for the start of commercialization."

And when it comes to new product development at 3M ESPE, there are several departments involved, from R&D to production to quality management to safety to marketing. New product development at 3M ESPE is an intense process that involves a variety of players. The

process can take years, but once the product is ready for market, the team members involved are confident the product will be a success, and is something that will help their customers practice better dentistry. And that's exactly how they feel about Imprint 4.

"The Imprint 4 portfolio consists of various materials offering different setting times and viscosities to satisfy all customer preferences and requirements," Dr. Osswald said. "We have only been able to succeed in developing all of these materials in time by a highly motivated team and with all the individuals acting together as one unit."

### Why now

In recent years, innovation in impressioning has been mainly attributed to digital impression systems, Dr. Osswald said, something 3M has been involved in with the development of the 3M True Definition Scanner.

Even so, many dentists still use VPS material to take impressions, and that's an area that hasn't seen much of an update, said Mark Cotton, Marketing Manager, Impression Materials. That, combined with the fact they knew dentists wanted a material with faster setting times, drove the team at 3M ESPE to create Imprint 4.

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“There hasn’t been a wow factor in the VPS impression material business for a long time. Imprint 4 brings the wow factor with the blazing fast intraoral set time while maintaining adequate working time,” Cotton said. “Doctors are always looking for ways to decrease procedure time and increase patient comfort. Imprint 4 accomplishes both of these issues. More importantly, this product benefits patients by reducing the time they have to sit in the chair waiting for an impression to be completed. Nothing good can come from having an impression take longer in the mouth.”

### How it works

The team at 3M ESPE knew dentists and patients wanted an impression material with a faster set time, they just needed to find a way to make it happen. After screening different technologies and approaches, they found adding a self-warming mechanism to accelerate the VPS setting reaction was the best way to achieve a shortened setting time without compromising the working time, said Rüdiger Hampe, R&D Services, Customer Integration.

In this special case, Dr. Osswald said they knew they only needed to accelerate the second half of the setting reaction and that the first half—the working time—should remain unaffected. They made this happen by using an additive that has a tailored reactivity, enabling the self-warming reaction only in the last part of the setting reaction.

“Imprint 4 incorporates new patent pending technology that makes the material warm from within,” Cotton said. “Once the material is in the mouth, the material will actively warm up to body temperature (98.6). The warming of the material allows the intraoral setting time to be reduced. The material will never get warmer than 98.6. The active-selfwarming allows Imprint 4 to have a faster set time, while also increasing patient comfort and decreasing procedure time.”

## Changing the impression material category

While dentists don’t have to learn a new technique to use Imprint 4, this new impression material is changing the patient and doctor experience. Reduced set times means less chair time, which leads to happy patients, fewer mistakes and restorations that fit.

### Putting Imprint 4 to the test

Before a new product can be brought to market, it needs to be tested in the field. 3M ESPE performed clinical application testing with 300 dentists in the U.S. and Europe, Dr. Farr said. Each dentist received prototype material, which they used for six weeks. These dentists created more than 3,000 impressions with the material and each one sent feedback on what they liked about the product or how it could be improved.

“This is a very important part because, first of all, it gives you confidence that the product performs how it should. We want to make sure it works for the dentists and that they can handle the product in the right way, and that they like the product,” Dr. Farr said. “Then we can go back and make changes if needed.”

### The feedback

The clinicians who have had a chance to use Imprint 4 in their practice, like Dr. Miraglia, love the faster set time and the accurate impressions, Rivas said. It makes impression taking faster, easier and more predictable, and that’s something every dentist wants.

“The overall satisfaction rate was very high. The short intraoral setting time, combined with adequate working time, was mentioned as one of the most significant application benefits,” Hampe said. “Impression accuracy, including high detail reproduction, was another reason

for dentists’ overall satisfaction with Imprint 4. As a result of satisfaction, 89% of the testers would recommend Imprint 4 VPS impression material to their colleagues.”

Dentists are also pleased with how easy the margins can be read, Dr. Farr said. The new, fresh colors offer a great contrast that makes this possible. Dental lab professionals have also taken note, and are thrilled with the crisp, accurate impressions they’re receiving.

### Why you should give it a try

There are no new techniques or a learning curve with Imprint 4—it works the same way as the impression material you’re using now, Hampe said. But this new impression material offers a faster setting time and more accurate impressions for better fitting restorations, both features that will make impression taking easier, quicker and more successful. It makes the impression-taking procedure less stressful and more comfortable for patients, especially for patients who are gaggers. These are all benefits patients will notice and talk about, and that can only mean good things for your practice.

“The general procedure of impression taking does not change with Imprint 4 as the portfolio offers impression materials for all techniques as well as different viscosities and setting versions,” Dr. Osswald said. “But impression taking with Imprint 4 makes the procedure easier, faster and more convenient for the dentist and the patient.” ●



“WHEN YOU HAVE A CONNECTION WITH A PATIENT AND THEY’VE HAD A GREAT EXPERIENCE, THEY WON’T GO ANYWHERE ELSE. THEY HAVE TO TELL EVERYONE ABOUT IT. THAT’S WHEN YOU FEEL LIKE YOU’RE THE ONE MAKING THE DIFFERENCE.”

NICOLE MATHEWSON  
Office Manager, Hadfield Dental Care | Lehi, Utah

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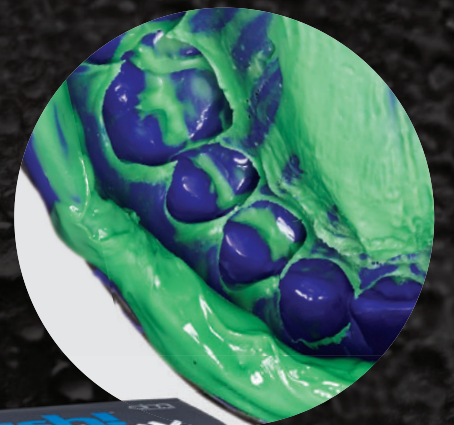
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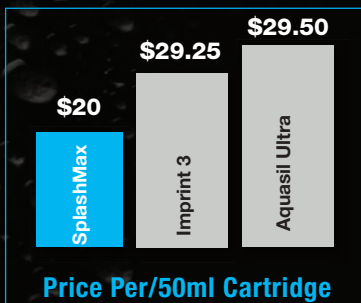
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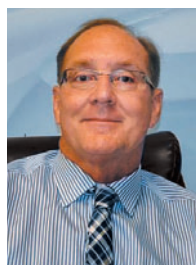
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I MADE THAT:

# Komet USA's F360™ Endodontic System

An interview with COO Warren White about the development of the Komet® F360 endodontic files.

Compiled BY RENEE KNIGHT



**WARREN WHITE**  
CHIEF OPERATING  
OFFICER

These days, many general dentists are referring less and opting to treat more speciality cases in-house.

That includes endodontic cases, and that's why Komet USA decided it was time to develop a product that would help general dentists successfully treat these endodontic cases in their practices, addressing common challenges including speed and safety. That product is the F360 root canal preparation system.

Here, COO Warren White tells us about this product's development and how it can help your patients and practice.

**Q:** What was the objective in the creation and manufacture of the F360 endodontic files?

**A:** For Komet USA, the F360 root canal preparation system is simply the right product introduced at the right time. Not only has the need for endodontic services expanded in line with demographic shifts, but within the dental community, general practices are now providing almost all types and levels of treatment. For economic reasons, general dentists are referring less to specialists for treatment such as endodontics. General dentists who previously focused exclusively on cosmetic dentistry or family dentistry, for instance, have moved from being generalists with a specialty to being true generalists. They're not referring cases out to specialists as they've done in the past.

Komet's objective with the development of the F360 files was to address the needs of approximately 90 percent of the endo cases general practitioners encounter among their patients. We wanted to appeal to the practice style of U.S. dentists.

**Q:** What was the nature of the development process?

**A:** We began with the idea of minimizing the number of files required for endodontic treatment, seeking to offer some distinct advantages over root canal preparation systems already on the market. Komet developed the F360 file with a unique S-shaped cross-section, which makes the file exceptionally

sharp and strong yet flexible. This development, in turn, provides several inherent advantages, including exceptional speed and efficiency, with only two files required for most root canal preparations.

**Q:** Is there a specific aspect of the product of which you are particularly proud?

**A:** We're proud of the fact Komet can quickly respond to market needs, and I'm personally proud of the Komet R&D group that addressed these needs. The F360 files are constructed of NiTi, which has been around for years. The development of the S-shaped cross-section, however, has been a game-changer, an advancement in design technology that dramatically reduces the number of files required for preparation procedures. This revolutionary change affects speed and simplicity for faster, easier endo preps.

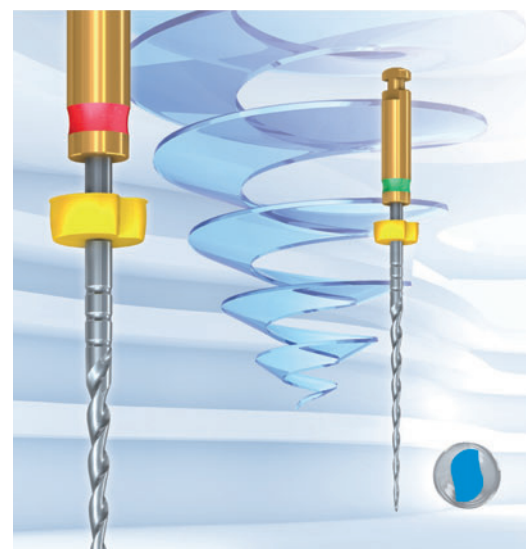
Six months ago, at the early stages of the marketing program, we needed a banner headline to describe the product. After a great deal of consideration, we came up with "Undeniably Simple." This phrase represents the advancement that F360 files bring to endodontic treatment. Use of the files doesn't demand a change of technique, and these rotary-operated files require only one speed and one torque level for all the instruments. In short, "Undeniably Simple" says it all.

**Q:** Why did Komet decide to expand its presence in a very competitive endodontic market with the F360 launch?

**A:** Komet has been in the endo-instrument business for many years, producing, among other items, stainless steel hand files. Our traditional K-Files and Hedstrom files, for instance, have long been successfully employed for endo treatment and continue their usefulness and popularity.

Komet is a worldwide leader in powered (rotary) instrumentation, and the F360 files are a logical extension of our product line. After six years in the U.S. rotary instrument market, Komet was ready to introduce the right file system to meet the needs of a specific market. We have the existing technology in other markets and sought to launch a product that was Americanized and appealed to the general dentist.

Looking at current trends in restorative dentistry involving the increasing use of esthetic, high-strength-ceramic restorations (zirconium dioxide, for example), Komet provides the instruments to effectively work on the newer, popular, durable materials and the instruments that simplify root canal access through the restorations. As we continually work to better integrate our product line, the addition of the F360 endo files brings us almost full-circle. ●



## Komet USA LLC

Komet USA F360™ endodontic preparation files are designed to address the increasing number of root canal treatments now performed in U.S. general dental practices, looking to meet the challenges of speed, ease of use, economy and safety by providing high-performance, reliable instrumentation. Komet's R&D department took this vision and designed files with a double-S cross section for efficient, mechanical cleaning and shaping of the root canal, with only two files required for most preparations. The pre-sterilized NiTi files also feature a thin instrument core, providing exceptional flexibility while minimizing preparation errors such as canal transportation, zipping and ledging.

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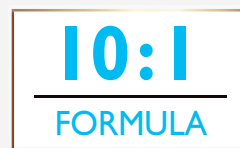
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I MADE THAT:

# 3Shape's TRIOS® Color Digital Impression Solution

An Interview with Tais Clausen, co-founder and CTO of 3Shape.

Compiled by RENEE KNIGHT



**TAIS CLAUSEN**  
CO-FOUNDER AND  
CHIEF TECHNOLOGY  
OFFICER

Since its release, the 3Shape TRIOS® Color has fascinated many dental professionals with its high performance and ability to create realistic and life-like impressions with exceptionally natural coloration of both teeth and gingiva.

Just months later, the 3Shape TRIOS® Color is being used successfully in dental clinics worldwide. Here, 3Shape co-founder and Chief Technology Officer Tais Clausen talks about the product's development and the key features that make it different.

**Q:** What drove 3Shape to embark on making an intraoral scanner?

**A:** After years in the dental lab segment, we have accumulated a strong combined expertise within optics, electronics, fine mechanics and software. Combined with our vast knowledge about the dental industry, this made us perfectly geared to create the best intraoral solution for digital impression-taking. We saw many things in current solutions we felt we could improve. Not only technology and performance-wise—but also in terms of the solution concept and how digital technologies could benefit dentists. Here we could apply our years of experience within dentistry and CAD/CAM solutions.

We saw how intraoral scanning and CAD/CAM solutions in labs could be tied together in complete digital workflows aided by digital communication—something other solutions did not focus on. We developed advanced scan workflows matched to dedicated CAD workflows. The concept allows dentists to enjoy new clinical possibilities and offer patients a broad range of indications and materials.

**Q:** What were the biggest challenges?

**A:** We wanted to make a solution that helped dentists daily. It was important to make it comfortable for the patient as well as easy for the doctor to use. We also focused on creating a scanner that was both fast and accurate. We performed clinical evaluations and asked patients and doctors for their opinions. Most patients found the experience much more comfortable than silicon impressions. Doctors reported they saved time and achieved better fits. We wanted to introduce new levels of performance for intraoral scanning. To achieve the speed and accuracy, we had to develop our own special camera, and thus the TRIOS® camera is custom-made and generates more than 3,000 images per second.

**Q:** What features are you most proud of?

**A:** We are proud of many features. Our RealColor technology is an amazing innovation. The natural looking colors of our scans always astound those that see them. Some doctors even use TRIOS® Color scans as a replacement for intraoral photographs.

With TRIOS®, it's easy for doctors to get great scans within minutes. There is no need to hold the scanner at a special distance or angle; the scanner transmits a sound that guides the doctor.

We offer the TRIOS® in various configurations to match individual clinic needs. The TRIOS® Cart is a single equipment unit with built-in touchscreen and PC. The POD offers optimal mobility and flexibility for clinics with limited space. We offer both a Standard and TRIOS® Color solution.

TRIOS® is spray- and powder-free, ergonomically designed, and contains a wide range of tools to clinically validate the impression.

**Q:** How does it make a dentist's life better?

**A:** Compared to conventional impression-taking, intraoral scanning introduces many benefits. One of the most important advantages is the improved and consistent



## 3Shape

3Shape TRIOS® Color is built on 3Shape's Ultrafast Optical Sectioning™ and RealColor™ technologies. TRIOS® allows doctors to scan for an extensive range of indications—including crowns, bridges, inlays, onlays, veneers, post & core, orthodontics and customized abutments with emergence profile capture. The system's built-in Communicate™ software lets doctors and labs interact directly to exchange case information, 3D designs, 2D treatment previews and comments.

As an integral part of every TRIOS® system, 3Shape offers yearly software upgrades to keep the system ever-strong with new features and enhanced performance, and back users with an extensive support network and a wide range of different learning channels. 3Shape TRIOS® Color was recently awarded the Pride Institute's "Best of Class" 2013 Technology Honor, for its unique market-differentiating characteristics and the high value it creates for dentists.

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impression accuracy facilitated by digital capture. The accuracy provided by a digital impression is inherited all along the workflow chain—starting from the clinic, through design in the lab, and on to final manufacturing. High accuracy from the start results in better fits, reduced grinding and fewer adjustments during seating.

The digital method makes impression-taking more convenient, fast and easy; there are no impression materials and mess involved, and the dentist saves costs on materials and shipping. Patients also have a better experience. Digital impression-taking is quick without the usual discomforts caused by impression substances in the mouth. The method helps reduce overall chair time.

**Q:** How does TRIOS® return the investment?

**A:** The technology provides a range of savings such as impression materials, trays, shipping costs. Because doctors get back a high rate of accurate restorations, they save valuable time. We did a study comparing analog and digital impressions. Our records show crowns made with TRIOS® took less time to seat than crowns designed from physical impressions. Both patient comfort, and the clinic's image as high-tech, are hard to put a price tag on. But both could bring more business to the clinic. ●



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I MADE THAT:

# Providing value beyond products

In 2012, Pentron asked their customers what they needed most—and they listened. The result? Pentron Strada.

by RYAN HAMM



**AIMEE CHEMENTÉ**  
ASSOCIATE PRODUCT  
MANAGER, PENTRON

Pentron has long been a leading manufacturer and innovator in the dental space, offering a wide array of materials such as flowable composites, impression materials, and cements. But over the last few years, they dug a little deeper in an effort to discover what, exactly, their customers felt was missing in the dental industry. The answer they got: clinicians wanted help with education, for their patients, for their staff, and for themselves. And so, in the same spirit that led to breakthroughs in material technology, Pentron began to create a new way to offer dentists free and comprehensive educational resources.

The solution? Pentron Strada.

Pentron Strada is an online resource offering information, news and education to clinicians and their patients. The site contains blogs written by working dentists, richly illustrated and content-packed infographics containing information for both clinician and patient, helpful business management suggestions, and an aggregated news section that pulls together the most important dentistry news in real time.

We recently spoke with Aimee Chementé, Associate Product Manager at Pentron, about the reasoning behind Pentron Strada, the surprises and challenges of the website, and how Pentron hopes to continue meeting clinicians' needs in the years to come.

**Q:** What led Pentron to launch Pentron Strada? What were you hearing from your customers that made you decide to create this website?

**A:** Pentron has been around for more than 40 years and we've long been known for

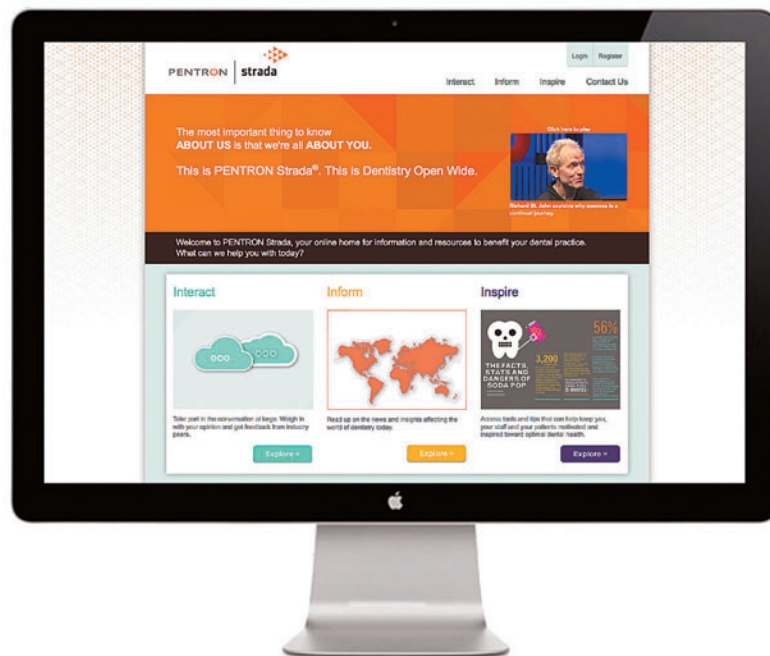
developing dental restoratives of great quality at a very fair price. In 2012, we asked our customers what they wanted—not just in terms of products, but in terms of their practice operations as well. One thing we heard over and over again from dentists was that one of the hardest things to get hold of as a dentist was up-to-date education materials, both in terms of CE and patient education.

