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NEWS AND SOLUTIONS TO DRIVE PRACTICE SUCCESS

DENTAL SPECIALTIES Increase predictability for faster tooth movement

DENTAL EQUIPMENT & SUPPLIES Product Roundup: Dental Patient Chairs

BEST PRACTICES Handling and storing sterile instruments

Dental Products Report

ADDINg up Additive manufacturing

Dental Technology

Leveraging 3D printing to provide better, faster, less costly care. A look at the current place the technology holds in the dental industry and the vast potential it holds to change how practices and labs produce restorations.

Restorative Dentistry

How to achieve anterior success

Loss of an anterior tooth can present a challenging treatment and restoration process and it’s best to accept changes to the treatment plan.

NEW Dental Products

[APEX Dental Materials]
RE-GEN™
A full suite of bioactive restoratives including the world’s first bioactive universal and self-etch adhesives.

[Formlabs]
Form 3B
A new versatile and affordable 3D printer backed by a dedicated support team focused on the dental industry.

[Biolase]
Epic Hygiene
A diode laser designed by dental hygienists for dental hygienists in order to expand the reach and benefits of laser dentistry.
Helping Health Happen, Together!

Henry Schein Cares is “helping health happen” by partnering with the American Heart Association (AHA) to prevent cardiovascular disease through our Heart Health Program. Henry Schein stands with the AHA in recognizing the connection between oral health and overall health. As part of our Heart Health Program, the red dentistry products and cardiovascular health products featured in our program, will raise awareness of the AHA’s important work.

The American Heart Association is committed to fighting heart disease and stroke, and raising awareness of these diseases. As part of their mission, they focus on specific causes designed to help people achieve a heart-healthy lifestyle and aim to be a relentless force for a world of longer, healthier lives.

Thank You
to our valued customers for making a difference in the world!
Look for our Heart Health program online at: www.henryscheindental.com/HeartHealth

For more information and to order, contact your Henry Schein Sales Consultant or visit: www.henryscheindental.com

Interested? Circle Product Card No. 01
CIRCLE RS #2
877-418-4782
Apex Dental Materials

be a barrier to bio-activity,” page 16. For more on Re-GEN see “Don’t let your bond adhesive.
the functional ions to the compromised tooth materials are limited in their ability to provide the bioactive adhesives. Current bioactive
The cornerstones of the RE-GEN suite are biocompatible, and BPA Free.
restoration that is osteogenic, antimicrobial, regenerative process and a stable, long-term tooth and biological fluids, thus promoting a surface layer after being in contact with additional materials from 3rd parties are available for the printer through the Formlabs Materials Partner Platform that ensures proper printing with these materials on the new 3B printer.
Why this 3D printer is different:
Along with launching its latest printer, Formlabs also launched a dedicated dental division with a team of specialists in dental 3D printing. The printer is backed by a new Dental Service Plan that puts the expertise of the company’s dedicated dental team to work for dental practices and laboratories using its printers.
Formlabs
617-702-8476
Dental.formlabs.com
CIRCLE RS #3

Epic Hygiene
Epic Hygiene is the latest innovation in BIOLASE’s proven Epic laser technology, designed by dental hygienists for dental hygienists. This system gives dental professionals a total solution to effectively manage non-surgical periodontitis and increase clinical production. It includes proven step-by-step clinical protocols, including pocket therapy and perio debridement, for easy implementation. The company announced the launch of the new laser—which has officially been granted Food and Drug Administration clearance—at the Greater New York Dental Meeting. Epic Hygiene now gives dental hygienists the ability to offer dental laser technology to their patients, including minimally invasive and virtually pain-free treatments that allow for quicker procedures and faster recovery times.
Each system includes hygiene-specific training, turnkey practice guidelines with step-by-step practice integration tips, and access to exclusive on-call Epic Expert support, with leading clinicians to provide peer to peer support.

Why this dental laser is unique: With more and more states in the U.S. allowing hygienists to treat patients with lasers, this new laser is designed specifically for the hygiene department and is portable and affordable to make it easier to utilize the technology.

BIOLASE
855-292-5690
goo.bidlake.com/EpicHygiene
CIRCLE RS #4

Cover Products and other EDITOR’S CHOICE products throughout this issue are chosen based on innovation or their perceived impact on improving patient care and practice efficiency.

RE-GEN™
Featuring the world’s first-ever bioactive universal and self-etch adhesives, RE-GEN is a suite of bioactive materials comprised of a flowable composite, bulk fill and resin cement, and pit & fissure sealant. By employing Bioglass as an active ingredient, this is said to resolve all the uncertainty surrounding previous generations of bioactive materials. Bioglass is backed by 50+ years of medical use, and is supported by scientific research, along with countless clinical studies, according to the manufacturer. Bioglass has been proven to form a hydroxyapatite-like surface layer after being in contact with tooth and biological fluids, thus promoting a regenerative process and a stable, long-term restoration. The unique blend of ingredients in the RE-GEN family of products provides a restoration that is osteogenic, antimicrobial, biocompatible, and BPA Free.

Why this suite of materials stands out:
The cornerstones of the RE-GEN suite are the bioactive adhesives. Current bioactive materials are limited in their ability to provide the functional ions to the compromised tooth because the functional ions have been sealed with an adhesive. For more on RE-GEN see “Don’t let your bond be a barrier to bio-activity,” page 16.

Apex Dental Materials
877-418-4782
apexdentalmaterials.com
CIRCLE RS #2

Form 3B
Described as incredibly accurate, the Form 3B 3D printer consistently produces crisp and precise parts from more than 10 materials. The new printer is designed to work with the next generation of dental materials, and is backed by a dental-dedicated service team, and powerful software to help streamline workflows. Resins can be swapped with a simple cartridge system, and the 3B printer can be used to produce crown and bridge models, clear aligner models, diagnostic models, surgical guides, ceramic slips, wax patterns for casting and pressing, and digital dentures with a selection of 4 base shades and 6 tooth shades. Additional materials from 3rd parties are available for the printer through the Formlabs Materials Partner Platform that ensures proper printing with these materials on the new 3B printer.

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apexdentalmaterials.com
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**NEW DENTAL PRODUCTS**

**NEW PRODUCTS**

10 The newest launches from the industry

**RESTORATIVE DENTISTRY**

**SOLVE MY PROBLEM**

14 One-step cementation that adheres to virtually every material
   How PANAVIA™ SA Cement Universal allows for easy application, simple excess removal, and room temperature storage.

16 Don’t let your bond be a barrier to bio-activity
   Composite adhesives lack bioactive bonds, but RE-GEN™ Bioactive Adhesive from Apex Dental Materials adds a bioactive agent to the restorative process.