Historically, most of the educational content out there you have had to pay for, so we started brainstorming as to how we might be able to get useful, educational content to our customers, something that genuinely goes beyond the value of great products.

Pentron Strada is designed particularly with Pentron customers in mind, but it's not something that is limited to that audience. It is intended as an open, non-commercial resource that any dentist out there can find useful and can easily access. We set to work creating a content-rich website that is interactive and ever-changing. We have some eye-catching infographics and other printable content accessible on Pentron Strada, too—and visitors can print the items they want to hang on their walls or share with patients.

**Q:** What has been the most challenging thing as you've been updating and refining Pentron Strada?

**A:** When we started Pentron Strada, we set the goal to take all feedback we get from dentists into consideration. What we found was that different doctors wanted different things, so the challenge has been balancing this. But prioritizing this feedback and figuring out what we can do to help is at the heart of why we created Pentron Strada in the first place.



**Pentron**

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**Q:** What has been the most surprising thing to you about Pentron Strada?

**A:** I think there are actually two surprising things: the feedback and the comments. We have made it really easy for a person to contact us and provide feedback. We've heard consistently positive things—the feedback we've had has been of the “this is great” or “I really like this. Can I share it on my website or Facebook page?” We were also pleasantly surprised at just how people want to use the infographics on Pentron Strada. When we first created the infographics, we viewed it as an entertaining way to share relevant information. Then we started getting request after request asking, “Can we put this on our website?” That wasn't something we specifically expected. We had hoped dentists would

share them with patients by printing them out—and that is happening as well—but they're actively posting them on their Facebook pages, and that's a pleasant surprise.

**Q:** How has Pentron changed or evolved the site with the feedback you've gotten from users?

**A:** The biggest thing is making it easier to share content from the website. What's happening is, in a year from now, you're going to see more of everything that is there now. The poll section has been really interesting—we've gotten some great feedback on the questions. At the end of the day, the goal is, “How can we assist the doctor in communicating with patients and staff?” It's all about providing more value to our customers beyond great products. ●





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I MADE THAT:

# CAO Group's Precise® SHP

An interview with Densen Cao, President and CEO of CAO Group Inc., about the development process behind the Precise SHP Diode Laser and iPod touch.

Compiled by STAN GOFF



**DENSEN CAO**  
PRESIDENT/CEO,  
CAO GROUP INC.

The Precise SHP Diode Laser System's merger of diode laser technology with the operating system of an Apple iPod touch was designed to enhance everyday dental procedures with real-time tech support.

Here Densen Cao, the President and CEO of CAO Group Inc., tells DPR about the development process behind this technology.

**Q:** What was your role in Precise SHP's development?

**DC:** My role in the development of the Precise SHP was really anticipating the next step in the evolution of diode laser technology, which I believed to be centered around expanding the adoption of diode lasers in dentistry and increased communication with, and support of, practitioners. This vision for the next generation diode laser led me to the idea of using the iPod touch as the "command center" of the laser. With the iPod touch technology already in place, it was just a matter of pairing the two to create a state-of-the-art diode laser system.

**Q:** What was the idea behind this product and what problems did it solve?

**DC:** Pairing an iPod touch with a diode laser addresses a number of issues. One, from a development standpoint, the iPod touch already had the touch screen and communication features so development time was improved. Two, once a diode laser is purchased there is no opportunity to upgrade the system as dentistry continues to progress in applications of diode lasers. The iPod touch "command center" always

can be updated through Apple Apps with new procedures, program upgrades and other improvements that keep it on the cutting edge long after it has been purchased. Three, the iPod touch's communication capability enables the practitioner direct access to clinical, technical and training support through FaceTime and demonstration videos. No other diode laser system can provide that level of support.

**Q:** How long was the development process?

**DC:** It took us more than three years to develop the Precise SHP. Pairing an Apple device with the complexities of a diode laser can be challenging with all the changes and updates associated with a consumer electronic product like an Apple iPod touch. For example, when Apple changed the connector to all of their hand held devices, we had to change the connector on the laser to ensure it was compatible with the latest version of the iPod touch.

**Q:** What were the main challenges?

**DC:** There were many challenges in developing this product, for example, technical, regulation compliance, safety, etcetera. The main challenge was to bring together a consumer product with a medical device and gain FDA approval for various procedures. Because this had never been done before, the FDA gave the Precise SHP extra examinations to ensure its reliability, efficacy and safety as a class IV medical device. As part of compliance, we have to work with Apple constantly to ensure we met all their requirements to incorporate an Apple product into a medical device.



**Q:** What feedback have you received?

**DC:** We have received great feedback since its introduction. Your readers have voted it one of the top 50 technology products. Dentists doing pre-launch evaluations have commented on the ease of operating the laser with its 21 procedural presets for the most common dental procedures. They liked the iPod touch display stand that mounts on the handpiece rack for convenient control of the laser and easy viewing of the iPod touch screen. They were also impressed with its versatility beyond soft tissue surgical procedures including pain relief treatment and in-office teeth whitening. First-time diode laser users indicated their familiarity with the Apple iPod touch and its intuitive communication platform boosted their confidence in using a diode laser system.

**Q:** What features are you most proud of?

**DC:** I would say the best feature is the iPod touch's full operational control of the laser and its interactive communication capability with customers. The iPod touch technology provides the clinician access to a variety of communication tools. Wifi connectivity enables the use of FaceTime to connect with clinical and technical support. Training videos and procedure demonstrations can be instantly accessed on the iPod touch. The Precise SHP Laser App can be updated with enhancements,

## CAO Group's Precise SHP

The new Precise® SHP Diode Laser System pairs advanced laser technology with the cutting-edge operating system of an iPod touch. The Precise SHP Diode Laser system offers live customer support through FaceTime™, unlimited updates and instant access to training videos and laser procedure demonstrations.

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# DENTSPLY Caulk's TPH Spectra

The Catapult Group presents its review on this universal composite.

by DR. SAM SIMOS



## TPH SPECTRA

TPH Spectra™ Universal Composite provides the handling preference of choice with TPH Spectra LV (Low Viscosity) and TPH Spectra HV (High Viscosity) that is spreadable or packable. The new shading system for the composite offers seven VITA-based shades that cover the entire VITA shade system. This reduction in shades allows for carrying fewer inventories in the office and is said to provide confidence that the chameleon shading ability of the composite will blend it in to the surrounding tooth structure making the restoration indistinguishable.

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## ABOUT CATAPULT

Catapult is an organization that consists of more than 50 clinicians spread throughout Canada and the United States. As a company, manufacturers pay a fee for their product to be evaluated and what we deliver are truthful, independent answers from surveys that we develop with them. We have had many products that have either had to be altered before hitting the market or simply never arrived because of our openly honest evaluations. In this way, Catapult assists the manufacturer to avoid potentially releasing a faulty product, or simply a product that needs refinement. Lastly our clients are omnipresent in the industry, small to large, no favoritism, simply reviewing the latest products in our practices.

In most practices, composite is commonly used as a restorative material in both anterior and posterior restorations. In a recent survey by the Catapult Group, more than 75% of dentists polled use three or more different composite systems to satisfy different challenges posed when placing these restorations. Currently, different composite shades have been necessary to provide a lifelike optical appearance of natural tooth structure to create a structurally sound restoration for functional stability and a pleasing esthetic result.<sup>2,4</sup> This article will introduce Dentsply Caulk's new TPH Spectra Universal composite through Catapult Group's evaluation and a photographed case study.

Techniques for composite placement differ when trying to create a lifelike appearance. The goal of any technique is to enhance the composite's optics so the operator can create opacities, translucencies, or subtle chroma and value differences within the enamel.

## Layering technique

The layering technique is the most commonly used technique to achieve this result. While many have mastered this technique, it remains a difficult, time consuming, and complex technique that requires both an artistic eye, a large amount of composite inventory, and a knowledge of the shades used to create a lifelike result. Ironically, the advancements and sophistication in composite technology, designed to give better/easier results, have instead made it more difficult, in many instances, for the clinician to make the correct shade decisions. This leads to operators giving up on the layering technique, opting instead for materials that are "simpler" or more "chameleon-like."<sup>1,3</sup>

## Closing the gaps

Dentsply Caulk's new TPH Spectra™ universal composite builds on the trusted TPH brand that has been the gold standard in composites for the last 20 years. TPH Spectra™ is the only composite offered

in two viscosities: high viscosity and low viscosity, depending on your preference for handling. TPH Spectra™ also incorporates a unique optic system that allows for simplified shading by providing seven of the most essential tooth shades that cover the entire VITA spectrum. TPH Spectra™ also offers a unique shade guide that leads the clinician to the correct composite shade. All of this helps save time when placing restorations.

Putting this new composite to the test, a 35-year-old male presented with spaces between tooth Nos. 7, 8 and 9 (Fig. 1). He wanted the spaces closed. Because he speaks in front of large audiences, a natural cosmetic result was important to him. A factor to consider when selecting a shade and technique is the varying degree of translucency and opacity within his teeth. When taking the shade with the TPH Spectra™ shade guide (Fig. 4), we noted both shades B1 and A1 were very close to the shade of the tooth (Figs. 2 and 3). The simplicity of the system allows the clinician to pick one





**Fig. 1** A 35-year-old male presented with spaces between tooth Nos. 7, 8 and 9.

**Figs. 2 and 3** Shades B1 and A1 are very close to the shade of the tooth.

**Fig. 4** The Spectra shade guide.

**Fig. 5** The simplicity of the system allows the clinician to pick one of the shades from the supplied shade matching guide.

**Fig. 6** Shade A1 was used on the central incisors and B1 on the lateral incisor using a non-layering technique.

**Fig. 7** After placement and shaping of the material, polishing with an Enhance finishing disc was performed.

**Fig. 8** The final result.

**“The resulting translucencies, opacities and subtle chroma value of TPH Spectra composite were excellent and, best of all, the patient loved the result and could not believe how little time the entire procedure took to complete.”**

of the shades from the supplied shade matching guide (Fig 5). In this case, shade A1 was selected because the overall appearance of the tooth matched the A1 tab better.

It should be noted that either of the shades (according to the shade matching guide) could be used. To test the system, I chose to use A1 on the central incisors and B1 on the lateral incisor using a non-layering technique (Fig. 6). After placing and shaping the material, polishing with an Enhance® finishing (DENTSPLY Caulk) disc was performed (Fig. 7). Immediate post placement results were captured with photos and evaluated (Fig. 8).

The resulting translucencies, opacities, and subtle chroma and value of the TPH Spectra composite were excellent and, best of all, the patient loved the result and could not believe how little time the entire procedure took to complete (about 40 minutes).

### Catapult Group evaluation

Overall, TPH Spectra™ was very well received by Catapult’s evaluators. They seem to be very discriminating in that they use a wide variety of systems (more than 75% use three or more systems) to meet their personal preferences and patient needs.

Eighty-six percent rated this product in the excellent/good category, while 77% would incorporate TPH Spectra™ into their posterior composite practice and 71% into their anterior composite practice. An overwhelming 90% of evaluators would recommend TPH Spectra™ to their colleagues.

The top three reasons evaluators liked this material over their current system were:

1. Chameleon effect
2. Simplified shade system
3. Overall handling and less stickiness to instruments

### Conclusion

Results drive our material decisions. Control over the entire restorative process is crucial. Employing a material that gives you command over shade selection to account for a wide range of varying opacities and translucencies, as well as high polishability and sculptability, are essential for a great result every time. ●

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# “Every dentist should consider using the VELscope for every oral examination.”

One clinician’s view on VELscope VX, distributed by DenMat.

Compiled by RENEE KNIGHT



## VELscope VX

The VELscope VX® enhanced oral assessment system is said to be effective, minimally invasive and can be seamlessly implemented in a patient’s routine dental check-ups. The system’s blue-spectrum light causes the soft tissues of the mouth to naturally fluoresce. The device can detect a wide variety of abnormalities so they can be discovered before they are visible to the unassisted eye.

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**DR. JEAN C. WU**  
Newport Beach, Calif.  
PRACTICING SINCE 1990

Seven years ago, Dr. Jean Wu changed the way her practice does oral cancer examinations.

Instead of relying on the conventional exam alone, Dr. Wu also uses the VELscope oral cancer detection aid to ensure every patient receives a thorough examination. As a dentist, she feels it is her responsibility to provide this to her patients, and she also knows this supplemental screening can save lives.

### How did you first hear about the VELscope? What made you decide you wanted to incorporate it into your practice?

Steve Semmelmayer, DenMat’s CEO, introduced the technology to our office and we immediately felt it was important to provide this service to our patients. It was a non-invasive method of screening for oral cancer that was easy to implement, user-friendly and painless for the patient.

### What benefits does it bring to your patients?

There are no traumatic brushes or messy solutions for patients to endure, and early detection of dysplasia and soft tissue pathology can save lives.

### What benefits does it bring to your practice?

Having the latest technology really changes the way we do our oral cancer examinations and demonstrates to our patients we are always striving to improve our methodology and be as effective as possible with our care.

### Why would you encourage other dentists to use the VELscope in their practice?

It is our responsibility to complete a thorough oral cancer evaluation at every hygiene recall and re-examination, and the VELscope provides us with the reassurance we are adding an additional dimension to the visual and tactile examination. With the VELscope, we can better differenti-

ate between the normal appearance and the abnormal and document what we see with the camera. It is an effective way to communicate with other physicians, as well as patients.

### How important is it for dentists to screen for oral cancer?

It is critical as part of our comprehensive care and health management. Patients see their dentist more than twice a year on average, and physicians may be lucky to see their patients once a year. As dentists, we understand the oral anatomy more intimately than our medical colleagues and the oral cavity is our area of responsibility.

### Is there anything else you’d like to say about the VELscope’s benefits?

The VELscope is a simple tool to supplement a conventional oral cancer evaluation. Every dentist should consider using the VELscope for every oral examination. We owe it to our patients to use every technology available to us, to improve their quality of life and even save lives. ●





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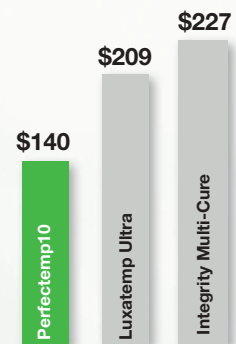
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# “... it takes the guesswork and the misconceptions out of the treatment equation...”

One clinician's take on the DEXIS® Digital Imaging System.

Compiled by STAN GOFF



**GERALD BITTNER, JR., DDS**  
San Jose, Calif.  
PRACTICING SINCE 1985

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### What first brought you to DEXIS?

One of my biggest challenges was getting the hygienists and assistants to “buy in” to the switch from traditional film to digital. This didn’t happen as quickly as I would have liked, because we started out with a different brand of digital x-ray. After a frustrating time with another type of digital system loaded with issues, I gave up 10 of their sensors to move to DEXIS. The team loved it. When I present a case, the patient needs to have a high opinion of my abilities. I don’t want imaging glitches that could cause me to backpedal trying to save the case rather than going forward with it. I get great performance with DEXIS.

### How has DEXIS given you a good ROI over the years?

It has been nice to see the positive effects on my staff and patients. It really contributes to public relations and makes my whole team look good. The assistants don’t have the embarrassment of retaking an x-ray and keeping the patient waiting while it develops. With the speed of digital, a retake, when needed, can be done almost instantly.

In my opinion, having a digital system helps make diagnosis

easier. To start, I am not trying to look at tiny film x-ray with a magnifying glass. Over the years we have gone from 13-inch to 20+ inch screens making treatment planning, which I consider to be a joint effort between me and my patient, even easier. Now, when I show them a cause for concern on their DEXIS x-rays and on a 20-inch screen, they ask me, “Why don’t we fix this?” I use ClearVu™ most of the time to enhance the contrast and add clarity to x-rays—an especially remarkable image enhancement tool. When I work with a cosmetic case, which is a true love in my practice, DEXIS plays a major part in presentation. I can display all their x-rays and digital photographs, and even create and display a graphic of the final result. It takes the guesswork and the misconceptions out of the treatment equation, and makes the patient feel comfortable about the whole process. With DEXIS, my patients understand the need for compliance, and we achieve more case acceptance.

### How has your DEXIS system changed over the years?

I have been through a lot of different imaging programs from the original DICOM system 15 years ago till now, and

was even a beta tester for DEXIS Imaging Suite. This new version of software and the new Platinum sensor were great updates to this already great system. Now with DEXIS go®, we have the option of using an iPad® to move about the office and share images. But it’s not just the upgrades from DEXIS that has impacted my practice—it’s the change from the other systems to DEXIS. The company has done a good job of integrating all of its imaging tools so that I can efficiently get the results that I want without feeling like I have to become a computer program editor, which was the case with many of my old imaging programs. I want to spend my time doing dentistry, not “computing.” DEXIS lets me do this.

### What would you say to doctors still using film?

To those dentists still using film, I would ask, “Why not use something quicker, more effective for the patient and better for the environment?” My patients and my office deserve the quality that we get with DEXIS. Why not go with the best? ●



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# HOW MUCH DOES YOUR TEAM KNOW ABOUT IMPLANTS?

## AS A DENTAL PROFESSIONAL, IT'S YOUR ROLE TO EDUCATE.

That's why it's so important for you and your team members to be up-to-date on what implants can do for your patients, as well as be able to educate them on the benefits. This month, Dr. Kenneth Judy takes a look at what it means to be a successful implant practice, and the importance of patient education and trust.

64

69%

of adults ages 35 to 44 have lost at least one permanent tooth to an accident, gum disease, a failed root canal, or tooth decay

Source: The American Association of Oral and Maxillofacial Surgeons

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A step-by-step using 3M ESPE's Lava Plus High Translucency Zirconia.



#### Tech Brief

#### DENTSPLY MIDWEST'S MIDWEST AUTOMATE

A closer look at this automated handpiece maintenance system.



82

88

90



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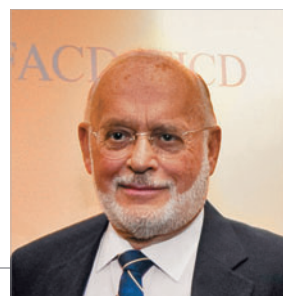
**THE TAKE-AWAYS**

- Through education and technology advancements, dental implants have greatly improved.
- Clinicians should be prepared to meet a growing demand for dental implants.

# IMPLANTS AND THE ROLE WE ALL PLAY FOR OUR PATIENTS' HEALTH AND HAPPINESS

As dental implants continue to grow in popularity and usage, it's important to take a step back and look at the importance of education and trust.

by DR. KENNETH W.M. JUDY, DDS, FACD, FICD



**DR. JUDY, CO-CHAIRMAN OF THE ICOI, EXPLAINS HOW EDUCATION AND A TEAM APPROACH ARE CRITICAL WHEN IT COMES TO IMPLANTS. →**

*Continued on page 68*



# A letter from Jim Glidewell, President/CEO of Glidewell Laboratories



Dear Doctor,

When we first started making restorations over implants more than 20 years ago, the industry's understanding of bone biology was limited, grafting techniques had not yet evolved, and implants were placed where the bone was, often having little relation to where the teeth needed to be. From a laboratory perspective, this often meant that restorations were elaborate designs having superstructures fastened to substructures with screws that threaded into other screws. These restorations typically came with a hefty price tag, and were delivered over multiple appointments.

Today, of course, things have changed. What was once a complicated and clumsy treatment option is now a more predictable and routine standard of care, and most general dentists restore dental implants as a regular part of their daily practice.

Today we see the implant market has evolved to a place where most implant companies boast osseointegration success rates of more than 95 percent, and through a combination of educational efforts and rapidly advancing technology, the implant landscape has changed dramatically.

The confidence of dentists and patients alike in this treatment modality is now readily apparent. With the advent of cone beam imaging, dentists are able to see where the bone is prior to laying a flap—something not possible 20 years ago. Treatment planning software allows dentists to virtually place implants—and restorations—long before the surgery. Surgical guides now help clinicians place the actual implant in a virtually identical position to the planned location.

As the price continues to fall on implant systems and surgical guides, and patient awareness and demand continues to increase, more GPs will begin placing and restoring implants. This will ultimately lead to more patients who can benefit from this type of treatment actually receiving care. We are thrilled to see the number of three-unit bridges fabricated in our laboratory continue to drop, and look forward to the day in which we make our last three-unit bridge. For it will signal the day that enough GPs are offering the service—and it has become affordable enough—that all patients will choose to save their adjacent teeth.

Our company continues to invest in innovation around the implant space, from the production of affordable implant systems and all-inclusive restorative packages, to the development of digital technologies and software that make digital treatment planning and surgical guides financially feasible. Our goal is that implant dentistry becomes as standard as crown-and-bridge, and that digital planning and guided surgery become as common as diagnostic wax-ups before veneers, or BioTemps temporaries prior to final cementation. Implant dentistry might just be the most exciting and technologically advanced area of dentistry, and we look forward to being an integral part of your restorative team, now and in the future!

Sincerely,

A handwritten signature in black ink that reads "James R. Glidewell". The signature is fluid and cursive.

Jim Glidewell, CDT  
President/CEO, Glidewell Laboratories



# ■ Glidewell stresses teamwork

Director of Implant Manufacturing at Glidewell shares his thoughts on the evolving world of dental implants.

Compiled by Kevin Henry



**GRANT BULLIS**  
DIRECTOR OF IMPLANT  
MANUFACTURING,  
GLIDEWELL  
LABORATORIES

Kevin Henry, Group Editorial Director for Dental Products Report, had the chance to sit down with Grant Bullis, director of implant manufacturing for Glidewell Laboratories, and ask him about the state of the implant industry and how his company is making an impact.

**Henry:** What do you see in the near future with implants?

**Bullis:** I see a continued move toward “value” implants. I think the premium brands will struggle to gain share. It is increasingly difficult to command premium prices for implants that have very similar features and success rates to value brands. I think implants that show value and offer a complete solution for the practitioner from beginning to end will make a difference.

**Henry:** What is the one stumbling block you still see for dentists to incorporate implants into their practices?

**Bullis:** I think learning the surgical part is still a little intimidating for some. It requires a different set of skills than crown and bridge and making the transition to feeling equally as comfortable placing implants can be challenging. Many overcome those challenges and the number of GPs placing implants is growing, however, many more choose to refer implant placement out, and that is okay, too. The key is finding a surgeon that is truly restorative driven and has the prosthetic knowledge to set the GP up for success.

**Henry:** What difference does Glidewell offer in the implant market?

**Bullis:** We take a prosthetically-driven approach to implant therapy. We start from the desired restoration and work the case backward to implant placement. We make the entire process simpler for the dentist by providing everything

needed to replace a missing tooth, from the implant and drills, healing components to the abutment and crown. One package at one price with everything included. Quoting patient fees is predictable and dentists don’t have to invest in a large inventory of parts because everything needed for each case is included.

**Henry:** Talk about the teamwork between the dentist and the lab, including with implant cases.

**Bullis:** Teamwork is very important, whether it’s a dentist working with a specialist to place the implant or doing it all himself. The earlier the lab can be involved, the better. The placement of the implants has a direct effect on the prosthetic outcome, and that’s where we want to be involved in the process from the beginning. Whether for a surgeon working with a referral network, or a dentist who places his own implants, our Inclusive® system is designed to set the stage of quality restorative outcomes.



**Teamwork:** At Glidewell Laboratories, there’s a strong belief that it’s critical that dentists, oral surgeons and the laboratory all work together closely.

## DR. MICHAEL DITOLLA



When I see a patient who is missing a lower molar and he or she tells me it has been missing for 20 years, I congratulate that person on a smart decision! The patient looks a little surprised because every other dental team member he or she has come in contact with for the last 20 years has chastised him or her for not having a bridge placed in that space.

I know that I used to describe what could go wrong in that area as though loss of a lower first molar was the fifth-leading cause of death in the United States. Today, patients get a pat on the back and I congratulate them for waiting until now. Why? We are able to implant a replacement tooth in the area, whereas in the past we would have had to grind

their adjacent teeth into little nubs (it’s fun to use “patient-speak” when it serves our purposes!).

I’m pretty sure holding out for a more conservative treatment modality was not why this patient procrastinated for 20 years, but shaming hasn’t worked, so I am going with the opposite approach. Many patients used to ask, “Why can’t we just bond a tooth onto the gum tissue?” This suggested that a single-tooth approach always made more sense to them. Of course not every patient who procrastinated on the bridge will immediately say yes to an implant, but many do.

Try giving your patients a compliment, even if you don’t think they deserve it. It just may be the motivation for them to discover why single-tooth implants are superior to three-tooth bridges.



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\*Data is based on 123,757 BruxZir crowns manufactured digitally at Glidewell Laboratories through June 2013.  
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*Continued from page 64*

**Oral implantology/implant dentistry is a growth area in many aspects worldwide. In the continuum of dental implant care, there are several different players in the field and they all have responsibilities. Sometimes there is an overlap but quite often there is not.**

For instance, in the United States, devices and/or materials that are inserted into patients' bodies should be shown to be effective and delivered to practitioners in a sterile manner. We rely on the Food and Drug Administration (FDA) for appropriate protection in this regard. Injectables such as antibiotics, local and general anesthetics, bone morphogenic proteins, bone substitute materials, as well as a plethora of endosteal implants made from different materials and of different designs all must be FDA-approved.

**A growing segment of dentistry**

At the same time that FDA processes were being developed, the general public was becoming aware of the potential, well-advertised benefits of implants. Today, patients are requesting their dentists to help them with implants. A general understanding of the multiple responsibilities of the various players mentioned above is an appropriate exercise.

As far as *Dental Products Report* (DPR) is concerned, I personally feel the publication serves to help dentists understand all of

the different implants, implantable materials, instruments, x-ray machines, etc., that are necessary for safe implant placement, restoration and maintenance.

What is obvious is that with the across the board professional acceptance of implants, now a concept promoted by the American Dental Association (ADA), almost all of the disciplines of dentistry have become involved. Therefore, an inclusive range of dental products is needed. These products also must be updated and constantly improved. Obviously the commercial success of various products is what is needed to command significant advertising space.

laboratory technicians, as well as an omnibus society that addresses the needs of generalists and specialists of all disciplines of dentistry. We also have members in more than 100 countries and relationships with multiple national implant societies. While this is not a necessity for a well-functioning implant society, especially because of the expenses involved, it is nonetheless an ideal situation. I feel implant societies should behave fraternally, i.e. they should relate to each other and cooperate with each other for the common good. Further, they should support research and education and recognize the professional achievements of their members. As much as possible implant societies also should provide

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**“...implant societies should also provide certain benefits for their membership at no cost, such as implant glossaries, webinars, generic video clips for educating patients on members’ websites, etc.”**

—Dr. Kenneth Judy

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**The importance of implant societies**

What about implant societies? What are their responsibilities? First and foremost, they must endeavor to educate and to tell us the truth. To pretend implantology began in North America in 1982 is just not true and does not serve the profession. The FDA already had held a Consensus Conference in 1978 and I personally have been placing screw and blade form implants since 1970. Subperiosteal implants were developed in the mid to late 1950s. A number of implants, which were touted as successful and superior to others, with purported strong scientific backing, simply failed. A brief appearance in DPR might have occurred, but the situation was self-correcting. However, someone had fooled the FDA first.

Secondly, implant societies are obligated, in my opinion, to teach all members of the dental team. Therefore, the International Congress of Oral Implantologists (ICOI), for example, has an auxiliary division for dental hygienists and dental assistants, a component that focuses on

certain benefits for their membership at no cost, such as implant glossaries, webinars, generic video clips for educating patients on members’ websites, etc. The costs of major seminars and new initiatives of any type, especially with an economy as challenging as it is, should be well cost-controlled to encourage participation.

Implant societies also should have outreach programs for researchers, academicians, and even the military. They should support international dental societies such as the Federation Dentaire Internationale (FDI) to promote the unity of our profession and constant interchange of ideas.

**Research and education**

There are three other activities that can be combined. First, ICOI has had an extremely active Research and Education Foundation, which has contributed several million dollars to various grant and educational projects over the years. Second, using its extensive connections with academic and world-class clinicians, the ICOI over many years has sponsored several Consensus Conferences to address



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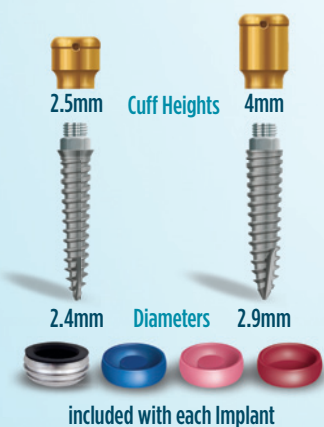
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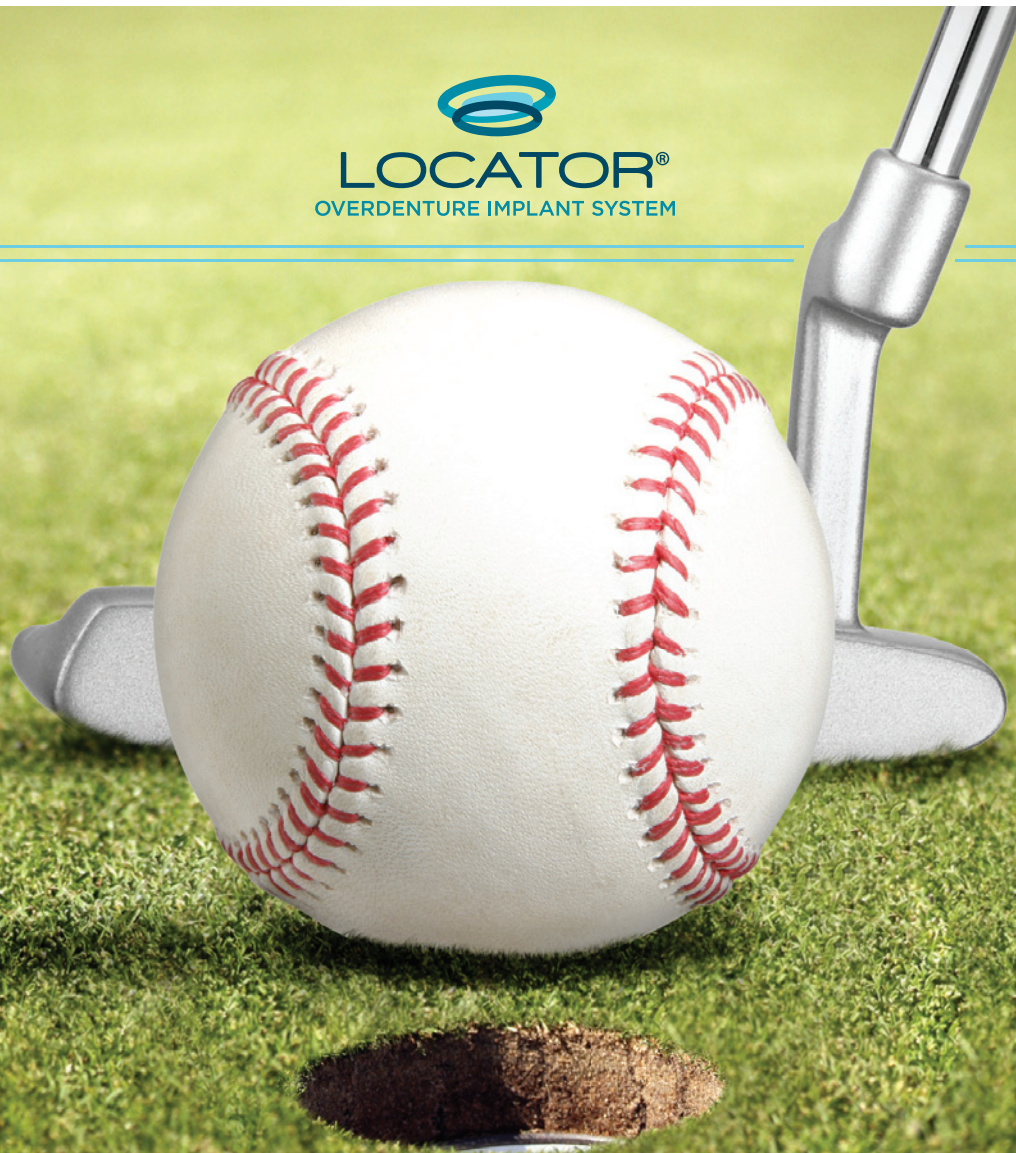
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curriculum guidelines or special areas of interest in oral implantology/implant dentistry. Again, we were inspired by the FDA, which held two (almost unheard of) Consensus Conferences relating to our field in 1978 and 1988.

How have times changed? In 1988, we dealt with “Osseointegration in Oral Implantology.” In 1990, our Consensus Conference was on “Pre-doctoral Implant Education.” In 1991, we addressed “Implant Education in General Practice Residency/Advanced Education in General Dentistry Programs.” In 1995, ICOI’s Consensus Program was “Oral Implantology/Implant Dentistry for Dental Hygiene Education and Continuing Education for Practicing Dental Hygienists.” In 2002,

it was “Vertical Dimension of Occlusion relating to Implants.” In 2005, it was “Crown-height Space Guidelines for Implant Dentistry.” Our Consensus Conference in 2008 dealt with “Implant Success, Survival and Failure.” Our most recent Consensus Conference was in 2012 and dealt with the “Use of Cone Beam Computer Tomography in Implant Dentistry.” The titles illustrate how technology and thinking has changed.

**The role of dental schools**

What is the role of dental schools and how do implant societies relate to them? Relatively recently, the ADA mandated that the specialty programs for periodontics, prosthodontics, and



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9	LA Area
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15	Tampa, FL
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Date	Location
6	Denver, CO
13	Atlanta, GA
14	Philadelphia, PA



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# MDI

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**“We must have verified scientific data to present to the FDA or its analogues in other countries and honest advertising principles.”**

—Dr. Kenneth Judy

oral and maxillofacial surgery teach oral implantology/implant dentistry to the educational level of competence. To correctly staff their departments and continuing education programs, many schools needed the assistance of practicing “implantologists.” Individual and society sponsored clinicians rose to the challenge and now this is no longer a problem. However, in many countries that are not as advanced as the United States, implant societies have to try and fill the void in many respected faculties. Again a constant problem is cost. Not many schools can afford long distance teaching missions, so all countries could achieve equality. This situation is slowly changing around the world, because more people, even

in poor countries, are seeking the benefits of implants.

Dental schools should be taking advantage of outside electronic media as well as creating their own. They should be forming large in-depth faculties to meet the needs of their students and alumni.

**Implant manufacturers**

What is the responsibility of implant manufacturers? It is to develop quality, FDA-approved products and to tell the truth about them in advertising. Unfortunately we exist in a competitive economic world. We have more than 100 implant companies worldwide with substantive product



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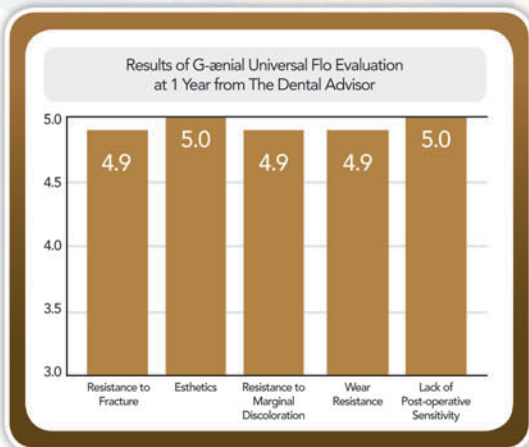
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lines. Each year some “reputable” implant does not live up to its company’s claims. Patients are hurt, practitioners are hurt, and lawsuits are generated. The answer is quite simple. We must have verified scientific data to present to the FDA or its analogues in other countries and honest advertising principles. Very often, the implant component of a restoration will only be 10-20% of the total cost to a patient. However, if there is an implant failure, it could be financially catastrophic. The responsibility of our manufacturers is critical.

**Your role**

Individual practitioners or group practices have extremely personal responsibilities. Advertising and placing implants today puts practitioners on the cutting edge or in a leadership position. Each practitioner should develop an inherent self-worth to his or her in-office colleagues and regional colleagues and/or referring dentists. Many should find the confidence and material to join regional, national, or international lecture circuits. ICOI’s table clinic and poster presentations are a great way to “test the waters” in this regard. The dental office auxiliary team should

realize they are also “cutting edge” and should strive to be the “best they can be.”

All of this self-worth and leadership should also benefit two other groups, i.e. local communities and team members’ families including, of course, dentists’ families themselves.

It should occur to all of us involved in this dynamic field that our need for education and growth on many different levels is unlimited. Not only do we place and/or restore and maintain implants, but we should or can have a special place in the expanding world of dentistry.

I feel honored to make this commentary. For more information about the ICOI, please go to [ICOI.org](http://ICOI.org).

*Dr. Judy or his immediate family has no commercial interest in any dental product.*

Dr. Kenneth Judy is the co-chairman of the International Congress of Oral Implantologists (ICOI) and has more than 40 years of experience in the area of dental implants. He has a private practice in New York City. You can learn more by visiting [icoinc.org](http://icoinc.org) or [kennethjudydds.com](http://kennethjudydds.com).



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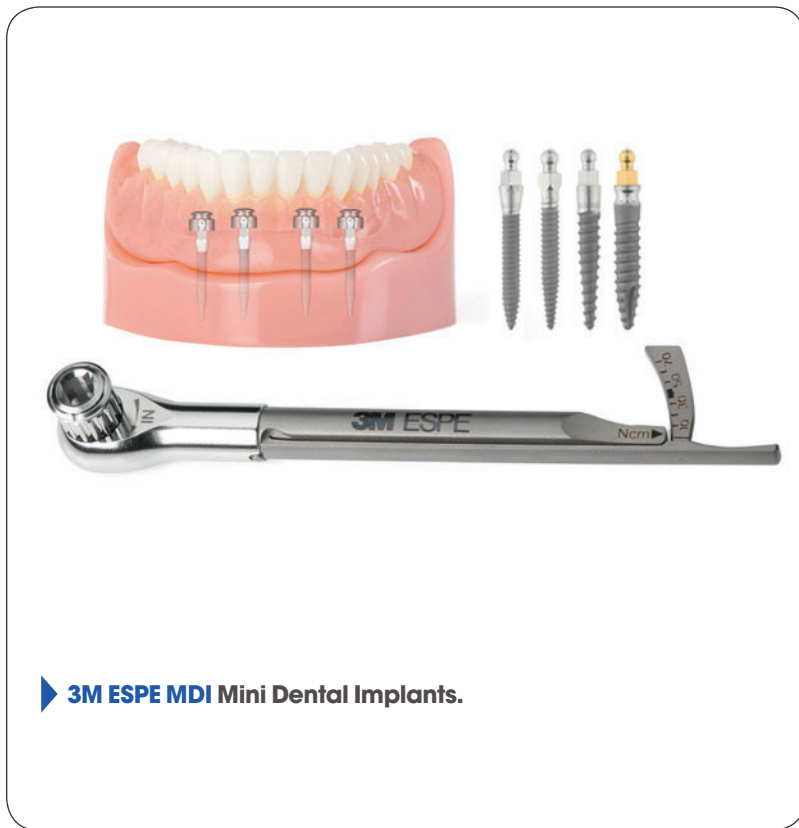
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▶ 3M ESPE MDI Mini Dental Implants.