18 An esthetic, quality, and efficient composite solution
   How Ivoclar Vivadent’s 3s PowerCure product system allows you to achieve aesthetic posterior restorations with high efficiency.

**TECHNIQUE**

20 How to achieve anterior success
   Loss of an anterior tooth can present a challenging treatment and restoration process and it’s best to accept changes to the treatment plan. by Eric Jones, DMD and Paul Korb, DMD

**DEEP CARE**

24 Silver Diamine Fluoride: The little known conservative caries management tool
   The FDA cleared Silver Diamine Fluoride (SDF) in 2014 for treating hypersensitivity. However, SDF’s off-label use for caries management has been making a significant difference for specific patient populations in these dental practices.

**BENCHMARK**

28 A novel implant cement universally impresses
   Ceramil Bioceramic Implant Cement earns unanimous praise from Catapult Evaluation panel with its biocompatibility, quick clean up, and easy handling. by Jeffrey W. Horowitz, DMD, FAGD, DASBA

**DENTAL SPECIALTIES**

**CLOSER LOOK**

44 Quicker, efficient glide path forming
   How KaVo Kerr’s Traverse™ Office and Glide Path File helps make forming the glide path easier, and reduces time and manual labor while improving the efficiency of endodontic procedures.

46 How to increase predictability for faster tooth movement
   Using Propel’s combination of micro-osteoperforations (MOPs®) and high frequency vibration can help clinicians deliver predictable, fast orthodontic treatments. by Nazeli Tarjan, DDS

**SOLVE MY PROBLEM**

50 Know when implants are ready to be restored
   With the Osstell Beacon, clinicians can measure implant stability and know exactly when an implant is suitably osseointegrated to support the planned restoration.

**DENTAL TECHNOLOGY**

**TECHNOLOGY EVANGELIST**

30 In pursuit of perfection
   Perfection is said to be unattainable. However, we owe it to our patients to keep striving for that elusive standard every day. by Dr. John Flucke

42 More applications and more patient comfort
   The benefits the Waterlase Express from BIOLASE has brought to one dentist’s practices.

46 How to increase predictability for faster tooth movement
   Using Propel’s combination of micro-osteoperforations (MOPs®) and high frequency vibration can help clinicians deliver predictable, fast orthodontic treatments. by Nazeli Tarjan, DDS
Introducing
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# Best Practices

## Infection Control

62 **Handling and storing sterile instruments**

The act of cleaning, disinfecting, and sterilizing instruments and equipment is just one battle in the war against infection. How the team handles equipment after reprocessing is just as important.

## Ergonomics

64 **Exercise for the New Year: Is a Personal Trainer the Right Choice for You?**

Exercise is good for your health, but certain workouts can actually cause pain for the dental professional. By Dr. Bethany Valachi, PT, DPT, MS, CEAS

## Data Management

66 **Don’t put off your network evaluation**

As the IT world switches away from the older break-fix model to the more modern managed services model, dentists need to make sure to remember to evaluate their networks on a regular basis. By Dr. Lorne Lavine

## The List

70 **Top 5 reasons to consolidate your business debt**

By Zach Raus

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**For more content online...**

20 Insights for 2020 offers advice and predictions from industry experts and some non-dental voices. While our Topic Resource Centers cover everything from materials to dentures to protecting your practice data. Check out these articles and more at [dentalproductsreport.com](http://www.dentalproductsreport.com).
And the winner is....

ChairsideCAD

exocad ChairsideCAD – awarded by experts as outstanding software for modern dentistry.

After many hundreds of hours of research and deliberation, the Cellerant Group announced the winners of the renowned Best of Class Technology Award 2019 in the middle of the year. As a groundbreaking product that will define the future of single-visit dentistry, exocad ChairsideCAD received this prestigious award.

For us, as the world’s leading company for open dental CAD software, this is fantastic confirmation of the work we have done and further incentive to continue delivering world-class performance and innovation.

*celerantconsulting.com/bestofclass

exocad.com/chairsidecad

Interested? Circle Product Card No. 07
CHAIRMAN’S LETTER

ADDING UP ALL THE CHANGES

ONE YEAR AGO AT THIS TIME

both Dental Products Report

and MJH Life Sciences looked
dramatically different. 2019

turned out to be a year of transi-

tion and improvement for both

this publication and its parent

company. The pace might be

much faster, but the impact of

our transition here at DPR and

MJH isn’t so different from the

one the dental industry is start-

ting to feel from the advancement

of 3D printing technology.

At this time last year MJH was

in the process of acquiring Dental

Products Report and a number of

other health care publications.

When the deal was closed at the

start of February our company

became the largest privately-

owned medical media company

in the United States. Of course

this was just the start of our tran-

sition rather than the end.

Throughout the remainder of

2019 we worked to integrate two

media organizations and reshaped

and improved our new health care
titles. Few of these brands underwent as massive

an overhaul as this publication.

By the end of the summer

we’d launched a new look for

the magazine along with a new

second year as a part of MJH

emerging for the people who stay

open new possibilities at practices

and labs, allowing them to offer

new services while improving on

processes already in place.

Just as joining MJH is allow-

ing the team at Dental Products

Report to learn new skills and

develop new programs, expanding field of dental 3D

printing is also pushing dental

professionals in new directions.

Mastering 3D design software

and preparing files for printing

is allowing dentists and

Dental Products Report, 3D

printing is allowing dentists and
dental labs to approach restora-

tions in new ways.

New materials are now

available, and faster, all-digital

workflows featuring 3D printing are making it easier to produce
crowns, bridges, dentures, and

other dental appliances with

greater precision.

As more dental practices adopt

printers, there will be even more

workflows available to allow the

printers in the clinics to produce

the restorations with great effi-
ciency even if the case design is done

ds offline and just sent to the

printer for production. 3D printers

open new possibilities at practices

and labs, allowing them to offer

new services while improving on

processes already in place.

As the go-to product resource for the dental industry,

Dental Products Report, 3D

printing is on its way to changing what patients

and clinicians expect. It’s a

similar story and opportunity is

abounding for all of us.

[ Mike Hennessy, Sr. ]

Mike Hennessy, Sr. is chairman and

founder of DPR’s parent company, MJH Life Sciences.

[ Our Mission Statement ]

Dental Products Report—known for its trusted new product information—delivers a complete picture and in-depth coverage of the innovations transforming dentistry for patients and enhancing clinical and dental practice success. Dental Products Report helps dental professionals understand the available dental products and how to select the best options for their practices and patients. We are committed to asking the right questions and delivering unbiased, quality content.