AN INTERVIEW WITH 3M ESPE

**Q:** What is the most frequent question you hear about this category?

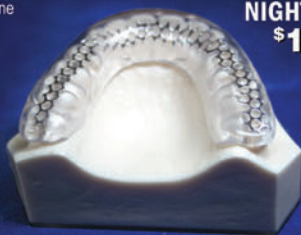
**A:** As some clinicians still consider mini dental implants to be a new treatment, one of the most frequent questions we encounter about this category is whether MDIs are a suitable and effective solution for long-term use. Dentists are also frequently unaware that small diameter implants can be used for fixation of single crowns and partial dentures.

**Q:** How does your product seek to answer that question?

**A:** 3M ESPE MDI Mini Dental Implants have amassed a significant clinical track record that proves small diameter implants not only offer significant benefits to patients as compared to traditional implants, but they also are effective long term. Studies with durations ranging from one to five years have found success rates between 92 and 98 percent. One study in particular followed 2,514 implants (531 patients) for up to five years and reported a success rate of 95 percent for full mandibular dentures and 92 percent for removable partial dentures.<sup>1,2,3</sup> An analysis also has been published in the Clinical Oral Implants Research journal that confirms survival rates for small diameter implants are similar to those for traditional implants—whether being used for stabilizing a full denture, partial denture, or a single unit crown over implant.



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**Q: What about this category helps dentists practice better dentistry?**

**A:** Small diameter implants help clinicians treat a wider patient base because they provide an effective stabilization solution for many patients who are not candidates for traditional implants, or who can't afford the cost of traditional implants.

MDIs require less bone height and width, and can be placed in a flapless procedure and immediately loaded because they're designed for stability in soft and dense bone. With this product, clinicians can offer an affordable solution that requires less time in the chair and an immediate boost in quality of life for their patients.

**Q: How is your product leading innovation in this category?**

3M ESPE offers affordable one-day MDI certification seminars led by some of the most experienced small diameter implant clinicians in the world. These hands-on seminars teach clinicians how to effectively carry out all types of indications with mini implants, including removable partial dentures.

For dentists who already have experience placing minis, 3M ESPE helps connect them with advanced courses to further their training. At any time, dentists can access online training webinars to refresh their knowledge of the procedure.

Additionally, 3M ESPE offers a comprehensive marketing tool kit to help dentists enhance patient awareness of the benefits MDIs offer, available online at MY3MESPE.com.

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HOWTO

# BOND WITH OPTIMAL RESULTS

Here's two clinical examples to illustrate how Futurabond U can be used clinically to achieve outstanding results.

by **DR. RON KAMINER**  
Information provided by *VOCO America Inc.*

Since 1955, when Dr. Michael Buonocore challenged dentistry with his primitive yet innovative form of bonding, materials and techniques have evolved dramatically. Yet despite the improvement in materials and techniques, when surveying a recent group of dentists, I realized the group still uses a variety of techniques and materials to achieve a similar outcome. Some still use phosphoric acid and then an adhesive, some use self-etch primer and an adhesive, and some use a single bottle, self-etching primer and bond.

One of the negative characteristics with self-etch primer and bond as compared to a phosphoric acid etch and bond system is adequate but decreased bond strengths. It is for this reason that many still like to use phosphoric acid prior to using a one bottle self-etch primer and bond (for improved bond strengths). This last statement is true for enamel but if you use 37% phosphoric acid on dentin prior to a self-etch primer and bond, you're likely to encounter a decrease in bond strengths and potential sensitivity. This occurs by the phosphoric acid removing more dentin mineral that can be filled by self-adhesive monomers.

## Universal adhesives

A new generation of bonding materials called universal adhesives have been created so dentists have the option of total-etch or self-etch with no concern of decreased bond strengths when used in conjunction with phosphoric acid on dentin. One such product, Futurabond U from VOCO America, offers simplicity of use with outstanding bond strengths.

Futurabond U differs from its predecessor Futurabond DC in a number of characteristics. Futurabond U has a lower PH than conventional self-etching systems like Futurabond DC. This lower PH will not allow for over etching of the already etched dentin in the total-etch technique. Futurabond U has a new surfactant that improves its wettability, leading to lower surface tension and improved bond strengths. Finally, the monomer chemistry is different than its predecessor thus enhancing the effect of the new acid.

Futurabond U doesn't differ from its predecessor in one of its most useful traits: the packaging. The innovative foil packaging of Futurabond U really separates it from all other adhesives on the market. The foil packaging consists of two compartments, each with its own unique chemistry. By pressing on a certain spot in the packaging, the material from one side shoots internally to the other side, allowing for an instantaneous fresh mix of the chemistry.



## AT A GLANCE

1. A microbrush is used to penetrate the foil into the material and then consequently brush it onto the tooth.
2. Pre-op photo shows a chip on the incisal edge of tooth No. 9.
3. A 37% phosphoric acid is used on the enamel for 10 seconds.
4. Futurabond U can be seen on the tooth after curing.
5. The final restoration is placed (GrandioSO Shade A1, VOCO), light cured, finished and polished.
6. Radiographic exam reveals early onset

## FUTURABOND® U FEATURES

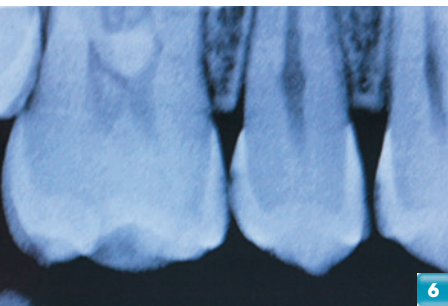
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decay in and around the contact area between the bicuspid and the molar.

7. Exam reveals no occlusal break from decay

8. A tunnel prep approach is chosen to access and remove the decay on both teeth.

9. Futurabond U used in the self-etch mode according to manufacturer's instructions.

10-11. After light curing, VOCO's GrandioSO Flow highly filled esthetic flowable composite was used to fill the preparation.

## Case presentation

**STEP 01** In the self-etching technique, a microbrush is now used to penetrate the foil into the material and then consequently brush it onto the tooth. This eliminates any evaporation of material that can occur from a bottle being left open or material being dispensed onto a dappen dish (Fig. 1). In the total-etch technique, a 37% phosphoric acid is used on dentin and enamel for 10 seconds, rinsed off followed by the application of Futurabond U. The material is brushed on for 20 seconds, air dried for five seconds and light cured for 10 seconds. At this point the tooth is ready to accept the restoration.

Because of its low film thickness, Futurabond U is ideal for indirect as well as direct restorations. Its chemistry allows it also to be used with any dual-cure or self-cure materials, eliminating any potential material incompatibility issues. Bond strengths in these instances still remain quite high, a feature not often seen with other systems. Futurabond U also bonds to zirconia, metals, aluminum oxide and silicate ceramics without the need for any other primers. It also is quite strong with bond strengths more than 30 MPa to enamel and dentin.

The following two clinical examples will illustrate how Futurabond U can be used clinically to achieve outstanding results.

As previously stated, Futurabond U can be used in the self-etch mode or with phosphoric acid in the selective-etch or total-etch mode.

**STEP 02** In this case, when bonding to an incisal edge, we elected to use phosphoric acid first to improve bond strengths of the composite. Our pre-op photo shows a chip on the incisal edge of tooth No. 9 (Fig. 2).

**STEP 03** A 37% phosphoric acid (Ultra etch, Ultradent), is used on the enamel for 10 seconds (Fig. 3). After thoroughly rinsing off the etchant, a mylar strip is placed between 8 and 9, and Futurabond U is brushed on the enamel for 20 seconds and air dried for five seconds. Futurabond U is then light cured for 10 seconds. One of the nice things about Futurabond U is that you can see it on the tooth after curing (Fig. 4). This reinforces the fact that you have adhesive in place before placing the direct restorative.

**STEP 04** The final restoration is placed (GrandioSO Shade A1, VOCO), light cured, finished and polished (Fig. 5).

Incipient decay can be treated conservatively with tunnel preparations to avoid removing unnecessary tooth structure. Radiographic examination in this case reveals early onset decay in and around the contact area between the bicuspid and the molar (Fig. 6).

**STEP 05** Clinical exam reveals no occlusal break from decay (Fig. 7). A tunnel preparation approach is chosen to access and remove the decay on both teeth (Fig. 8).

Futurabond U is used here in the self-etch mode according to manufacturer's instructions (Fig. 9).

**STEP 06** After light curing, GrandioSO Flow (VOCO), a highly filled esthetic flowable composite, is used to fill the preparation (Figs. 10-11). This material, while strong, is also very esthetic as evidenced by the natural appearance and blending of the restoration with the existing tooth structure.

## Conclusion

Universal adhesives such as Futurabond U are the newest advances in dentistry as it relates to the bonding process. They eliminate the need for multiple adhesive systems and allow you to bond restorations in any manner that you like. In other words, they allow you to "have it your way." ●

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HOWTO

# ACHIEVE ACCURATE IMPRESSIONS

Simplifying the impression process for IPS e.max posterior restorations with Virtual XD.

by DR. ED LOWE

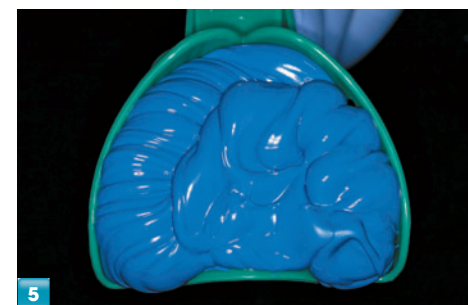
Information provided by Ivoclar Vivadent.

The long-term esthetic and functional success of indirect restorations is dependent in part on accurate and detailed impressions. Impressions form the basis for fabricating all-ceramic restorations (e.g., IPS e.max lithium disilicate from Ivoclar Vivadent) that properly fit the preparation design and demonstrate anticipated anatomical form. It is therefore understandable that dentists and laboratory ceramists require and appreciate impression materials that precisely capture tooth morphology, intricacies of preparations, and the relationship between tooth structure and gingival tissues (i.e., marginal details).

A recently introduced vinyl polysiloxane (VPS) impression material, **Virtual XD** from Ivoclar Vivadent simplifies the impression taking process for Ivoclar Vivadent's IPS e.max restorations. The material's precise and accurate detail reproduction also expand the possibilities for conservative, minimally invasive posterior treatments that demonstrate marginal integrity and an intimate fit. The Virtual XD impression system is indicated for final impressions used for fabricating indirect restorations (inlays, onlays, crowns, bridges, veneers); dental implant impressions; silicone matrices for wax-ups, study models, or treatment planning; edentulous impressions; and silicone matrices for creating temporary restorations.

Virtual XD impression materials adapt well to oral soft and hard tissues due to its flowability into the sulcus. As a result, impressions reproduce the details necessary for achieving an accurate and outstanding restoration fit. The material's advanced wettability properties and moisture displacement capabilities facilitate capturing precise details in a moist environment. The orange and yellow colors improve readability of the margins. Additionally, because Virtual XD produces impressions with high tear strength, the risk of tearing fine margins is reduced.

With the new impression material, dental professionals can pour models when needed because the material maintains its dimensional stability for up to two weeks. Enhanced elastic recovery from deformation after removal from the mouth contributes to the dimensional stability of Virtual XD impressions.



## AT A GLANCE

1. Pre-operative view of defective posterior amalgam restorations.
2. The teeth were prepared for inlay restorations, and wooden wedges were placed to protect the interproximal gingival tissue.
3. View of the completed inlay preparations for IPS e.max lithium disilicate restorations.
4. A stock tray was painted with Virtual tray adhesive.
5. The Virtual XD heavy body material was dispensed onto the impression tray.

### VIRTUAL XD FEATURES

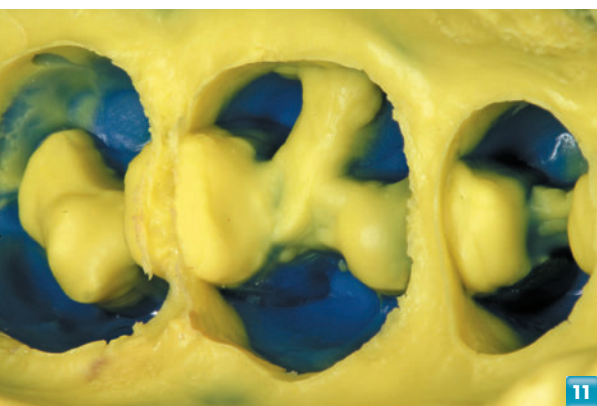
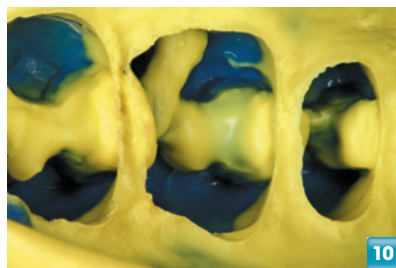
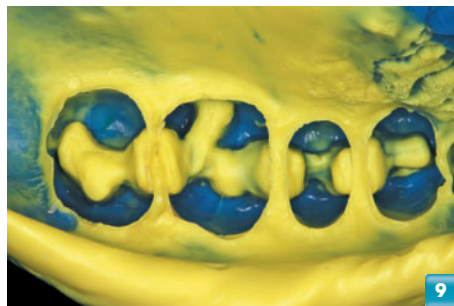
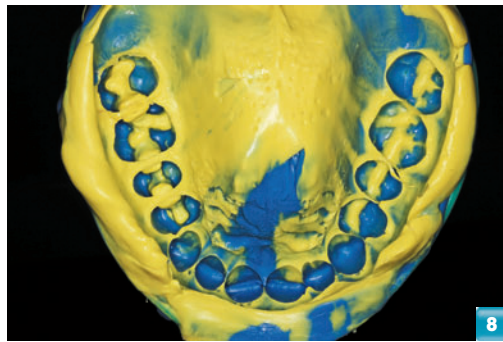
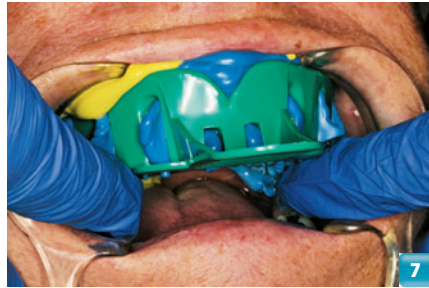
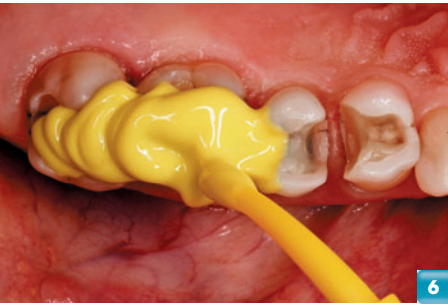
- Optimized flow characteristics for deeper penetration into the sulcus
- Advanced wetting ability for precise detail reproduction of both soft and hard tissue
- Higher tear strength to maintain the integrity of margins and fine detail upon removal of the impression

### SCAN:



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CIRCLE: RS NO. 111





6. Prior to seating the loaded tray, the Virtual XD light body impression material also was dispensed onto the inlay preparations, keeping the tip immersed in material as it was extruded.

7. The patient's mouth was retracted using a self-retracting retractor, and the loaded tray was seated.

8. View of the final VPS impression (Virtual XD) following removal from the mouth.

**Figs. 9-11.** These close-up images reveal the marginal detail of the impression captured by using the Virtual XD impression system materials.

**Fig. 12.** One month post-op of IPS e.max inlays in 2, 3, 4 and 5.

Facilitating ease of use and simplifying the impression taking process are the four viscosities included in the Virtual XD impression system (Extra Light Body, Light Body, Heavy Body and Putty). These are complemented by a new automatic material mixer for 380 mL cartridges, which features a designated mixing program and two dispensing speeds. The impression system also includes tray and wash materials in fast and regular setting times that demonstrate a patient friendly minty scent.

### Case presentation

**STEP 01** The patient presented with defective posterior amalgam restorations (Fig. 1). Following a thorough examination, it was determined that lithium disilicate inlays (IPS e.max) would be ideal restorations to reinforce the remaining tooth structure, ensure lifelike esthetics, and provide the strength necessary for the posterior area.

**STEP 02** At the preparation appointment, the patient was anesthetized, and the defective amalgam restorations were removed. Wooden wedges were placed to protect the interproximal gingival tissue (Fig. 2).

**STEP 03** Upon completion of the preparations (Fig. 3), a stock tray was lined with Virtual tray adhesive (Fig. 4). A fast-set heavy body material (Virtual XD) was dispensed onto the impression tray (Fig. 5).

**STEP 04** Then, the Virtual XD extra light body impression material was dispensed on top of the loaded heavy body material in the area of the inlay preparations. Prior to seating the loaded tray, the Virtual XD extra light body impression material was also dispensed onto the inlay preparations, keeping the tip immersed in material as it was extruded (Fig. 6).

**STEP 05** A self-retracting retractor was placed in the patient's mouth, after which the tray was seated into the mouth with even finger pressure and allowed to set (Fig. 7). The impression was checked to ensure complete setting, and it was removed and checked to verify duplication of the preparation details that would be necessary for accurately fitting restorations (Fig. 8). The impression was then disinfected using a surface disinfectant spray and shipped to the laboratory.

### Conclusion

Because accuracy and fit are requisites for treatment success, impressions sent to the laboratory must precisely capture tooth anatomy and preparation details. Using a recently introduced VPS impression material system, Virtual® XD, helped to simplify the impression taking process for IPS e.max lithium disilicate inlay restorations necessary for this case. The Virtual XD impressions taken for this case demonstrated a high level of marginal detail, which helped to ensure the fabrication of accurate restorations that fit well and demonstrated life-like anatomical detail (Figs. 9-11). Post-op photo (Fig. 12). ●



HOWTO

# ACHIEVE A SIMPLER BOND

BISCO's new eCEMENT™ can help you save time while maintaining strength and esthetics.

by JOSEPH KIM, DDS, PRIVATE PRACTICE, SUGAR GROVE, ILL.

Information provided by BISCO.

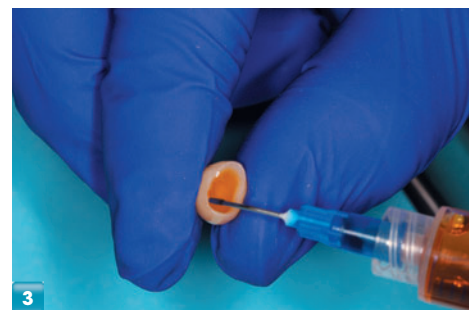
Over the past several years, there has been widespread adoption of lithium disilicate based restorations (e.g. IPS e.max®\*) by the restorative dental community. Previously, restorative dentists were limited in their material selection depending on the need for strength or esthetics. Now, this proven material allows clinicians to address most situations without sacrificing strength or beauty. However, this unified material approach often requires the use of different bonding or cementation techniques depending on the location, opacity and type of prosthesis being delivered.

BISCO's new bonding system, eCEMENT™, meets the various delivery requirements in a single, simplified kit that incorporates both light cure and dual cure resin cements. This kit was created specifically for lithium disilicate and most other all-ceramic restorations. In addition to the two different cements, the kit includes a combination of innovative and proven products to simplify the adhesive protocol: etch for both the tooth and ceramic, porcelain primer and a bonding agent. In the following case, the dual cure cement was chosen because of the thickness and low translucency of the finished restoration.

The patient presented with tooth No. 12, which recently had been treated with root canal therapy and a bonded post and core. Restoring premolars that have had root canal therapy can be challenging because of the minimal residual dentinal wall thickness, as well as their visibility in the esthetic zone. Increasing the difficulty, the premolar exhibited a short clinical crown height, and a widened mesiodistal space because tooth No. 11 was rotated.

## Case Study

**STEP 01** Being mindful of biologic width requirements, the tooth was prepared with a subgingival margin to allow enough room to create natural emergence contours, especially on the mesial and distal surfaces (Figs. 1 and 2). A shallow margin would not have allowed an esthetic outcome, while maintaining a cleansable proximal profile.



## AT A GLANCE

1. Tooth No. 12 prepared with a subgingival margin.
2. Alternate view of tooth preparation.
3. Etching the intaglio of the restoration with the eCEMENT kit's porcelain etchant. After etching for 25 seconds, rinse and dry.
4. Seating the restoration after applying two coats of All-Bond Universal self-etching adhesive.
5. Filling the crown with dual-cured eCEMENT.

## eCEMENT SYSTEM FEATURES

- Includes both light-cure and dual cure
- System can be used with all restorations, including veneers, inlays, onlays, crowns, three-unit bridges, CAD/CAM blocks and pressable ingots made of lithium disilicate
- Complete kit comes with all components needed to cement lithium disilicate restorations

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**STEP 02** At delivery, the provisional crown was removed, and the polycarboxylate temporary cement was removed from the tooth surface with an air driven sonic scaler. The lithium disilicate crown was tried in and the marginal fit, proximal contacts, and occlusion were verified.

**STEP 07** The final result fulfilled the unique space, height and color requirements of this case, and the patient was very satisfied with the outcome. (Figs. 8 and 9) The occlusion and contacts were rechecked, and the patient was dismissed.

Compared to alternative bonding and cementation systems, the eCEMENT™ system was uniquely suited for this particular case, where the margins were in a significantly subgingival position to idealize the contours, strength and retention. To control bleeding during delivery of a fixed prosthesis with subgingival margins, several criteria must be met, including a properly fabricated provisional and gentle but complete removal of all provisional cement. Even then, it can be a challenge to keep the site free of blood when etchants and bonding agents come into contact with the gingiva. In this case, the materials in the eCEMENT kit did not cause any issues with bleeding. In fact, the only blood that was encountered was during the final cleanup of the subgingival margins.

From an inventory point of view, stocking and becoming familiar with a single bonding system maximizes efficiency while minimizing errors and material waste. In doing so, delivery times and esthetic outcomes approach an optimal level of predictability.

In summary, the eCEMENT kit provides a comprehensive bonding solution to every lithium disilicate restorative situation, including veneers, inlays, onlays, crowns, fixed prostheses and CAD/CAM fabricated restorations. In doing so, it allows the unified approach of this versatile material to reach its full potential in an efficient and predictable manner. ●

*\* IPS e.max is a registered trademark of IVOCCLAR VIVADENT Inc. eCEMENT is a trademark of BISCO Inc. There is no sponsorship, affiliation or connection between BISCO Inc. and IVOCCLAR VIVADENT Inc. she is going ng be*

6. After the restoration was tack cured for three seconds, excess is easily removed with an explorer.

7. Using a high-output LED curing light to cure the restoration's surfaces.

8. Final result of the finished restoration.

9. Side view of completed case.



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**STEP 03** The intaglio of the restoration was etched with the eCEMENT kit's porcelain etchant for 25 seconds, then rinsed and dried (Fig. 3). The included porcelain primer was then brushed inside the crown and left for 30 seconds, then dried.

**STEP 04** Two coats of All-Bond Universal® from BISCO Dental Products, a single bottle, self-etching adhesive were applied to the tooth according to the manufacturer's instructions, and light cured for 10 seconds. The film thickness of the adhesive is less than 10 microns and will not interfere with seating of the restoration (Fig. 4).

**STEP 05** After bleeding the automix syringe, the crown was filled with dual-cured eCEMENT (Fig. 5). The crown was fully seated onto the prepared tooth. The cement was tack cured for three seconds facially and palatally, and the excess was easily removed with an explorer (Fig. 6).

**STEP 06** After thoroughly removing any subgingival marginal cement, the facial, occlusal and palatal surfaces were cured for 20 seconds each with a high-output LED curing light (Fig. 7). While this step is optional, it is my habit to post-cure dual-cured adhesive cements to inactivate any light sensitive molecules.



8



9



HOWTO

# PLACE AND FINISH DURABLE POSTERIOR RESTORATIONS

How 3M ESPE's Filtek Supreme Ultra universal restorative helps make the restorative process easy and straightforward, providing patients with esthetic, long-lasting restorations.

by ALAN R. WEINSTEIN  
Information provided by 3M ESPE.

When placing posterior composite restorations, dentists look for a number of qualities: wear resistance, radiopacity, ease of handling and polishability. Because of frequent difficult access and inherent technique sensitivity, a material that provides easy handling and finishing is important to keep the process efficient and ensure the best results.

Once the composite is placed, a simplified technique to reduce the number of steps used to gain a superior finish would be ideal. Because of the limited maneuverability in the posterior region, an alternative to multiple polishing points, cups or discs to achieve a smooth finish is best.

In addition to ease of handling, which includes placement and sculptability, and ease of finishing, a posterior composite also should provide clinically proven high strength and wear resistance. Additionally, even though esthetics in the posterior segment may not be as critical as they are in the anterior region, patients still want a restoration that provides an excellent shade match and long-term color stability.<sup>1,2</sup>

The latest edition of 3M™ ESPE™ Filtek™ Supreme Ultra universal restorative is an excellent choice for posterior use. Because the material is a nanohybrid with microscopic polishable particles of various size, it provides both strength and esthetics. Filtek Supreme Ultra restorative polishes easily initially, and has the ability to maintain its polish over the long term. Filtek's easy handling and sculptability allows it to be quickly manipulated without sticking or slumping, which is especially helpful in the posterior region. With a proven clinical record, it also provides the strength needed to resist fracture and wear.<sup>2,3</sup>



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## AT A GLANCE

1. Caries was present on tooth No. 19.
2. An indirect pulp cap was placed.
3. Scotchbond™ Universal Adhesive was applied and light cured.
4. Filtek™ Supreme Ultra Universal Restorative was placed in increments.
5. Initial reduction was performed with fine diamonds, followed by carbide finishing burs.



4

### 3M™ ESPE™ FILTEK™ SUPREME ULTRA UNIVERSAL RESTORATIVE FEATURES

- The nanohybrid material features microscopic polishable particles of various sizes
- Polishes easily initially, and has the ability to maintain its polish long-term
- Easy handling and sculptability

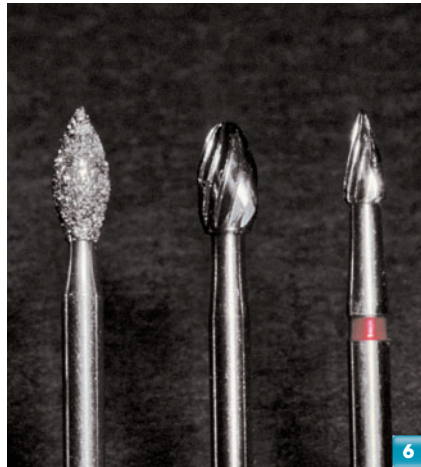
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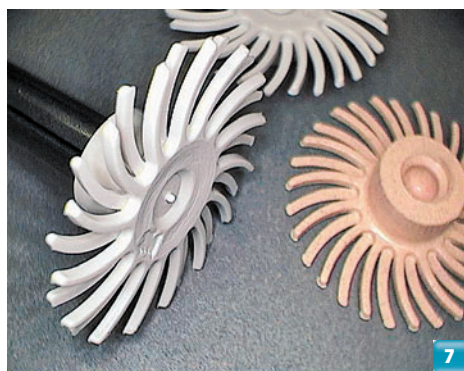
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6. Brasseler H379-023/OS-1 football shaped carbide finishing bur and 274-016 - small pointed carbide bur.

7. The coarser beige spiral finishing wheel was used first, followed by the white wheel for polishing.

8. Polishing was completed using the Sof-Lex™ Spiral Polishing Wheel.

9. Final polish.



7



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Recent improvements in finishing and polishing technology have made the use of this material even simpler. 3M™ ESPE™ Sof-Lex™ Spiral Finishing and Polishing Wheels are soft thermoplastic wheels with flexible “fingers” that have abrasive particles embedded throughout. These wheels reach easily into posterior areas and adapt well to all tooth surfaces, so there is no need to progress through a series of finishing and polishing cups, points or discs. Only light pressure is needed, and all sides of the wheel can be used.<sup>4,5</sup>

### Case presentation

The patient presented with tooth No. 19 showing caries present radiographically and clinically (Fig. 1).

**STEP 01** A conservative preparation was made with a small H245-008 carbide bur, followed by a #4 round bur for remaining caries removal. An indirect pulp cap of calcium hydroxide covered with dual-cured glass ionomer was placed (Fig. 2).

**STEP 02** The enamel was etched for 15 seconds with gel etchant followed by wash and placement of two 15-second coats of 3M™ ESPE™ Scotchbond™ Universal Adhesive, which was gently blown dry between coats, and light cured for 15 seconds (Fig. 3).<sup>2,3</sup>

**STEP 03** Filtek Supreme Ultra universal restorative in shade A1 was placed in increments to reduce internal stress while curing. A Tarno FP-3 (PFIW-3 new designation) instrument was used to manipulate the material, which handles very well. The slightly lighter shade was selected to provide contrast between the tooth and filling material during the finishing phase.

(Because of the posterior placement, an exact shade match was not crucial; however many other cases have documented the esthetic potential of this material.) The increments were light cured for 10-15 seconds (Fig. 4).<sup>1,2</sup>

**STEP 04** Initial reduction of resin was completed with fine diamonds (368-023 football shape-Brasseler) followed by carbide finishing burs. (Brasseler H379-023/OS-1 football shaped carbide finishing bur and 274-016—small pointed carbide bur (Figs. 5 and 6)).<sup>4,5</sup>

**STEP 05** Finishing continued with the 3M™ ESPE™ Sof-Lex™ Spiral Finishing and Polishing Wheels. The beige wheel was used first as the abrasive is coarser (Fig. 7), followed by the white wheel for polishing (Fig. 8). The final high luster polish was achieved by using only the finishing and polishing wheels (Fig. 9). No rubber finishing or polishing points were necessary, which can potentially cause damaging heat build up on the resin surface. Like Sof-Lex discs, these wheels are one-use only, so no sterilization is necessary.

### Closing thought

Access and ease of finishing is often a challenge in placing posterior restorations, but the right material and technique can go a long way toward reducing difficulty in restoring these areas. The easy handling of Filtek Supreme Ultra universal restorative makes the process simple and straightforward, while the material’s proven strength helps ensure it will serve the patient for the long term. This case was completed by finishing and polishing with unique flexible spiral wheels that adapt easily to the resin’s surfaces, demonstrating that posterior composite placement, especially of larger cases, can be easily streamlined. ●

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THE TAKE-AWAYS

- i-CAT FLX gives you the option to set the size and radiation dose with each scan.
- 3D Cone beam technology gives you the ability to show patients 3D renderings of their anatomical structure, which can help increase understanding and case acceptance.

# 3D cone beam technology that puts you in control

From radiation dose to customized scans, Imaging Sciences International's i-CAT® FLX offers a fast workflow and high-quality scans designed to help you offer the best patient care possible.

by DR. JEFFREY T. KOZLOWSKI

ABOUT THE AUTHOR

Dr. Kozlowski is world-renowned for his unique perspective on quality orthodontic treatment results and clinical efficiency. An internationally sought-after lecturer, he has presented all over the



world on topics including digital orthodontics, facial esthetics, efficient early treatment, orthodontic treatment mechanics and clinical efficiency. Dr. Kozlowski graduated with a BS in Economics from Syracuse University prior to receiving his DDS and Orthodontic Specialty Certificate from the State University of New York at Buffalo. He has been published in numerous orthodontic journals, including Seminars in Orthodontics, Journal of Clinical Orthodontics, Clinical Impressions and The Progressive Orthodontist. Dr. Kozlowski has practices in New London and East Lyme, Connecticut.

*The products that appear in conjunction with this article are for illustrative or informational purposes only. Their inclusion does not denote endorsement by the author of this article.*

When i-CAT FLX was unveiled, it seemed that the research and development department had read my mind.

Of course, I needed a quality image, but I also wanted the ability to control dose, resolution and modality so I could tailor scans to a patient's needs. I now have the best of both worlds and more—clear, diagnostically useful images, nearly unlimited possibilities in both 3D and 2D radiographs, as well as a full array of versatile treatment tools to augment my own clinical knowledge and improve my ability to communicate with patients.

You're in control

As an orthodontist who is very aware of radiation dose, I wanted to use cone beam 3D technology but was concerned about potentially expos-

ing my patients to higher radiation than traditional 2D imaging.

When I heard about i-CAT with QuickScan+, I realized I could obtain 3D information and have complete control over dose. Now, we take a 4.8-second scan with much less radiation than my previous panoramic, and I get the information that I need—pan, ceph and 3D views of the teeth and roots. A scan shows me skeletal structure, airways, sinuses, TMJ, and a wealth of other information.

Using Tx STUDIO™ software, I can show patients and/or parents 3D renderings of their anatomical structures. I then can communicate their dental development properly along with conditions such as crowding, missing teeth, extra teeth, root structure and formation. I explain the challenges that I see and, with this 3D information, they can see as well; this increases their desire to proceed with treatment.

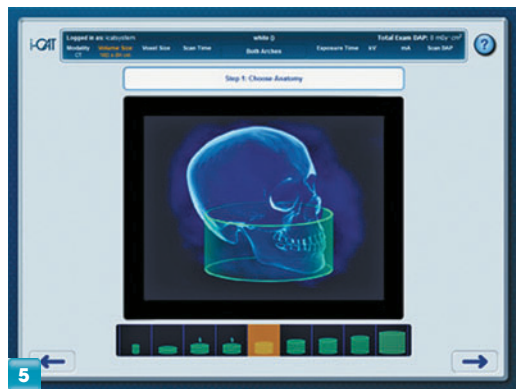


The i-CAT FLX from Imaging Sciences International

AT A GLANCE



FIGS. 1-4 Select the appropriate scan—traditional 2D i-Pan in large or small or 3D scan in various diameters, heights and resolutions—by touching the proper image on the screen (Fig. 1). Once the patient is in position, the next screen allows for a Scout, Dry Run, or the actual Scan capture (Fig. 2). With the “Scout” image, we are able to reposition the patient and to decrease or increase the height and position of the scan, as needed, then take the actual scan (Fig. 3). Within Tx STUDIO, I have access to a collection of diagnostic and treatment tools specific to orthodontics. There are also tools specific to other procedures such as airway and implants (Fig. 4).



**FIGS. 5-6** Create customized scans by first choosing the size or the amount of anatomy to be covered (Fig. 5). Select the resolution and dose, and then name the customized scans. It now becomes part of your SmartScan STUDIO library of protocols (Fig. 6).

“...we usually set for the lowest dose, but having the option of increasing when necessary gives me the control I was looking for in a 3D cone beam system.”

We usually take the lowest-dose scan, but I have the option of increasing the resolution when appropriate; for example, if the patient also needs implants. The ability of i-CAT FLX to get a 3D image of diagnostic quality for less radiation than a pan is phenomenal; having the ability to collimate and choose the resolution of any scan to fit a patient’s situation is a big bonus. In my opinion, that’s providing the best care possible for my patients, and that’s what good orthodontics is all about.

#### Scan selection and capture with i-CAT FLX SmartScan STUDIO

After I determine the patient’s particular imaging needs, the treatment coordinator initiates SmartScan STUDIO from the touchscreen. She enters patient information, then she selects the predetermined scan (2D pan or 3D scan) by touching the proper image on the screen (Fig. 1). She covers the patient with a lead apron, places the patient in the i-CAT, and situates him or her using the system’s laser lines. Once the patient is in position, she moves to the next screen, which allows for a Scout, Dry Run, or the actual Scan capture; she chooses “Scout” (Fig. 2).

We take this quick image to confirm the patient is positioned properly and to eliminate the risk of taking a scan that does not cover the needed anatomy. At this point, we are able to reposition the patient if needed, and to decrease or increase the height and position of the scan (Fig. 3). Once we have made adjustments and verified the patient’s position, the scan is taken. These steps take only a few minutes, start to finish.

As an added bonus, the touchscreen delivers and tracks the scan and dose information per patient. Being

able to track this information aligns with my in-office radiation protocol and philosophy. When a scan is complete, I open it in Tx STUDIO (Fig. 4) where I have a collection of integrated and highly useful tools, including those specific to orthodontics. There are also tools specific to other procedures such as those involving airway and implants.

#### Fast, efficient workflow

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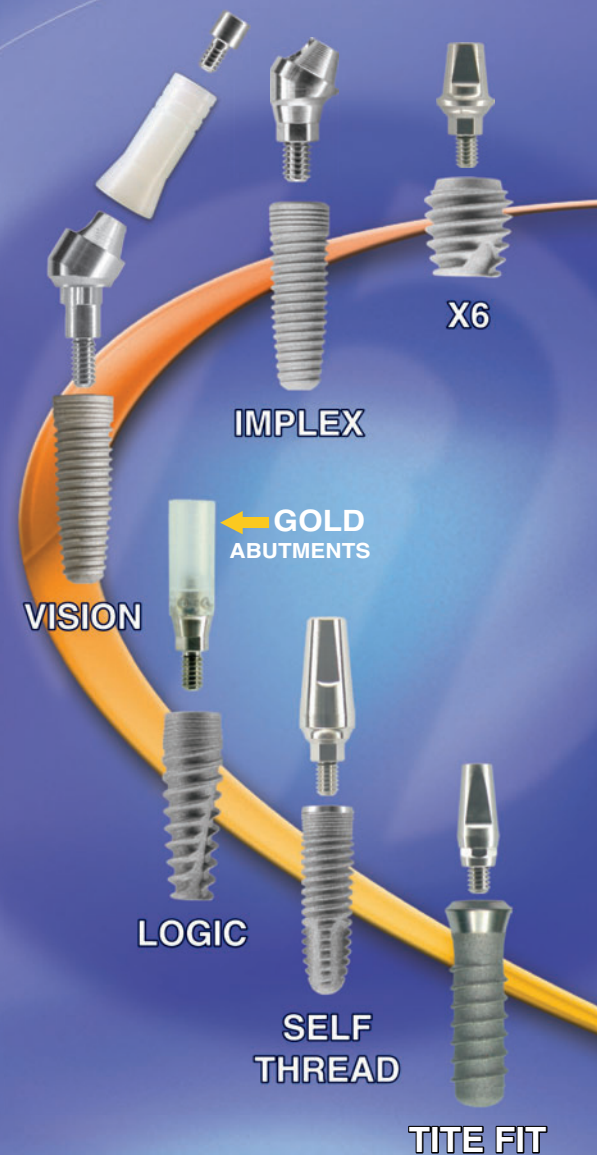
As I stated earlier, we usually set for the lowest dose, but having the option of increasing as necessary gives me the control I was looking for in a 3D cone beam system. ●

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HOWTO

# CREATE HIGHLY ESTHETIC MONOLITHIC ZIRCONIA CROWNS

3M ESPE's Lava Plus High Translucency Zirconia offers both outstanding esthetics and strength.

by DR. GARY ALEX  
Information provided by 3M ESPE.