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- No gag, odor or taste issues
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- Bite registrations
- Implant shims to guide placement
- Border molding trays for denture impressions

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JOSEPH A BLAES, DDS
ST LOUIS, MO

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BRIAN GRAY, DMD
WASHINGTON, DC

800.388.6319

Can be purchased individually

Interested? Circle Product Card No. 08

Advantage Dental Products, Inc.
advantagedentalinc.com
Scan Clarity Score

Dental laboratories can often feel frustrated due to the lack of quality scans sent to them for restoration fabrication. Pearl’s Scan Clarity Score allows dental labs to score and bucket each patient scan based on margin clarity. If the scan is of high quality, the margin is automatically marked and sent on for crown design. If the margin clarity score is low, it’s flagged for human intervention and/or for a call to be placed by the dentist. By systematically processing the quality of margins, dental labs, dentists, and most importantly, patients benefit from higher quality dental restorations.

Pearl
323-438-8330 | hellopearl.com
CIRCLE RS #12

Endo-CSV

The Endo-CSV is described as an affordable, lightweight endodontic handpiece that is easily programmable and completely portable. The heavy-duty high torque motor has five torque settings and nine rotation speeds. The Endo-CSV Cordless features built-in LED illumination and automatic forward and reverse functions. It can be used with your current latch-type endodontic instrument. This handpiece can switch from rotary to reciprocating with the press of a button. The Endo-CSV is available for retail on its own or as part of a discounted package with the SafeSiders HF Intro Kit.

Essential Dental Systems
201-487-9090 | eds dental.com
CIRCLE RS #11

ZERAMEX XT Implant

Designed to help clinicians provide lifelike esthetics for cases in the anterior or with thin tissue biotypes, the two-piece ceramic ZERAMEX XT Implant from Glidewell Dental is 100 percent metal-free and highly biocompatible. It’s said to offer a high degree of restorative flexibility compared to single-piece ceramic implants. These implants are valuable for esthetics and are also very hygienic—with a low affinity for plaque adhesion. The ZERAMEX XT features a beveled platform designed to ease the placement of prosthetic components. The implant is available in 4.2 mm and 5.5 mm diameters and the system includes an array of components to support a full range of temporary and permanent restorative protocols.

Glidewell Dental
888-303-3975 | glidewelldirect.com
CIRCLE RS #10

ROCK Resin

Cosmedent’s ROCK Resin Cement is a dual-cured, self-adhesive resin cement used for the permanent cementation of ceramics, zirconia, lithium disilicate and metal-based restorations. With its proprietary setting technology, ROCK resin is said to set faster and more completely than other self-adhesive cements. Its thin film thickness is designed to make it easier to seat restorations without the hassle of occlusal adjustments related to cement layer that’s too thick. It is said to be easy to use with fast clean up, superior marginal adhesion, virtually no post-op sensitivity, and can increase time for dentists and patients alike.

Cosmedent, Inc.
800-621-8729 | cosmedent.com
CIRCLE RS #09
[COMPOSITE RESIN]

**Predicta Bioactive Bulk**

Predicta Bioactive Bulk is a dual-core, bulk-fill resin composite that releases fluoride, calcium, and phosphate ions to stimulate mineral apatite formation and remineralization at the material-tooth interface. The material is designed to recharge fluoride ions, providing a unique combination of physical and chemical properties. Predicta Bioactive Bulk is said to be dimensionally stable, with optimal strength, time-efficient handling, and optical characteristics close to those of natural teeth.

*Parkell*
800-243-7446 | parkell.com
CIRCLE RS #13

This bulk-fill resin has great strength and mimics the look of natural teeth.

[RESTORATIVE TEMPLATE]

**Uveneer Extra Restorative Template System**

The Uveneer Extra Template System from Ultradent offers more natural restorations with four new upper anterior designs—Extra Large, Large, Medium, and Square templates, complementing the original Uveneer system. These templates work with any preferred composite to create reproducible composite veneers with predictable shape and symmetry. The templates prevent the oxygen inhibition layer from forming during the curing process, resulting in hard, glossy surfaces—while also allowing light to pass through to the composite for effective curing. The templates themselves are designed to be autoclavable.

*Ultradent*
800-552-5512 | ultradent.com
CIRCLE RS #14

[PAYMENT SOFTWARE]

**Payments**

Sikka’s new Payments platform is designed to equip patients with a pay-anywhere capability and automate the payment and reconciliation process for providers. Sikka Payments is said to harness increased capabilities, enhance security, and reduce the costs associated with processing electronic payments. With this payment solution in place, practices are said to be able to accept patient payments from a variety of channels, eliminating the need for manual reconciliation. These features are designed to make it easier for providers to collect payments earlier, provide a better patient payment experience, and maximize cash flow in the practice.

*Sikka Software*
800-94-SIKKA | sikkasoft.com
CIRCLE RS #15

This bulk-fill resin has great strength and mimics the look of natural teeth.

[APPLIANCE ACCESSORY]

**Retainer Buddy**

Lullubee’s Retainer Buddy is a fun, convenient, and sturdy holder for retainers and orthodontic aligners. It keeps retainers and aligners safe and off household surfaces during eating and tooth brushing. Designed to work for all shapes and sizes, including nightguards and Invisalign, Retainer Buddy is described as an affordable and amusing addition for any child, or even the young at heart. A variety of designs are currently available, including unicorn, gnome, home, football player, and soccer player, with more characters in the works.

*Lullubee*
917-387-4664 | lullubee.com
CIRCLE RS #16

January 2020 | DENTALPRODUCTREPORT.COM | 11
NEW DENTAL PRODUCTS

[ IMAGING ]

CR2
The CR2, Owandy’s new intraoral imaging plate, is said to offer the perfect plate scanning solution for a wide range of clinical applications, including endodontics, prosthetics, implantology, periodontics, orthodontics, and caries diagnosis. The scanner is designed with sensors that automatically detect the size and insertion direction of the plates being scanned. It was designed for use with the Owandy plates and is able to scan the following Owandy plate sizes—#0-child, #1-incisor block, #2-adult, #3-bite-wing, #4-occlusal block. The CR2 is said to be the smallest plate scanning system on the market, with no complicated user interfaces and no buttons.

Owandy Radiology, Inc.
203-745-0575 | owandy.com
CIRCLE RS #20

[ SALIVA ANALYSIS ]

SillHa
The SillHa Oral Wellness System is a salivary screening system for oral care and overall wellness. A small, touchscreen analyzer with software uses a saliva sample yielding results in five minutes for a patient-friendly, multi-point analysis. The system is designed to measure seven biomarkers in one screening and generates a patient education report to support care plans and hygiene products. The SillHa System analyzes tooth health, including cariogenic bacteria, acidity, and buffer capacity; gum health including the presence of blood, leukocytes, and protein; and oral cleanliness via ammonia measurement. The dentist can reference results when proposing treatments to improve oral wellness with results to support case acceptance.

Arkray USA, Inc.
844-559-0842 | arkrayusa.com
CIRCLE RS #17

[ ACCESSORIES ]

Collegiate Charms
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One-step cementation that adheres to virtually every material

How PANAVIA™ SA Cement Universal allows for easy application, simple excess removal, and room temperature storage. [compiled by Stan Goff]

Information provided by Kuraray Noritake Dental.

Finding a single cement that can be used in almost any restorative solution has been difficult in the past

Other challenges with some adhesives include delivering a quick cure and a durable seal, along with the need for additional silane or primer.

THE SOLUTION

PANAVIA™ SA Cement Universal

- Incorporating a unique silane coupling agent—LCSi monomer—this cement delivers strong, durable chemical bonds to glass-based ceramics (Lithium Disilicate, Porcelains, and Hybrid Ceramics)
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Don’t let your bond be a barrier to bio-activity

Composite adhesives lack bioactive bonds, but RE-GEN™ Bioactive Adhesives from Apex Dental Materials adds a bioactive agent to the restorative process. [compiled by Kristin Hohman]

Information provided by Apex Dental Materials.

THE PROBLEM

Bioactive materials are hampered by non-bioactive bonds

During composite restorations, the adhesive acts as a barrier, blocking bioactive ions from reaching the tooth and preventing the regeneration of the tooth structure.

THE SOLUTION

RE-GEN Bioactive Adhesives

- Incorporates bioactive materials, Bioglass, directly into the adhesive layer
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An esthetic, quality, and efficient composite solution

How the 3s PowerCure product system from Ivoclar Vivadent allows you to achieve esthetic posterior restorations with high efficiency.  [compiled by Stan Goff]

Information provided by Ivoclar Vivadent.

THE PROBLEM

The incremental layering technique can be very time-consuming, especially when dealing with large cavities.

Additionally, problems can arise when the clinician experiences application errors and insufficient curing of esthetic posterior restorations.

THE SOLUTION

3s PowerCure™ System

- Dentists can reduce their treatment time by more than half while achieving the same esthetics and function of traditional 2 mm layered composites.
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ACHIEVE ANTERIOR SUCCESS

Loss of an anterior tooth can present a challenging treatment and restoration process and it’s best to accept changes to the treatment plan.

[by Eric Jones, DMD and Paul Korb, DMD]

Information provided by Clinical Mastery Series

Paul Korb had to work in concert to achieve the best outcome.

The patient was a 45-year-old female with a history of trauma to teeth #8 and #9, which had occurred between five and seven years prior to presentation. She had two conventional crowns placed at the time of the trauma and was pleased with the appearance of the crowns. Upon examination, the tissue appeared slightly erythematous and darker on tooth #8. A radiographic series revealed what appeared to possibly be a lesion on tooth #8, with prior root canal therapy, a restorative post, and crown having been previously performed.

CT scan revealed a large lesion of endodontic origin that had perforated the buccal plate and thin tissue between #5 and #7. In this way, it was acting like a Maryland bridge to reinforce and eliminate any excessive cantilever effect.

After removing these two crowns and taking the impression, quick removal temporaries were fabricated in the mouth from bis-acrylic and cemented with temporary cement. The patient’s master impression was sent for surgery.

During surgery, an immediate implant was able to be placed. However due to the lack of primary stability, the decision was made to continue with a lab-processed temporary in lieu of immediate load temporization.

Two weeks after surgery, the patient returned for cementation of the lab-fabricated temporary above the implant. To ensure the area was cleansable, the lingual portion of the implant was able to be placed. However due to the lack of primary stability, the decision was made to continue with a lab-processed temporary in lieu of immediate load temporization.


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AT A GLANCE

1. A 45-year-old female presents with a history of trauma to teeth #8 and #9.
2. CT scan revealed a large lesion of endodontic origin that had perforated the buccal plate at the apex of tooth #8.
3. An acrylic temporary was placed two weeks post-op.
4. Anterior view of the temporary.
5. The temporary was removed after four months of healing.
6. The abutment and prep are shown.
7. The final results are shown.
8. When the patient returned for a six-month follow up, a regular recall was performed.

1. Anterior view of the temporary.
2. Radiograph of tooth #8.
3. Near occlusal view of tooth #8.
4. Close-up view of the abutment and prep.
temporary was removed in the hopes that the patient could adequately clean and irrigate the site using a water flosser. The patient was then allowed to heal for four months and after returning for a follow-up appointment, her papilla showed a nearly ideal shape and emergence.

Typically, at this point a screw-retained provisional crown would be fabricated to help shape this tissue, but upon consideration it was possible the papilla shape might not be capable of becoming better than it already was. Considering this, the papilla was impressed to try and preserve all of the tissue that was held so well by the temporary bridge.

A custom impression coping was made by creating mechanical retention on an open tray impression coping, then adding flowable composite circumferentially around it, filling up the sulcus and to help preserve the soft tissue anatomy. The impression was recorded as well as an impression of the accepted temporaries, MIP bite registration, and opposing model. Impressions were sent off to Gold Dust Dental Lab, where a custom cementable abutment on tooth #8 was fabricated using IPS e.max from Ivoclar Vivadent. This was done by using a UCLA abutment to wax and create an analogue to mimic a crown preparation in both contour and as close as possible shading to the patient’s natural prep shade. For tooth #9, the lab created a conventional crown and bridge die model. IPS e.max pressed restorations were fabricated for teeth #8 and #9, and subsequently cut back and layered for shade.

During placement, a triad jig was used to help ensure correct indexing of the orientation of the abutment. A radiographic PA confirmed that the abutment was fully seated. Clinically, the use of the ceramic custom abutment transitioning from appearing like an abutment subgingivally to looking like a crown preparation matching both the contour and color of the adjacent natural tooth crown preparation. At cementation and before final clean up, the clinicians observed how nicely the mesial papilla was preserved and that the distal had a satisfactory emergence profile. When the patient returned to the office about six months later, a regular recall was completed.

After it healed, the tissue was healthy and papilla between teeth #8 and #9 were sufficiently preserved with a high degree of symmetry. The case’s final successful result was that there was no abutment exposed or showing or show-through of any kind of metal through the thin facial tissue. The patient’s smile was healthy and esthetically beautiful to the clinician and patient.