In 2002, a zirconia-based ceramic system was introduced that used CAD/CAM technology to produce high-strength zirconia copings that could then be overlaid with stacked or pressed porcelain (Lava Zirconia from 3M ESPE). This technology provided clinicians with a viable alternative to traditional porcelain fused to metal (PFM) restorations.

A potential problem surfaced when some reported excessive chipping and/or fractures of porcelain that was layered over the zirconia substructure.<sup>1,2</sup> This appeared to be largely because of poor coping design and the fact that zirconia requires very specific parameters regarding heating and cooling cycles during fabrication, to which some labs did not adhere. Once these issues were recognized and addressed, any chipping issues were significantly attenuated. In any case, the emergence of full-contour monolithic zirconia restorations has made this a non-issue, as these restorations are milled from a single block of zirconia and there is no stacked or pressed porcelain that has the potential to chip. Monolithic zirconia fixed partial dentures (crowns) have many potential advantages, including very high flexural strength, the ability to be conventionally cemented or bonded into place, the benefits of CAD/CAM technology, and the fact that they are generally less expensive than traditional PFM restorations.

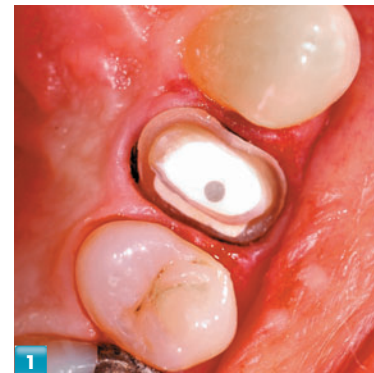
Two popular full-contour monolithic materials used for single fixed partial dentures are zirconia and lithium disilicate. While zirconia offers significantly greater flexural strength (more than 900 MPa compared with 400 for lithium disilicate), lithium disilicate has generally been considered to be a better choice for use in the esthetic zone because of its greater translucency and a more natural appearance. However, a new zirconia material now offers significantly improved esthetics as well as the strength for which zirconia is known. 3M™ ESPE™ Lava™ Plus High Translucency Zirconia is based on the original Lava™ Zirconia, with new special chemistry and processing to enable more translucency and warmth, and more natural esthetics.

SCAN:



## 3M™ ESPE™ LAVA™ PLUS HIGH TRANSLUCENCY ZIRCONIA FEATURES

- Patented shading system enables highly esthetic all-zirconia or traditionally layered restorations.
- Excellent color match to the VITA® Classical Shade Guide and VITA SYSTEM 3D-MASTER® Shades.
- Offers both strength and beauty



## AT A GLANCE

- The preparation on tooth No. 5 following endodontic treatment, post placement and core buildup.
- A fast-setting VPS impression material was used.
- Finished die.
- Finished monolithic crown made with Lava Plus Zirconia 4.
- The interior surface was lightly sandblasted.
- Zirconia primer was applied.
- The primer was dried with a warm air stream.
- A disposable rubber cup with pumice was used to clean the preparation.
- 3M™ ESPE™ RelyX™ Luting Plus cement was loaded into the crown.
- The crown was seated and excess cement removed after four minutes.
- Occlusal view of final restoration.
- The crown exhibited an excellent match to the surrounding area.



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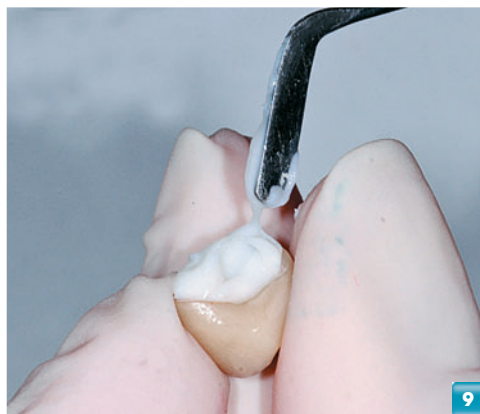
6



7



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11



12

A zirconia's translucency is influenced by two main factors: the presence of impurities and structural defects, and the alumina distribution and content. Alumina is added to some zirconias to maintain aging stability, but it can decrease translucency by scattering light. To engineer Lava Plus zirconia for both excellent aging stability and translucency, 3M ESPE

reduced the alumina content in the material to 0.1 percent of its weight. The distribution of the alumina also was improved, along with other high-quality processing steps to fully optimize the material's translucency.

### Custom shading capabilities

In addition to its excellent translucency, Lava Plus zirconia has a unique shading system that gives laboratories many options for custom shading and characterization. After milling a porous green-state block, the laboratory can choose from among 18 dyeing liquids that cover the 16 Vita Classical A1-D4 shades, as well as two bleach shades, to achieve custom coloring. (Lava Plus zirconia is the only system that matches the Vita Classical A1-D4 and bleached shades.) The dyeing liquid is applied and then, during the sintering step, the color ions are incorporated into the zirconia. This technique was invented by 3M ESPE, and because the dyeing liquids are designed specifically for the zirconia, dentists and labs can be assured of an excellent color match to the Vita Classical shades. When using a zirconia system without this dedicated shading system, labs must use a process of trial and error to achieve the desired color match,

which decreases efficiency as well as compromises esthetics.

While this zirconia offers excellent performance as a monolithic material, traditional layering also can be done, giving dentists and labs versatile options for achieving their esthetic goals. Whether it is used in a monolithic restoration or layered, field evaluations have shown that dentists and labs prefer the esthetics of this zirconia to many other zirconia systems, with data showing it offers significantly higher all-zirconia crown translucency.<sup>3,4</sup>

### Added benefits of higher strength

The greater strength of zirconia as compared to lithium disilicate also enables dentists to preserve tooth structure during preparation. Lava Plus zirconia crowns require only 0.5 mm minimum occlusal clearance while lithium disilicate ideally should have 1.5-2 mm of clearance. This difference can be significant in posterior applications where space is often tight. With significantly greater strength and now improved esthetics, this high translucency zirconia has the potential to be used in either the posterior or anterior regions of the mouth.

The case illustrated here highlights the use of this material to create a natural-looking crown for a first bicuspid.

### Case presentation

The patient presented with extensive caries and exposure of the pulp on the right first bicuspid. Endodontic treatment was completed, followed by placement of a post and core buildup.

**STEP 01** The tooth was prepped with a rounded internal shoulder preparation. A deep chamfer preparation also can be used. It is important not to have sharp line angles and to smooth and round the occlusal aspect of the preparation (Fig. 1).

**STEP 02** An automixed (Pentamix 3) heavy and syringeable light body VPS (3M™ ESPE™ Imprint 3 Penta Quick Step Impression Material) was used to capture the impression (Fig. 2).

**STEP 03** The case was sent to the lab, along with photographs illustrating shading. The laboratory milled the crown using Lava™ Plus Dyeing Liquid to customize the shade (Figs. 3 and 4).

**STEP 04** The crown was returned to the office and tried in to confirm fit. The internal surface of the crown was lightly sandblasted, and the crown was rinsed and air dried (Fig. 5).

**STEP 05** Z-Prime Plus by Bisco was uniformly applied to the interior surface and dried with warm air for 5 seconds to improve the chemical interaction (Figs. 6 and 7).

**STEP 06** The tooth was cleaned with a Pumice Preppie by Whip Mix (Fig. 8).

**STEP 07** 3M™ ESPE™ RelyX™ Luting Plus Resin-Modified Glass Ionomer Cement was dispensed onto a mixing pad and the two pastes were mixed together for 20 seconds. The cement was applied to the internal surface of the restoration (Fig. 9).

**STEP 08** The crown was seated onto the preparation with light pressure. The pressure was maintained for several minutes during the setting process. Once the cement reached a waxy stage, excess material was cleaned away (Fig. 10). A diamond polishing paste was used to achieve the final finish.

The final result was a highly esthetic crown that blended perfectly with the surrounding dentition (Figs. 11 and 12).

### Closing thought

The simplicity of monolithic restorations makes them very attractive for dentists, but until recently they have had to carefully balance their needs for esthetics and strength to determine which material is most appropriate. The high translucency zirconia material used here illustrates the new capabilities of zirconia to deliver outstanding esthetics as well as strength. The material is offered with a 15-year warranty, and is based on the original Lava zirconia, which has an 11-year track record of reliability. With this high-translucency zirconia, dentists have an excellent new option for creating strong and natural-looking restorations that are guaranteed to last.

### REFERENCES

1. Heintze SD, Rousson V. Survival of zirconia- and metal-supported fixed dental prostheses: a systematic review. *Int J Prosthodont.* 2010 Nov-Dec;23(6):493-502.
2. Swain MV. Unstable cracking (chipping) of veneering porcelain on all-ceramic dental crowns and fixed partial dentures. *Acta Biomater.* 2009 Jun;5(5):1668-77.
3. Application Test Lava™ Plus High Translucency Zirconia, 11 responding dental labs in Germany, Austria, Italy, Netherlands and U.S., 2011.
4. Application Test Lava™ Plus High Translucency Zirconia, 18 responding dentists in Germany, Italy and U.S., 2011. ●



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Articadent® is indicated for local, infiltrative, or conductive anesthesia in both simple and complex dental procedures. For most routine dental procedures, Articadent® containing epinephrine 1:200,000 is preferred. However, when more pronounced hemostasis or improved visualization of the surgical field are required, Articadent® containing epinephrine 1:100,000 may be used. Reactions to Articadent® (pain and headache, for example, or convulsions or respiratory arrest following accidental intravascular injection) are characteristic of those associated with other amide-type local anesthetics. Articadent® contains sodium metabisulfite, a sulfite that may cause allergic-type reactions including anaphylactic symptoms and life-threatening or less severe asthmatic episodes in certain susceptible people. **Accidental intravascular injection may be associated with convulsions, followed by central nervous system or cardiorespiratory depression and coma, progressing ultimately to respiratory arrest. Dental practitioners and/or clinicians who employ local anesthetic agents should be well versed in diagnosis and management of emergencies that may arise from their use. Resuscitative equipment, oxygen, and other resuscitative drugs should be available for immediate use. Articadent®, along with other local anesthetics, is capable of producing methemoglobinemia. The clinical signs of methemoglobinemia are cyanosis of the nail beds and lips, fatigue and weakness. If methemoglobinemia does not respond to administration of oxygen, administration of methylene blue intravenously 1-2 mg/kg body weight over a 5-minute period is recommended.**

Please see Brief Summary of Prescribing Information on adjacent page.

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PHA07-0810-2.2 Rev. 02

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# Articadent® (articaine HCl and epinephrine) Injection; Intraoral Submucosal Injection

Articaine hydrochloride 4% and epinephrine 1:200,000

Articaine hydrochloride 4% and epinephrine 1:100,000

## BRIEF SUMMARY. [See Package Insert For Full Prescribing Information]

### USE

Articadent® is indicated for local, infiltrative, or conductive anesthesia in both simple and complex dental procedures. For most routine dental procedures, Articadent® with epinephrine 1:200,000 is preferred. Articadent® with epinephrine 1:100,000 is preferred during operative or surgical procedures when improved visualization of the surgical field is desirable.

### CONTRAINDICATIONS

Articadent® is contraindicated in patients with a known history of hypersensitivity to local anesthetics of the amide type, or in patients with known hypersensitivity to sodium metabisulfite.

### WARNINGS

**Accidental intravascular injection may be associated with convulsions, followed by central nervous system or cardiorespiratory depression and coma, progressing ultimately to respiratory arrest. Dental practitioners and/or clinicians who employ local anesthetic agents should be well versed in diagnosis and management of emergencies that may arise from their use. Resuscitative equipment, oxygen, and other resuscitative drugs should be available for immediate use.**

Intravascular injections should be avoided. To avoid intravascular injection, aspiration should be performed before Articadent® is injected. The needle must be repositioned until no return of blood can be elicited by aspiration. Note, however, that the absence of blood in the syringe does not guarantee that intravascular injection has been avoided.

Articadent® contains epinephrine that can cause local tissue necrosis or systemic toxicity. Usual precautions for epinephrine administration should be observed.

Articadent® contains sodium metabisulfite, a sulfite that may cause allergic-type reactions including anaphylactic symptoms and life-threatening or less severe asthmatic episodes in certain susceptible people. The overall prevalence of sulfite sensitivity in the general population is unknown. Sulfite sensitivity is seen more frequently in asthmatic than in non-asthmatic people.

**Articadent®, along with other local anesthetics, is capable of producing methemoglobinemia. The clinical signs of methemoglobinemia are cyanosis of the nail beds and lips, fatigue and weakness. If methemoglobinemia does not respond to administration of oxygen, administration of methylene blue intravenously 1-2 mg/kg body weight over a 5 minute period is recommended.**

The American Heart Association has made the following recommendation regarding the use of local anesthetics with vasoconstrictors in patients with ischemic heart disease: "Vasoconstrictor agents should be used in local anesthesia solutions during dental practice only when it is clear that the procedure will be shortened or the analgesia rendered more profound. When a vasoconstrictor is indicated, extreme care should be taken to avoid intravascular injection. The minimum possible amount of vasoconstrictor should be used." (Kaplan, EL, editor: Cardiovascular disease in dental practice, Dallas 1986, American Heart Association.)

### PRECAUTIONS

**General:** Resuscitative equipment, oxygen, and other resuscitative drugs should be available for immediate use (see **WARNINGS**). The lowest dosage that results in effective anesthesia should be used to avoid high plasma levels and serious adverse effects. Repeated doses of Articadent® may cause significant increases in blood levels with each repeated dose because of possible accumulation of the drug or its metabolites. Tolerance to elevated blood levels varies with the status of the patient.

Dehydrated patients, elderly patients, acutely ill patients and pediatric patients should be given reduced doses commensurate with their age and physical condition.

Articadent® should be used with caution in patients with heart block.

Local anesthetic solutions, such as Articadent®, containing a vasoconstrictor should be used cautiously. Patients with peripheral vascular disease and those with hypertensive vascular disease may exhibit exaggerated vasoconstrictor response. Ischemic injury or necrosis may result. Articadent® should be used with caution in patients during or following the administration of potent general anesthetic agents, since cardiac arrhythmias may occur under such conditions.

Systemic absorption of local anesthetics can produce effects on the central nervous and cardiovascular systems. At blood concentrations achieved with therapeutic doses, changes in cardiac conduction, excitability, refractoriness, contractility, and peripheral vascular resistance are minimal. However, toxic blood concentrations depress cardiac conduction and excitability, which may lead to atrioventricular block, ventricular arrhythmias, and cardiac arrest, possibly resulting in fatalities. In addition, myocardial contractility is depressed and peripheral vasodilation occurs, leading to decreased cardiac output and arterial blood pressure.

Careful and constant monitoring of cardiovascular and respiratory (adequacy of ventilation) vital signs and the patient's state of consciousness should be performed after each local anesthetic injection. It should be kept in mind at such times that restlessness, anxiety, tinnitus, dizziness, blurred vision, tremors, depression, or drowsiness may be early warning signs of central nervous system toxicity.

*In vitro* studies show that about 5% to 10% of articaine is metabolized by the human liver microsomal P450 isoenzyme system. However, because no studies have been performed in patients with liver dysfunction, caution should be used in patients with severe hepatic disease.

Articadent® should also be used with caution in patients with impaired cardiovascular function since they may be less able to compensate for functional changes associated with the prolongation of A-V conduction produced by these drugs.

Small doses of local anesthetics injected in dental blocks may produce adverse reactions similar to systemic toxicity seen with unintentional intravascular injections of larger doses. Confusion, convulsions, respiratory depression and/or respiratory arrest, and cardiovascular stimulation or depression have been reported. These reactions may be due to intra-arterial injection of the local anesthetic with retrograde flow to the cerebral circulation. Patients receiving these blocks should be observed constantly. Resuscitative equipment and personnel for treating adverse reactions should be immediately available.

Dosage recommendations should not be exceeded (see **DOSAGE AND ADMINISTRATION** in package insert).

### Information for Patients:

- The patient should be informed in advance of the possibility of temporary loss of sensation and muscle function following infiltration and nerve block injections.
- Patients should be instructed not to eat or drink until normal sensation returns.

**Clinically Significant Drug Interactions:** The administration of local anesthetic solutions containing epinephrine to patients receiving monoamine oxidase inhibitors, nonselective beta adrenergic antagonists or tricyclic antidepressants may produce severe, prolonged hypertension. Phenothiazines and butyrophenones may reduce or reverse the pressor effect of epinephrine. Concurrent use of these agents should generally be avoided. In situations when concurrent therapy is necessary, careful patient monitoring is essential.

**Carcinogenesis, Mutagenesis, Impairment of Fertility:** Studies to evaluate the carcinogenic potential of articaine HCl in animals have not been conducted. Five standard mutagenicity tests, including three *in vitro* tests (the nonmammalian Ames test, the mammalian Chinese hamster ovary chromosomal aberration test and a mammalian gene mutation test with articaine HCl) and two *in vivo* mouse micronucleus tests (one with Articadent® with epinephrine 1:100,000 and one with articaine HCl alone) showed no mutagenic effects. No effects on male or female fertility were observed in rats for Articadent® with epinephrine 1:100,000 administered subcutaneously in doses up to 80 mg/kg/day (approximately two times the maximum male and female recommended human dose on a mg/m<sup>2</sup> basis).

**Pregnancy:** Teratogenic Effects-Pregnancy Category C.

In developmental studies, no embryofetal toxicities were observed when Articadent® with epinephrine 1:100,000 was administered subcutaneously throughout organogenesis at doses up to 40 mg/kg in rabbits and 80 mg/kg in rats (approximately 2 times the maximum recommended human dose on a mg/m<sup>2</sup> basis). In rabbits, 80 mg/kg (approximately 4 times the maximum recommended human dose on a mg/m<sup>2</sup> basis) did cause fetal death and increase fetal skeletal variations, but these effects may be attributable to the severe maternal toxicity, including seizures, observed at this dose.

When articaine hydrochloride was administered subcutaneously to rats throughout gestation and lactation, 80 mg/kg (approximately 2 times the maximum recommended human dose on a mg/m<sup>2</sup> basis) increased the number of stillbirths and adversely affected passive avoidance, a measure of learning, in pups. This dose also produced severe maternal toxicity in some animals. A dose of 40 mg/kg (approximately equal to the maximum recommended human dose on a mg/m<sup>2</sup> basis) did not produce these effects. A similar study using Articadent® with epinephrine 1:100,000 rather than articaine hydrochloride alone produced maternal toxicity, but no effects on offspring.

There are no adequate and well-controlled studies in pregnant women. Animal reproduction studies are not always predictive of human response. Articadent® should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers:** It is not known whether articaine is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Articadent® is administered to a nursing woman.