ABOUT ERIC JONES, DMD
Dr. Eric Jones maintains a full-time private practice outside of Atlanta, Georgia, focusing on complex esthetic and functional problems. Dr. Jones lectures nationally on topics from occlusion to practice management and serves as a clinical mentor with the Clinical Mastery Series. He is a member of the American Dental Association, American Academy of Cosmetic Dentistry, the American Academy of Implant Dentistry, the Hinman Dental Society and has also been awarded a fellowship with the Academy of General Dentistry.

ABOUT PAUL KORB, DMD
Dr. Paul Korb is a board certified Oral & Maxillofacial Surgeon. The focus of his practice is implant dentistry through comprehensive, top down treatment planning. He understands that successful outcomes depend on a team effort between the surgeon and restorative dentist. Dr. Korb has placed thousands of implants with a 98 percent documented success rate. In addition, he is a past Biomet 3i surgical teaching mentor and a past 3i Surgical Advisory Board Member. Dr. Korb also sits on the advisory board for the Institute for Dental Implant Awareness and lectures nationally on dental implant marketing and esthetics.
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— Stephanie Tilley, DMD
General Dentist — Pensacola, Florida
SILVER DIAMINE FLUORIDE: THE LITTLE KNOWN CONSERVATIVE CARIES MANAGEMENT TOOL

The FDA cleared Silver Diamine Fluoride (SDF) in 2014 for treating hypersensitivity. However, SDF’s off-label use for caries management has been making a significant difference for specific patient populations in these dental practices.

[by Terri Lively]
Many times Kabel's patients are on a waiting list for treatment from a Medicaid provider, which she says could be a wait anywhere from three to five weeks. They use SDF as a stop-gap measure to arrest the decay while they wait for restorative care. In her program, they see patients in the fall months, and then again in the spring, which is a good schedule for retreatment.

“Sometimes we see them in September, and then when we go back in January, we will see them again,” Kabel explains.

Also, because the program does not include radiographs, they diagnose what they can see. When they see something that might indicate decay but is not 100 percent clear, Kabel and the team will apply SDF and recheck it the next time they see the patient for visual changes. An additional benefit here is the SDF protects against decay in the area where it was applied.

“Since we were already providing other preventative treatment, this has been a great supplement to be able to provide the service,” Kabel says of using SDF in the school-based program.

Using SDF has been particularly helpful when treating patients who move a lot, especially for the transient Hispanic population that uses Kabel's program for dental care. When applied to their permanent molars, SDF helps protect the patients against future decay.

“We’re able to put SDF on there and arrest that decay. At least we know that it stopped because we don’t know if we will see them again,” Kabel explains. Sometimes we see them in September, and then, when we go back in January, they’ve already moved. So, that’s been an added benefit for them.”

In his private practice, Dr. Horst uses SDF at the examination for nearly all cavities, particularly those he will restore. He describes this as the first step in the two-day SMART (Silver Modified Atraumatic Restorative Technique) protocol for small or large Class I restorations—at the second visit he merely cleans the tooth with pumice, applies conditioner, rinses, then places a glass ionomer filling. This method has enabled him to treat countless toddlers and fearful patients without use of numbing or rubber dams. His first fillings using this simple approach were placed in 2014 and are still in the baby teeth that will exfoliate within the next year.

“It would not be possible without using SDF to harden the cavity first. The SDF-arrested area is twice as hard as healthy dentin, so why put a drill on it?” Dr. Horst says.

SDF can help patients on the other end of the age spectrum, as well. Geriatric patients with difficult-to-treat cavities on the root or under another dental prosthesis can use SDF to delay treatment but arrest caries in the meantime. Also, it can help for patients who are unable or unwilling to treat the decay.

Cindy Yanora, RDH at Stuart Periodontics in Florida, uses SDF with her elderly patients. Many times she describes it as buying time while they work through whatever is preventing them from moving forward with the restorative work they need.

“I always try to get them back to the general dentist to do the restorative work,” Yanora says, regarding patients where she uses SDF to arrest decay.

Yanora describes a case where a woman in her late 70s was having restorative work on an existing crown and having a new implant placed at the same time, but not for a few months. Near the margin, the dentist had repaired the crown already. The patient complained of sensitivity around that repair.

“I could feel it was soft around that repair,” Yanora says. “So, I put SDF there because she’s probably months out before she does the crown on that one.”

Also, SDF can provide another option for removal and restoration therapy for caries management. However, retreatment is necessary to maintain its effects.

Yanora says SDF comes in handy with patients suffering from Xerostomia. The dry conditions contribute to early decay around crown margins. After cleaning the plaque, she applies SDF to protect against further decay.

“Nursing homes are using it now,” Yanora says. “It would make total sense for patients that can’t be transported. A lot of people, it’s just too

---

**ADDITIONAL INFORMATION ON SDF**

Two articles from the American Dental Association’s (ADA) November 2017 issue of Professional Product Review analyzed SDF’s treatment and prevention properties.

- To access the ADA Professional Product Review November Issue visit the website at: https://www.ada.org/en/publications/ada-professional-product-review-parchem-issue (An ADA log-in is required.)
- The Journal of the California Dental Association has the UCSF Protocol for Caries Arrest Using Silver Diamine Fluoride: Rationale, Indications, and Consent available online.
  - To access the article in full, go to: http://bit.ly/CDAProtocol

The California Dental Association has a fact sheet about SDF for patients.

- To download the PDF for your practice, go to: http://bit.ly/CDASDFFactsheet

Elevate Oral Care has the Fact Sheet for the American Academy of Pediatric Dentistry available on their website.

- To download the PDF, go to: http://bit.ly/AAPDFactsheet
much to be able to go through a procedure, but SDF would prevent them from being in pain.”

The disadvantages of SDF

There are some drawbacks to using SDF. The most notable disadvantage is the staining that occurs. After application, decay turns black. SDF can also stain inflamed gingiva. As a result, SDF is not applied to broken or ulcerated tissue areas because the staining could be permanent. SDF is not for everybody. You should not apply it to patients with allergies to silver. Also, patients who are fluoride treatment averse would not like the high concentration of fluoride present. You should discuss all of these disadvantages in a pretreatment interview. With minors, parents should sign a waiver that acknowledges these risks to avoid problems later.

Yanora says the staining scares some people away from using it, even other hygienists. However, she thinks that fear is unnecessary. Often, she says, you are using it in areas that most people can’t see. Many times, she uses her explorer to see if it worked because she can’t see the area where she applied it.

“It doesn’t turn the tooth black; it turns the caries black,” Yanora says. “Just don’t be afraid of it. Patients are very willing to use it.”