**Pediatric Use:** In clinical trials, 61 pediatric patients between the ages of 4 and 16 years received Articadent® with epinephrine 1:100,000. Among these pediatric patients, doses from 0.76 mg/kg to 5.65 mg/kg (0.9 to 5.1 mL) were administered safely to 51 patients for simple procedures and doses between 0.37 mg/kg and 7.48 mg/kg (0.7 to 3.9 mL) were administered safely to 10 patients for complex procedures. However, there was insufficient exposure to Articadent® with epinephrine 1:100,000 at doses greater than 7.00 mg/kg in order to assess its safety in pediatric patients. No unusual adverse events were noted in these patients. Approximately 13% of these pediatric patients required additional injections of anesthetic for complete anesthesia. Safety and effectiveness in pediatric patients below the age of 4 years have not been established. Dosages in pediatric patients should be reduced, commensurate with age, body weight, and physical condition. See **DOSAGE AND ADMINISTRATION** in package insert.

**Geriatric Use:** In clinical trials, 54 patients between the ages of 65 and 75 years, and 11 patients 75 years and over received Articadent® with epinephrine 1:100,000. Among all patients between 65 and 75 years, doses from 0.43 mg/kg to 4.76 mg/kg (0.9 to 11.9 mL) were administered safely to 35 patients for simple procedures and doses from 1.05 mg/kg to 4.27 mg/kg (1.3 to 6.8 mL) were administered safely to 19 patients for complex procedures. Among the 11 patients ≥ 75 years old, doses from 0.78 mg/kg to 4.76 mg/kg (1.3 to 11.9 mL) were administered safely to 7 patients for simple procedures and doses of 1.12 mg/kg to 2.17 mg/kg (1.3 to 5.1 mL) were safely administered to 4 patients for complex procedures.

No overall differences in safety or effectiveness were observed between elderly subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. Approximately 6% of patients between the ages of 65 and 75 years and none of the 11 patients 75 years of age or older required additional injections of anesthetic for complete anesthesia compared with 11% of patients between 17 and 65 years old who required additional injections.

### ADVERSE REACTIONS

Reactions to Articadent® are characteristic of those associated with other amide-type local anesthetics. Adverse reactions to this group of drugs may also result from excessive plasma levels (which may be due to overdosage, unintentional intravascular injection, or slow metabolic degradation), injection technique, volume of injection, hypersensitivity, or may be idiosyncratic.

The reported adverse events are derived from clinical trials in the US and UK. Table 1 displays the adverse events reported in clinical trials where 882 individuals were exposed to Articadent® with epinephrine 1:100,000 and Table 2 displays the adverse events reported in clinical trials where 182 individuals were exposed to Articadent® with epinephrine 1:100,000 and 179 individuals were exposed to Articadent® with epinephrine 1:200,000.

**Table 1. Adverse Events in controlled trials with an incidence of 1% or greater in patients administered Articadent® with epinephrine 1:100,000.**

Body System	Articadent® with epinephrine 1:100,000 N (%)
Number of patients	882 (100%)
Body as a whole	
Face Edema	13 (1%)
Headache	31 (4%)
Infection	10 (1%)
Pain	114 (13%)
Digestive system	
Gingivitis	13 (1%)
Nervous system	
Paresthesia	11 (1%)

**Table 2. Adverse Events in controlled trials with an incidence of 1% or greater in patients administered Articadent® with epinephrine 1:100,000 and Articadent® with epinephrine 1:200,000.**

Number of patients exposed to drug	Articadent® with epinephrine 1:100,000 (N=182)	Articadent® with epinephrine 1:200,000 (N=179)
Number of patients that reported any Adverse Event	35	33
Pain	14 (7.6%)	11 (6.1%)
Headache	6 (3.2%)	9 (5.0%)
Positive blood aspiration into syringe	6 (3.2%)	3 (1.6%)
Swelling	5 (2.7%)	3 (1.6%)
Trismus	3 (1.6%)	1 (0.5%)
Nausea and emesis	0 (0%)	3 (1.6%)
Sleepiness	1 (0.5%)	2 (1.1%)
Numbness and tingling	2 (1.0%)	1 (0.5%)
Palpitation	2 (1.0%)	0 (0%)
Ear symptoms (earache, otitis media)	2 (1.0%)	1 (0.5%)
Cough, persistent cough	2 (1.0%)	0 (0%)

The following list includes adverse and intercurrent events that were recorded in 1 or more patients, but occurred at an overall rate of less than one percent, and were considered clinically relevant.

**Body as a Whole:** abdominal pain, accidental injury, asthenia, back pain, injection site pain, burning sensation above injection site, malaise, neck pain.

**Cardiovascular System:** hemorrhage, migraine, syncope, tachycardia, elevated blood pressure.

**Digestive System:** constipation, diarrhea, dyspepsia, glossitis, gum hemorrhage, mouth ulceration, nausea, stomatitis, tongue edemas, tooth disorder, vomiting.

**Hemic and Lymphatic System:** ecchymosis, lymphadenopathy.

**Metabolic and Nutritional System:** edema, thirst.

**Musculoskeletal System:** arthralgia, myalgia, osteomyelitis.

**Nervous System:** dizziness, dry mouth, facial paralysis, hyperesthesia, increased salivation, nervousness, neuropathy, paresthesia, somnolence, exacerbation of Kearns-Sayre Syndrome.

**Respiratory System:** pharyngitis, rhinitis, sinus pain, sinus congestion.

**Skin and Appendages:** pruritus, skin disorder.

**Special Senses:** ear pain, taste perversion.

**Urogenital System:** dysmenorrhea.

Persistent paresthesias of the lips, tongue, and oral tissues have been reported with use of articaine hydrochloride, with slow, incomplete, or no recovery. These post-marketing events have been reported chiefly following nerve blocks in the mandible and have involved the trigeminal nerve and its branches.

Hypoesthesia has been reported with use of articaine, especially in pediatric age groups, which is usually reversible. Prolonged numbness can result in soft tissue injuries such as that of the lips and tongue in these age groups.

Ischemic injury and necrosis have been described following use of articaine with epinephrine and have been postulated to be due to vascular spasm of terminal arterial branches. Paralysis of ocular muscles has been reported, especially after posterior, superior alveolar injections of articaine during dental anesthesia. Symptoms include diplopia, mydriasis, ptosis, and difficulty in abduction of the affected eye. These symptoms have been described as developing immediately after injection of the anesthetic solution and persisting one minute to several hours, with generally complete recovery.

### OVERDOSAGE

Acute emergencies from local anesthetics are generally related to high plasma levels encountered during therapeutic use of local anesthetics or to unintended subarachnoid injection of local anesthetic solution (see **WARNINGS, PRECAUTIONS; General and ADVERSE REACTIONS**).

**Management of Local Anesthetic Emergencies:** The first consideration is prevention, best accomplished by careful and constant monitoring of cardiovascular and respiratory vital signs and the patient's state of consciousness after each local anesthetic injection. At the first sign of change, oxygen should be administered.

The first step in the management of convulsions, as well as hypoventilation, consists of immediate attention to the maintenance of a patient airway and assisted or controlled ventilation as needed. The adequacy of the circulation should be assessed. Should convulsions persist despite adequate respiratory support, treatment with appropriate anticonvulsant therapy is indicated. The practitioner should be familiar, prior to the use of local anesthetics, with the use of anticonvulsant drugs. Supportive treatment of circulatory depression may require administration of intravenous fluids and, when appropriate, a vasopressor.

If not treated immediately, both convulsions and cardiovascular depression can result in hypoxia, acidosis, bradycardia, arrhythmias and cardiac arrest. If cardiac arrest should occur, standard cardiopulmonary resuscitative measures should be instituted.

### HOW SUPPLIED

Articadent® (articaine HCl and epinephrine) Injection is available in 1.7 mL single use glass cartridges, packaged in boxes of 50 cartridges in the following two strengths:

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Ultradent's new Opalescence Go was developed to give patients an affordable, at-home whitening option that offers the type of results they'd see from in-office treatment. Shannon Pace Brinker breaks down the benefits of this new treatment and how patients can get the best results.

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# PUT CONTROL IN YOUR PATIENTS' HANDS

With Opalescence Go, you can get the quality of in-office whitening treatments with the convenience of an at-home product.

by SHANNON PACE BRINKER, CDA, CDD, EDITOR FOR CONTEMPORARY PRODUCT SOLUTIONS

Every day, more Americans look for ways to enhance their smiles.

Many patients choose whitening treatments to quickly and effectively improve the appearance of their teeth and overall smiles. A study completed by Dunn *et al* found that tooth shade played the most significant role in determining the esthetics of a smile.<sup>1</sup> Not only is the whiteness of a person's smile among the first characteristics people notice in others, but visible differences in the shade of someone's teeth detracts from their overall appearance.<sup>1,2</sup> Not surprisingly, more patients are relying on dental professionals to enhance their smiles and achieve the results they desire.

To meet this demand, tooth whitening products and procedures represent a majority of esthetic treatments in modern dentistry.<sup>3,4</sup> The non-invasive nature

of whitening treatments, combined with their cost-effectiveness, provide the safest and most efficient way to improve a patient's smile.<sup>5</sup> However, choosing the best whitening agent and delivery method for a patient requires care, because some products can be harsh and increase the likelihood of soft-tissue irritation and burns.<sup>6</sup> Even with this precaution, teeth whitening quickly generates positive results efficiently and cost effectively for both the patient and dental office.

## Whitening considerations

Several factors should be considered before selecting teeth whitening as a treatment. Some indications for teeth whitening include tooth discoloration caused by endodontic treatments, fluorosis, medications, food, drink, and age. Patients with tooth stains resulting from these factors prove to be the ideal candidates for successful teeth whitening.

However, whitening veneers, crowns and other prior restorative work only affects the underlying tooth structure and around the margins; while doing so can help to revitalize the appearance of prior dentistry, the restorations themselves won't whiten. Therefore, patients with prior restorations are not ideal candidates for teeth whitening.<sup>7-9</sup>

Another contraindication includes failed restorations, which should be replaced first instead of whitened to improve esthetics. Additional factors to consider are the vitality of the pulp, presence or absence of symptoms, and the presence or absence of periapical pathoses to determine whether an internal or external bleaching approach is appropriate.<sup>10,11</sup>

## Choosing the best option

Proper patient assessment provides a foundation for the best possible outcomes. After determining whitening is the appropriate treatment for enhancing a patient's smile, a variety of materials, procedures and products are available. These include in-office treatments, at-home treatments, various chemical compositions of whitening agents, and a variety of applications.

Two factors that determine a whitening treatment's success are the concentration of the whitening agent and the amount of time the teeth are exposed to the whitening substance.<sup>12-14</sup> Used successfully as a whitening agent, different concentrations of carbamide peroxide have been shown to cause some sensitivity during and post whitening treatment.<sup>15</sup> Another common adverse effect,

tooth sensitivity, frequently exists during and post whitening treatment.<sup>16</sup>

In addition to the chemical effects of most whitening treatments, inconvenience, cost, and discomfort affect whitening success. Some techniques require in-office appointments, while others can be done at home but require in-office visits for impressions and models. In-office treatments can be expensive and time-consuming for practice team members and patients.

At-home products can be more affordable but may lack the whitening efficacy needed to achieve the patient's desired result. Finally, some pre-fabricated at-home or in-office trays and strips can be uncomfortable and time-consuming. The fit of trays and their ability to maintain contact between the whitening agent and the teeth play a large role in a whitening treatment's success.<sup>12,13</sup> With the increase in requests for whitening treatments, the development of a practical, cost-effective, and successful at-home whitening product is in demand.

## Opalescence Go

A recently introduced, dentist-dispensed at-home whitening system, Opalescence Go from Ultradent Products ([ultradent.com](http://ultradent.com)), offers professional quality whitening with the convenience of pre-filled trays that are ready for use at any time. It is ideal for the on the go lifestyle, helping save dental offices and patients time. The UltraFit® trays provide an adaptable and comfortable whitening experience and represent a solution for expensive, time consuming, and uncomfortable whitening treatments. Opalescence Go creates a cost-effective, easy to use, and highly esthetic whitening experience.

The Opalescence Go bleaching agent formula also provides a safe treatment option. In both the 10% and 15% hydrogen peroxide concentrations, the formula contains potassium nitrate and fluoride. Potassium nitrate helps to increase patient comfort by reduc-

## Did you know...

Opalescence Go offers a more convenient and affordable option than traditional teeth whitening systems, but maintains the power of a professional whitener.



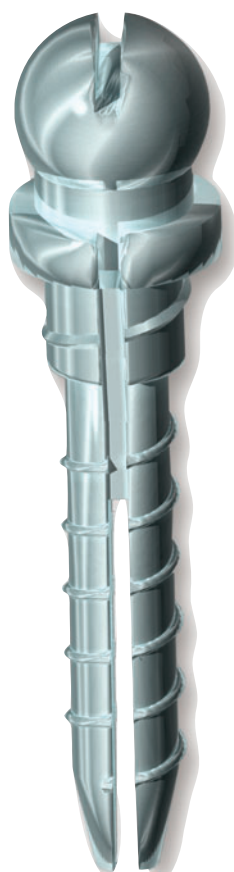
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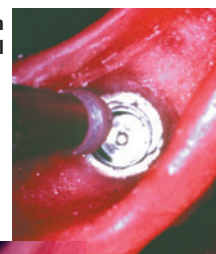
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<sup>1</sup>Musikant, B.L., Cohen, B.I., Deutsch, A.S. Replacement Insert Makes Denture and Post Connection Easier. Dentistry Today, 1995;14(11):116-117.  
<sup>2</sup>Cohen B.I., Musikant B.L., Pagnillo M., Condos S., Deutsch A.S. Comparative study of two precision overdenture attachment designs. J Prosthet Dent 1996;76(2):145-152.  
<sup>3</sup>Leung, T., Preiskel, H.W. Retention Profiles of Stud-Type Precision Attachments. International Journal of Prosthodontics, 1991;4:175-179.  
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**Fig. 1** Remove the Opalescence Go UltraFit tray from the package.



**Fig. 2** Center the tray on the upper arch.



**Fig. 3** Suck down or make a swallowing motion to secure the tray on the teeth.



**Fig. 4** Once the tray is secured, remove the colored outer tray.



**Fig. 5** Suck down or make a swallowing motion again.



**Fig. 6** If necessary, tap the inner transparent tray to further adapt it to the smile.



**Figure 7.** Trays are worn once a day, with the wear time varying depending on the concentration.

mint, melon, and peach flavors and allows for a 30-to-60 minute wear time. The 15% hydrogen peroxide concentration allows for a wear time of 15 to 20 minutes and is available in mint. Both concentrations achieve results in 5 to 10 days, and the variation offers dentists the opportunity to select the ideal concentration based on patient preferences and needs. Opalescence Go take-home kits include 4 or 10 pre-filled trays and instructions.

### The trays

With the UltraFit trays, Opalescence Go easily conforms to any patient's individual dentition, providing comfortable wear throughout the treatment. It offers molar-to-molar coverage and ensures the gel contacts more posterior teeth than previous take-home systems.

The pre-filled trays are so convenient that they can be worn right out of the package, further saving dental team members and patients time. The whitening trays are discreet and allow for easy whitening anywhere, including on the go. Without the need for impressions, models, and

lab time, Opalescence UltraFit trays offer complete contact and universal comfort.

### Your patients are in control

The Opalescence Go system puts control in your patients' hands. By allowing patients to determine when they are content with the whitening effect, the patient's satisfaction can be ensured.<sup>21</sup>

Patients receive appropriate assessment, directions, and treatment planning, because Opalescence Go is only dispensed at dental offices. This benefits both clinicians and patients by encouraging a conservative method for smile enhancement.<sup>21</sup> Unlike in-office whitening treatments, patients can choose flavors, concentrations, and tray wear time. Opalescence Go also easily adapts to a patient's lifestyle and budget.

### Prescribing take-home kit

After dental professionals complete the initial examination and assessment and determine that a patient is a candidate for teeth whitening, a baseline tooth shade is taken, after which the appropriate concentration, flavor and size of the Opalescence Go whitening kit can be determined. Kits include pre-filled trays and easy to follow instructions.

Once dispensed, dental assistants can easily explain Opalescence Go instructions to patients.

## Trays that conform to your patients' lifestyle

The pre-filled trays and discreet look allow for use anywhere. They are ready for use instantly and do not require dental office or patient preparation.

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<sup>1</sup>. Full bibliography available.



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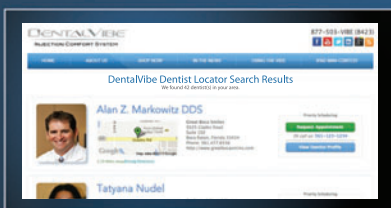
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**Before**  
A view of a patient's shade before using Opalescence Go.



**After**  
A view of a patient's shade after using Opalescence Go.

The first step is to remove the Opalescence Go UltraFit tray from the package (Fig. 1). Then, the tray is centered on the upper arch (Fig. 2). Next, patients suck down or make a swallowing motion to secure the tray on the teeth (Fig. 3). Once the tray is secured, the colored outer tray is removed (Fig. 4), and the patient swallows again (Fig. 5). If necessary, the inner transparent tray can be tapped to further adapt it to the smile (Fig. 6). The process is repeated for the lower arch tray.

The amount of time patients should wear the trays depends on the concentration dispensed. If they have the 10% hydrogen peroxide option, patients should wear the trays once a day for 30 to 60 minutes (Fig. 7). If they're using the 15% hydrogen peroxide concentration, they should wear the trays for 15 to 20 minutes. The length of time varies depending on the patient's desired results. Once the time is up, patients remove and discard the tray and then brush their teeth, being careful not to swallow the remaining gel.

### A convenient way to whiten

With the increased demand for cost-effective ways to quickly improve patients' smiles, new dental products and materials are introduced constantly. Although still a go-to solution for many patients, in-office and take-home whitening treatments can be expensive, time consuming and uncomfortable. Emphasizing convenience and results, Opalescence Go offers professional quality whitening for patients with an on-the-go lifestyle. Its variety of hydrogen peroxide concentrations, patient-friendly flavors, and wear time make it an ideal dentist-dispensed solution for both patients and dental teams. ●

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# HOW TO TAKE ACCURATE PHOTOGRAPHS AND IMPRESSIONS FOR INVISALIGN TREATMENT

Technique tips for dental assistants during Invisalign treatment planning.

by SHANNON PACE BRINKER, CDA, CDD

Dental assistants create the foundation for a variety of dental treatments, including orthodontic treatment planning for Align Technology's Invisalign cases. Among their many roles, dental assistants and dental team members are responsible for facilitating the various tasks associated with record taking.

Photographic and impression records are essential to the success of these endeavors. Therefore, education and practice are necessary to consistently produce accurate and detailed information. With ongoing education, implementing new techniques and procedures can ensure proper protocols are followed, while practice develops ample experience and the ability to adjust to each unique patient.

By combining education and practice with technique tips from experienced dental assistants, the highest likelihood for obtaining accurate records can be realized.

## Treatment planning for Invisalign

Invisalign treatment planning, in particular, involves assembling patient alignment infor-



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mation, eight photographs, and upper/lower impressions.<sup>3</sup> Invisalign uses these records to create aligners that are unique to each patient and are essential to the orthodontic treatment's success. Dental assistants are generally responsible for the majority of Invisalign record taking. The process begins with an evaluation that includes several questions regarding the patient's current tooth alignment and the anticipated final results.