In Kabel’s school-based program, they have seen almost 1,100 children for more than a year and a half and haven’t had any negative consequences from its use.

“As far as any side effects or parental concern about the discoloration or not having consent forms signed, that has not been a problem,” Kabel says, adding that they have about a 50 percent return rate on consent forms to use SDF.

Dr. Horst agrees that staining is not a significant deterrent from treatment. He estimates that two out of 600 patients have declined SDF in the past year, and that wasn’t because of the staining.

“We find that patients don’t care about staining nearly as much as dentists,” Dr. Horst says.

Kabel especially appreciates how SDF helps some kids who otherwise might have to be hospitalized and put under general anesthesia to have their teeth restored. It also benefits kids who are afraid of the dentist. Furthermore, by arresting the decay in the primary teeth, SDF helps them reduce the incidences of decay in their permanent teeth.

“I don’t know why anyone would not want to use SDF because it’s probably the best thing we’ve done in our schools.”

Dr. Parrett explains the risks of staining with SDF and has the patients or their legal guardians sign consent forms. He also encourages them to come back the next month for retreatment if they haven’t had the restorative work done yet.

One of his patients is a six-year-old girl named Macie, whom he describes as a real happy kid that he has been treating with SDF since she was two. Macie was facing surgery under general anesthesia and chrome crowns as a toddler. Instead, Dr. Parrett arrested the decay with SDF. Soon, her permanent will come in, which will give her a chance to “learn to cut out the gummy bears,” Dr. Parrett says.

“That’s a whole other area that SDF is going to help with; eliminating the trauma that patients would have experienced with the old drill and fill,” Dr. Parrett says.

Dr. Parrett is also actively campaigning for the use of SDF in community screenings. In particular, he wants to use SDF to buy time for patients that attend a local FQHC (federally qualified health center), which has a six-month wait time for routine care.

“These patients could receive immediate applications of Silver Diamine Fluoride and schedule for return visits to the Screening Clinic to retreat,” Dr. Parrett writes in his proposal to the CEO of Keystone Health.

“It is the best thing that has been added to our regimen to help kids or help anyone at high risk for decay. I would recommend anyone who can use it, whether you are private practice or public health, nursing homes, or anything else, I would use it,” Kabel says.

“It’s a social justice product because it’s so easy to do and so easy to receive as a treatment,” Dr. Horst says, “and to make a huge difference in the trajectory of the disease.”

References


2. Ibid.

3. Ibid.


5. “Promocode=&promocodeaction=overwrite>
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A Novel Implant Cement Universally Impresses

Ceramir Bioceramic Implant Cement earns unanimous praise from Catapult Evaluation panel with its biocompatibility, quick clean up, and easy handling. [by Jeffrey W. Horowitz, DMD, FAGD, DASBA]

With an ever-increasing number of implants being placed and restored in dentistry, the need for a reliable luting material cannot be denied. Implant restorations present the clinician with very different concerns than those encountered with tooth-borne restorations. The lack of traditional gingival architecture surrounding dental implants creates an increased risk for cement retention in the peri-implant sulcus which can lead to an inflammatory response and ultimately peri-implantitis.

At the same time, retrievability is seen as a favorable trait in an implant luting material whereas most clinicians do not consider ease of crown removal for tooth borne restorations. In the spring of 2019, Doxa Dental requested that Catapult Education evaluate an innovative product that addresses all of the above concerns—Ceramir Bioceramic Implant Cement.

About the product
Ceramir Bioceramic Implant Cement is a permanent, radiopaque bioceramic cement with excellent handling properties. Ceramir Implant Cement is 100 percent resin-free and self-setting. It was purposefully engineered to provide good flowability and easy seating. Bioceramic technology is the key element behind the active ion exchange seen with Ceramir Implant Cement, and this also allows for a tight seal for ceramics and metals alike. By combining these qualities with an unprecedented ease of clean up, Doxa is confident in the clinical applicability of this product.

The evaluation
Twenty of Catapult Education’s clinicians participated in the evaluation over the third and fourth quarters of 2019, after which they were surveyed to gain user perspective on the implant cement. Doxa Dental did not compensate the evaluators for their participation, nor was there any form of compensation to the clinicians.

The results
Most of the evaluators were already familiar with the chemistry and handling characteristics of Ceramir Cement with an impressive 60 percent of the evaluators already using this material for implant crown cementation. Of the current users, half reported that Ceramir was their exclusive implant crown luting agent of choice, while the other half reported having an alternative for varying indications such as short abutments or esthetic protocols.

Interestingly, only one other single brand had multiple users amongst our evaluators, that being BISCO’s Theracem with three users. Of the eight evaluators that were not currently using Ceramir, seven different products were being utilized in differing material categories as follows:

- Resin Modified Glass Ionomer – 2;
- Implant Cements – 2;
- Theracal – 2;
- ZO-P – 1;
- ZO-E – 1

Ease of clean-up: Excess cement retention around implant retained crowns is a primary concern for the restorative dentist. This was confirmed by asking our evaluators to rank required implant cement characteristics in order of importance. Overwhelmingly, nearly 90 percent of evaluators ranked ease of cement removal and clean-up as the most important attribute with marginal integrity as a distant second. The Catapult evaluators all rated this product among the best-in-class regarding ease of excess removal.

Ceramir Bioceramic Implant Cement
The Ceramir Bioceramic Implant Cement is a permanent, radiopaque cement with excellent handling properties. The good flowability and easy seating, which the Ceramir technology is known to provide, is present in their self-setting cement. It is 100 percent resin-free and has the ability to form a tight seal with ceramics and metals, making it optimal for implant cementation.

Doxa Dental, Inc.
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CIRCLE RS #31
This should not be taken lightly as was either convenient or very slightly inconvenient, one-fourth saw some inconvenience. Thus, the value of this material to our best efforts and intentions, small amounts of cement may be left by even the best of clinicians. To reduce the risks posed by this common occurrence, Ceramir boasts unprecedented biocompatibility.

Knowing how common excess cement retention is, why would any clinician not use a product like Ceramir that makes it easier to clean up while being better tolerated by the surrounding tissues? Given the current material choices, Ceramir could become the gold standard for implant crown cementation, carving out a true niche in implantology that no other has yet claimed.

Figs. 1-8 | Zirconia abutments torqued to place (Fig. 1). Teflon Tape placed to protect abutment screw (Figs. 2-3). Teflon condensed with amalgam condenser below level of access opening (Fig. 4). A layer of Ceramir Cement is placed and thinned with a brush. The crown is then seated (Fig. 5). Crown in place for 2 minutes, allowing for simple clean up (Fig. 6). Implant crown in place following an easy final clean up (Fig. 7-8).
In Pursuit of Perfection

Perfection is said to be unattainable. However, we owe it to our patients to keep striving for that elusive standard every day.