Accurate dental photography in the orthodontic treatment planning process requires proper equipment, correct camera settings, and experience for optimum results.<sup>1</sup> The eight photographs needed for Invisalign treatment represent the patient both extraorally and intraorally and include full-face and retracted images. Impressions also require proper materials, as well as an ability to ensure patient comfort, because impressions can cause distress and gagging that can result in compromised intraoral details.<sup>2</sup> Dental assistants are responsible

for taking, organizing and submitting all of this information to facilitate proper fitting orthodontic appliances. Inaccurate records can lead to retakes, extra time, costly materials, unhappy patients, and ill-fitting aligners that result in poor treatment outcomes.

## Technique tips

Obtaining accurate photographs is more involved than using a "point and shoot" camera. The recommended equipment includes a digital single lens reflex (DSLR) camera, neutral background, and flash. While a DSLR camera is an investment, it is important for capturing clear images.<sup>4</sup> However, understanding the camera and its settings plays a larger role in photographic accuracy. By learning about exposure, specifically aperture, shutter speed, and film speed, the camera can be set correctly for each particular photograph. Additionally, the histogram feature can be used for instant exposure verification to ensure the image is clear and accurate.



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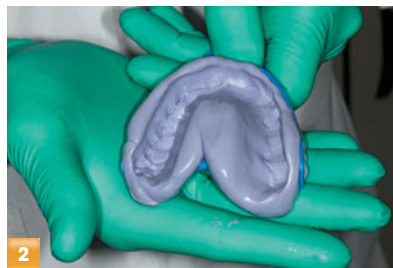
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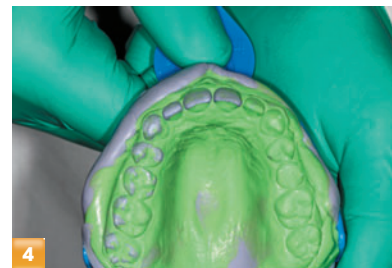
**Fig. 1** Using Heraeus Flextime Putty, knead and fold the catalyst and base. Load the putty around the tray making sure you have a good even amount of material.



**Fig. 2** Make indentations where the teeth should be with your finger before tray placement.



**Fig. 3** Add the Correct Flow wash right on top of the putty and seat into the patient's mouth.



**Fig. 4** Seat the tray into the mouth. When the time is complete, remove the impression.



**Fig. 5** Left buccal photos for Invisalign records.



**Fig. 6** Lower full-arch mirror photo.



**Fig. 7** Retracted biting together photos.



**Fig. 8** Right buccal photos for Invisalign records.

Besides mastering the camera and its settings, dental assistants can be responsible for taking the actual photographs. After selecting an appropriate background, choosing the most effective retractors for photographic purposes is also helpful. The eight required images are all different, but they are all important for creating a successful Invisalign aligner. To capture them accurately, it is essential to know the optimal way to take each photograph.

To capture the correct patient features, it is necessary to look at the frame, aim, and focus. For full-face smile and rest pictures, the frame includes the top of the head to below the chin. The aim focuses on the nose and is perpendicular to the face. The patient's right side profile also is framed in the same way as full-face pictures and is the final extraoral image. The anterior picture includes the second molar to the second molar. The aim is perpendicular to the face and focused on the centrals. The right and left lateral frames should maximize the exposure of the right or left region, which can be accomplished by pulling the retractor toward the respective ear. The aim is perpendicular to the buccal segment and focuses on the molar and cuspid relationship.

The final two photos are of the maxillary occlusal and mandibular occlusal frame. The main emphasis of these shots is to not leave any teeth out of the photo.

Focusing the camera in the center of the plate and keeping the nose out of the frame completes these images.

When taking impressions for Invisalign treatment planning and record taking, the goal is to accurately record the intraoral structures.<sup>3</sup> The greatest interference dental assistants experience while taking impressions is patient discomfort. This can present itself in several forms, including fear, distress and gagging.<sup>5</sup> By avoiding patient discomfort, dental assistants can create predictable and accurate results on the first attempt. Invisalign training materials focus on using a one-step technique to create the impressions.<sup>3</sup> This technique, in combination with a VPS impression material, allows for maximum patient comfort and the most efficient impression-taking procedure.

### Clinical record-taking technique

1. After the patient was determined to be a suitable candidate for Invisalign treatment, proper assessment of the patient and his alignment needs was completed, and an Invisalign case was selected.
2. Photographic records were obtained by setting up a neutral and plain background. The dental assistant used a DSLR camera and ideal photography retractors.
3. Eight photographs were taken, including:

- (1) Full face at rest
- (2) Full face smiling
- (3) Right side profile
- (4) Retracted anterior frontal
- (5) Buccal right
- (6) Buccal left
- (7) Maxillary occlusal
- (8) Mandibular occlusal

The images were then uploaded to the Invisalign website and patient profile, along with additional patient information.

4. VPS impressions, both upper and lower, were taken using VPS/PVS material. After the allotted time, the impressions were set, disinfected, and packaged for shipment.
5. The treatment plan was reviewed and submitted, and the impressions were shipped for fabrication of the customized Invisalign aligners.

### The foundation for case planning

Invisalign treatment planning ensures the correct fit and function of the customized aligners for the patient. It is essential to the final result and successful nature of the treatment and is predicated on accurate photographs and impressions to aid in the development of the orthodontic appliances. Dental assistants and team members perform these record-taking and treatment planning tasks, creating the foundation for case planning. To produce the requisite pho-

tographs accurately, the proper camera is required. Beyond that, knowledge of the ideal camera settings and the best way to capture the specific necessary images is essential. The materials, as well as the dental assistant's ability to avoid patient discomfort, strongly influence the accuracy of impressions. ●

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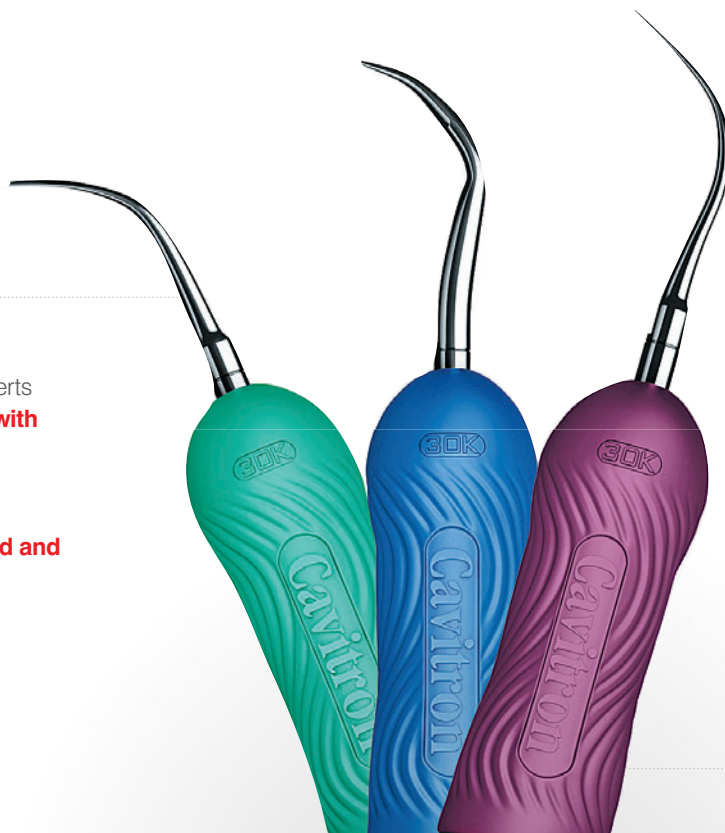


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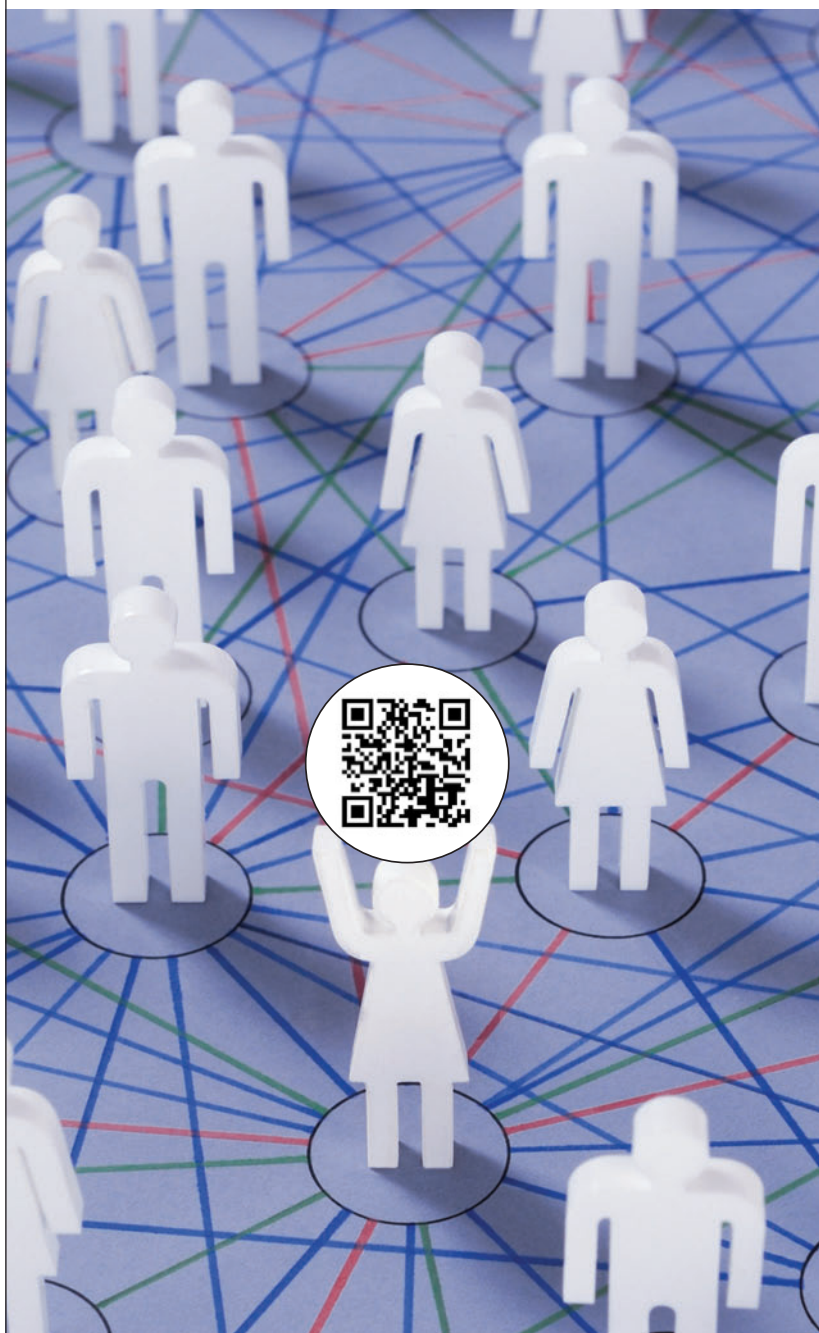
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1. Publication Title: Dental Products Report
2. Publication Number: 0011-8737
3. Filing Date: 9/30/13
4. Issue Frequency: Monthly
5. Number of Issues Published Annually: 12
6. Annual Subscription Price (if any): \$150.00
7. Complete Mailing Address of Known Office of Publication: 131 West First Street, Duluth, St. Louis County, Minnesota 55802-2065  
Contact Person: Kristina Bildeaux  
Telephone: 507-895-6758
8. Complete Mailing Address of Headquarters or General Business Office of Publisher: 2501 Colorado Avenue, Suite 280, Santa Monica, CA 90404
9. Full Names and Complete Mailing Addresses of Vice President and General Manager: John Schwartz, 2501 Colorado Avenue, Suite 280, Santa Monica, CA 90404  
Group Content Director: Kevin Henry, 24950 Country Club Blvd., North Olmsted, OH 44070  
Editor in Chief: Stan Goff, 24950 Country Club Blvd., North Olmsted, OH 44070
10. This publication is owned by: Advanstar Communications Inc., 2501 Colorado Avenue, Suite 280, Santa Monica, CA 90404. The sole shareholder of Advanstar Communications Inc. is: Advanstar, Inc., whose mailing address is 2501 Colorado Avenue, Suite 280, Santa Monica, CA 90404.
11. Advanstar Communications Inc. is a borrower under Credit Agreements dated June 6, 2013, with various lenders as named therein from time to time. As of June 6, 2013, the agent for the lenders is: Goldman Sachs Lending Partners LLC, Administrative Agent, 30 Hudson St, 4th Floor, Jersey City, NJ 07302.
12. Does Not Apply
13. Publication Title: Dental Products Report
14. Issue Date for Circulation Data Below: August 2013
15. Extent and Nature of Circulation

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I. Percent Paid and/or Requested Circulation	62.29%	61.75%

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17. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the November issue of this publication.  
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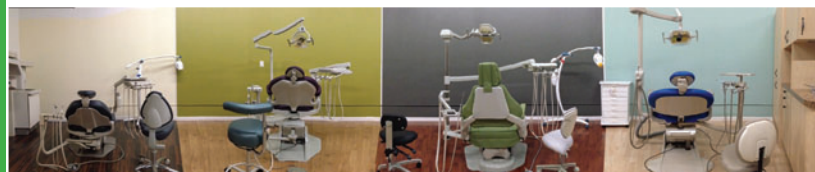
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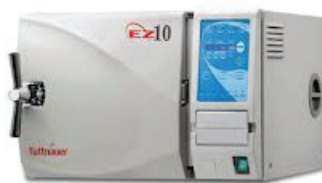
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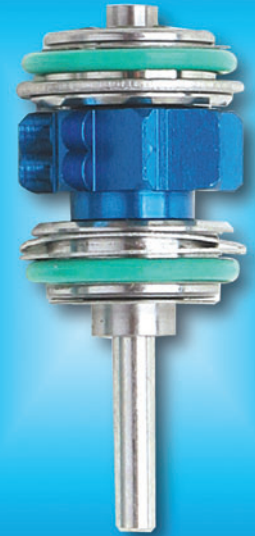
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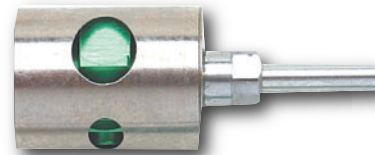
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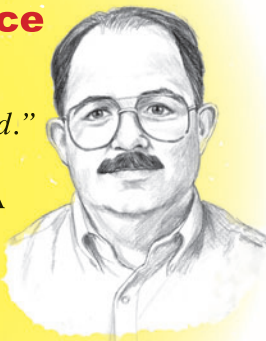
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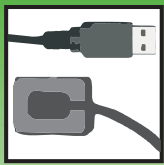
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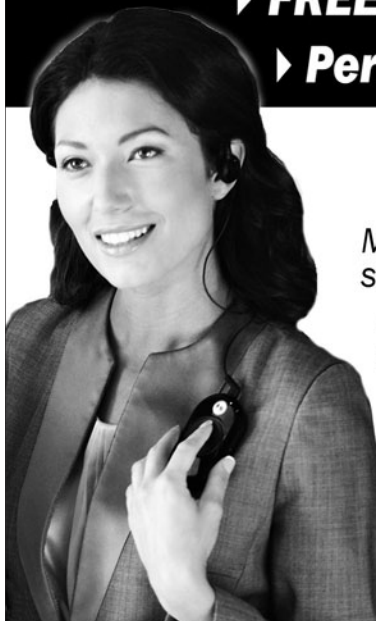
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# A HEALTHIER MOUTH IN JUST SIX MONTHS

How CariFree products helped this patient drastically reduce the number of cavities in her mouth and feel better about her smile.

Compiled by RENEE KNIGHT



**ASHLEY SCHWALENBERG**  
Chippewa Falls, WI.  
PATIENT OF  
DR. MAUREEN LEAKE

After years of struggling with cavities, Ashley Schwalenberg found a solution to her dental woes: Oral BioTech's CariFree.

Ashley began using CTx4 Treatment Rinse, CTx3 Rinse, and CTx4 Gel 1100 in October 2012 after her dentist, Dr. Maureen Leake, suggested she give them a try. She couldn't be happier with the results. Here's her story.

**Q:** What issues were you and your doctor targeting with your CariFree treatment?

**A:** Ever since I was a kid they found cavities at every visit, and most times they were very extensive and required hours of work to fix. I've been lucky so far and only had one root canal, but pretty much all of my teeth have been drilled and filled multiple times. I also had braces as a child.

**Q:** Do you know the cause of your difficulties?

**A:** I've never specifically been tested for any issues. My goal was to reduce the number of cavities I was getting and hopefully have a cavity-free visit.

**Q:** What else had you tried?

**A:** In the past I tried Mi Paste, prescription high fluoride toothpaste, Colgate Phos-Flur. I also reduced the number of sodas I was drinking and watched the sugary foods. I tried to brush after meals when I could and tried to drink more water and chew sugarfree gum.

**Q:** What have you learned about dental caries?

**A:** From what I have read in the CariFree literature, I learned bad teeth can be genetic and is not something just caused by poor dental hygiene. It made me feel better that it wasn't totally my fault. I was trying really hard to take care of my teeth and nothing was working. It showed me there might be a reason all the changes I had made didn't work.

**Q:** How has the treatment process changed your condition?

**A:** At my 6-month cleaning after using CariFree, the hygienist said my teeth looked really good, my gums looked healthy, and there wasn't much plaque on my teeth. I only had one cavity in the back of my mouth on the back of a tooth but it didn't appear to be very involved.

**Q:** How has this process changed the way you view your dentist?

**A:** After using CariFree, I don't dread going to the dentist as much anymore. I was actually excited to go and see if it had helped and it did! My teeth and mouth feel cleaner and overall healthier. I now have hope that one day soon I will get to go to a cleaning and have no cavities!



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**Q:** Do you think CariFree and risk assessment should be standard in dental offices?

**A:** Yes, I wish I had learned about CariFree years ago. I believe it would have saved me many hours in the dental chair and thousands of dollars of dental work.

**Q:** What problems or issues do you have with sticking to your treatment plan?

**A:** I don't have any problems sticking to the CariFree regimen. I really like the flavors and the way my teeth feel after I rinse and brush. I actually reach for my toothbrush more now to get that clean smooth feeling, especially after I have eaten something that makes my teeth feel fuzzy. The only issue I could see for some people is the cost. It would be nice if insurance covered it. Right now, I make it work in my budget so I keep my dental bills down.

**Q:** Do you think there are people that would benefit from risk assessment and CariFree that are not currently able to access it?

**A:** Yes. I believe the dental field has progressed significantly since I was a child and that my children will have better dental resources than I do now. I think, with time, more dentists and dental professionals will learn about CariFree and be able to recommend it to their patients and that more people will be able to have better dental health.

**Q:** Is there anything else you'd like to share?

**A:** I think these products are great. It tastes great, it makes my mouth feel great, and it's easy to use. Thank you for helping me achieve better dental health and making me dread the dentist less! I know one day soon I will get the "No cavities" picture I always wanted as a child! ●

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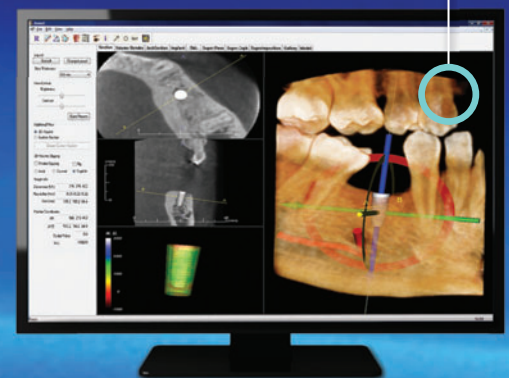


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