[by Dr. John Flucke]

This month we are starting a new year and with that you probably have either some resolutions or, at the minimum, some things you’d like to focus on and/or change. I’m no different. I always take time off between Christmas and New Years to just recharge, but I also like to look at the past year and then try and think about the year ahead.

As Technology Evangelist, I have worked hard over the years to bring you all as much information as I can about new devices, materials and techniques. This year I will continue to do that, but I’ve decided to also occasion-

ally discuss some topics I think will flat out improve our profession as well as the care we provide our patients.

This month let’s take a look at one of the most common product categories in our profession and how that category impacts a concept that is beaten into us from the first day we set foot into a dental institute of higher learning.

What does it mean to “focus on perfection?” I once heard the following joke and I thought it would be a great demonstration of what I’ll be discussing this month.

There was a college class full of a mix of engineering students and math students. It was being taught by Bob a mathematics professor. One day a friend, Sam, who happened to be an engineering professor approached him.

“Theory, he said, “I bet I can tell which of your students are math majors and which are engineering by a simple test.” They agreed to try the experiment the next day.

That day, Sam got in front of the class and asked everyone to stand up and follow him to the parking lot where he lined them up in front of a brand-new Ferrari. “We are going to do an exercise,” he stated. “This is how it will work.”

First, he had all the students line up along the wall of the building facing the parking lot.

Sam then instructed, “Each time I tell you, each of you can cover half the distance to the Ferrari in front of us. The first one to reach it can have it.”

Immediately all of the math students turned around and walked back inside the classroom.

Sam than confidently said, “Here are the engineering students.”

The joke of course is that the math students had all quickly figured out that no matter how long they played the game, they would never reach the car because they can only get halfway there. Each time those halves grow smaller, but they never go away.

However, all the engineering students remained standing because they had reasoned that even if they could never actually reach the goal, they could get close enough to accomplish what they hoped to accomplish.

While this joke perhaps generalizes too much, it does speak volumes about what our goals should be.

In our training, we are constantly reminded that our goal is “perfection.” I put it in quotes there because, like the mathematics students, we all know perfection is unattainable. Given the environment we practice in, sometimes “clinically acceptable” can be a challenge. Yet, I think those who train us focus us on perfection for a very good reason. That reason is: If you are striving for perfection and can sometimes only achieve “acceptable” what would the result be if we started out with “acceptable” as the final goal?

Perfection is incredibly difficult or impossible to attain, but does that mean we should cease striving for it? As Technology Editor for Dental Products Report I get some incredible opportunities to learn about what we do. Recently, I had the opportunity to do some work with bonding agents in a laboratory setting. The exercise was to use a standardized industry-wide testing protocol to see just how strong our bonds to tooth structure truly are.

One of the many great things about doing your very own experiments in the lab is it gives you the opportunity to actually put things in context so you understand them on a personal level. Often manufacturers and their sales reps will share data with us in the forms of charts and graphs. The problem for us doctors is if we cannot translate what they show us into a form we understand, they might as well be speaking a foreign language (and for me maybe more so than others).

Perfection is said to be unattainable. However, we owe it to our patients to keep striving for that elusive standard every day.

[by Dr. John Flucke]
So, to start this conversation let me give you some context. One of our most common procedures is “bread and butter” operative dentistry. We all place fillings every day and the success of these restorations is very important to our patients.

If our restorations fail quickly, our patients’ lives and health are negatively affected. That’s why aiming for perfection is so darn important! Yet, I think many of us struggle to define just what we are striving for when we strive for perfection.

I would argue that the best way to aim for this is to aim to put the tooth back into as close a state of physical strength as possible. Shade, anatomy, and other things are also important, but if our target cannot survive the physical and mechanical environment it exists in, then failure is a result not far over the horizon.

So, my goal is for the tooth to be as strong as it was before it was weakened. To that end, it would be helpful to know just how strong the tooth is in the first place. Utilizing the same fracture-resistance testing used to fracture restorative materials, I fractured healthy tooth structure. It turns out that under this testing protocol, healthy teeth fracture at between 80 to 90 mPa. The specimens tested all fractured within that range.

Given that range, we now know how strong the tooth is. That piece of knowledge now equips us to understand what the “perfection” is we are aiming for. In order to put the tooth back into a state to withstand its environmental demands our goal is 80 to 90 mPa.

The frightening piece of information I personally learned in the lab is that practically all bonding agents currently on the market are falling FAR short of that number even when being used strictly according to the manufacturer’s instructions as well as being performed under ideal conditions.

So, the logical question to be asked is if before starting a procedure a doctor knows his or her material will provide an inferior result, why should that material be used? When our mission is to “strive for perfection” why would we begin with building blocks that are not the best available to us?

Interestingly enough, there were several of us working in the lab that day and we compared our results. We each followed the instructions “to a T.” We were careful, we were patient, and we each got similar results.

The intriguing and somewhat frightening information I learned is there are some very popular bonding agents on the market that provide very poor clinical results. Knowing that the tooth is 80 to 90 mPa would you want a restoration in your own mouth that has a bond strength of <30 mPa? Personally, I would not, and there were some materials that no matter the tester, never exceeded 30.

I think the pursuit of perfection here demands that we, as doctors, ask our manufacturers for data and then make the effort to understand it as best we can. That isn’t always easy, and it may sometimes require asking for help, but that’s OK. Asking is how we learn and it’s a much better way to learn than making mistakes and learning from them.

I think it is also important that we demand from manufacturers that they use standardized testing protocols, not just ones that make their products appear superior.

Also, a focus on cost should not be the principle decision making matrix in your practice. A doctor has to pay the bills, or they will not be able to help anyone—but a focus on costs is not the recipe for clinical success.

To use bonding agents as a sample here, I’ve had colleagues say, “Why should I pay $1.75 per use when I can pay $1.00?”

My reply is because using inferior products leads to inferior restorations and what does it cost in hard costs and reputation to redo restorations?

Clinical success leads to referrals. I’d much rather experience that than save 75 cents and be called in 7 years to redo a restoration for free. A reasonable amount of products appears superior.

I think the pursuit of perfection is unattainable, however we owe it to our patients to aim for it every single day. They deserve nothing but our very best and I will do my very best to provide you with the information you need to perform at your very best for them.

It’s going to be a lot of fun around here in 2020. I hope you enjoy the ride. And me? I’ve never been more excited to be your Technology Evangelist. Now let’s go places together!
Leveraging 3D printing to provide better, faster, less costly care.  [By Robert Elsenpeter]

In many ways, dentists are just as amazed by the outcomes of 3D printing as A Square was by his discovery of a third dimension. For those who have only ever printed something on the flat, two-dimensional surface of a sheet of paper, the ability to print three-dimensional objects may seem somewhat astonishing as A Square’s interaction with the sphere.

3D printing has become a revolutionary means for production across all sorts of industries, and dental is incorporating it, as well. Dental laboratories initially embraced the technology, but now, dentists, themselves, are able to add those printers to their CAD/CAM workflows, offering patients a number of items quickly, more efficiently, and at less cost.

Beyond the lab
There was a time when 3D printing was the sole purview of the dental laboratory. But times have changed, and now, more and more practices are adopting the technology for in-house use.

P. Christian Rose is the director of dental channels and sales, North America, at EnvisionTEC. EnvisionTEC is a manufacturer of dental 3D printers and materials. In 2008, they collaborated with Glidewell Dental Lab to first bring 3D printing to the dental industry. Since then, EnvisionTEC has provided equipment, materials, and technology to laboratories and clinicians in a wide range of dental and orthodontic applications.

“The dental industry is moving digital,” Rose says. “Doctors and labs are taking those digital scans, and it allows them to very rapidly produce a variety of parts. For the patient, there’s that immediacy of delivery, control of quality, a large cost savings, as well as savings of time.”

3D printing has become a pervasive part of everyday life and it is a natural fit for dentistry.

“When we look at 3D printing with a wide lens, we see that the technology is very accessible today, even by consumers for making toys and trinkets at home,” says Jamie Stover, CDT, senior manager of dental lab applications at Carbon, a company that offers hardware, software, and materials for 3D printing and connects clients’ printing efforts to the cloud to monitor performance and adjust as needed. “But when we focus that lens on the unique requirements of our industry and on the demands that the oral health care profession as a whole places on providers for products and materials that are safe for patient use; highly accurate, to ensure that restorations fit with precision; are durable, so that restorations hold up in the oral environment; and that can be produced quickly and at a cost that allows labs and clinicians to operate more efficiently and profitable, it becomes crystal clear that not all printers are created equal and there isn’t one tool for every job. Using 3D printing to fabricate dental restorations requires a robust printer that can produce highly accurate products with speed and consistency.”

For the clinician, 3D printing is a burgeoning technology—and an opportunity.

Rik Jacobs is the vice president and general manager of 3D Systems, focusing on dental 3D printing. 3D Systems offers printers and materials for prosthetics, orthodontics, and implantology, and dentures.

“We are just at the starting point, as far as the dental office is concerned,” Jacobs says. “It started being massively adopted by the labs in 2016-2017. And what’s very important in this part of the business is the adoption of the intraoral scanner and then the size of a dental office. Dental offices are offering more and more treatments under the same roof, so they have multiple chairs, they have different kinds of specialized doctors—implantology, prosthodontics, orthodontics. They also have people in-house who can, for instance, design and who can give either mill or print services.”

Clinical advantages
3D printing allows for efficiencies to traditional processes, streamlining patient visits.

Ken Haldeman is the executive director of business initiatives for Zahn Dental, which offers 3D printing solutions, including its FirstFit Guided Prosthetics Delivery System. FirstFit allows clinicians to print trays allowing the placement of three-unit bridges and up to 10 upper and lower veneers, all at once.

"Dental is a natural fit for 3D printing. I believe, in the next 10 years, all dental appliances, restorations, and everything else, will get the majority share of being 3D printed directly...the portfolio is just going to expand."

—Sam Wainwright
“In a traditional process, the clinician would diagnose restorative needs on first visit; complete preparation, take traditional and/or intraoral scans and place temporary restorations on second visit; remove the temporaries, complete clean up and then place restorations on third visit; thus the use of the most advanced digital technology within FirstFit combined with 3D printing makes restorative and cosmetic dentistry more efficient, convenient and predictable for both the dentist and patient, alike,” Haldeman says.

“You have increased speed and accuracy with printing, as opposed to other reductive technologies,” says Beth Collington, director of digital materials and laboratory equipment at Zahn Dental. “You just can get a much more accurate final restoration on so many levels with so many different types of materials. With the cost of the printers being so economical these days, you can literally purchase a printer at any price point, depending on build space, speed, and accuracy. Especially now, with the smaller footprints for a dental office, it makes sense to add it to the workflow.”

3D printing seems to be making great inroads into all sorts of industries, and it is a good match for dental.

David Lakatos is Formlabs’s chief product officer and says that his company’s objective was to create a 3D printer targeted to the dental industry that wouldn’t break the bank.

“We’ve always thought that the real market was in creating a printer that doesn’t cost hundreds of thousands or millions of dollars and can print the same quality as the large industrial machines,” he says.

“In 2011, that was nowhere to be found. So we created that category, a $3,500 printer that performs better than the large industrial machines.”

The result was a Kickstarter campaign that raised $3 million towards the equipment.

Formlabs recently launched a new dental business unit, Formlabs Dental, with a new Form 3B printer and new materials specific to the dental industry.

“Dental is a natural fit for 3D printing,” says Sam Wainwright, the dental product manager at Formlabs. “I believe, in the next 10 years, all dental appliances, restorations, and everything else, will get the majority share of being 3D printed directly. We see that today happening a little bit, but that portfolio is just going to expand more and more. So, right now, for the dental practice specifically, direct-printed appliances, like surgical guides, splints, those sorts of things, make a ton of sense for practices.”

The resins used in 3D printers are as important as the printers, themselves.

Chris Niquette, president of EvoDent Digital, describes his company’s printers as “selectively open,” meaning they can use resins from other companies, but they have to be properly validated, first.

“We don’t just allow them to put any resin in there,” Niquette says. “As they come out with new and innovative products, we’re able to get them validated in our machine fairly quickly. They send us the product for the resin testing and validation. So it’s done in the proper way, especially if it’s going to be something that’s a biocompatible and has to be FDA-cleared.”

But not all 3D printers are created equally, especially when one considers the unique demands of medical devices.

Planmeca offers its Creo C5, a chairside 3D printer, allowing the fabrication of customized surgical guides, dental models and aligner bases in a single patient visit.

“There are a lot of different 3D printers on the market,” says Jukka Kanerva, vice president of Planmeca’s Dental Care Units and CAD/CAM Group. “And, mainly, they are developed for general industry purposes—prototyping or whatever different type of applications, different industries are using. But we have focused on having a printer only for dental and supporting the whole clinical workflow, and to make the printer as user-friendly as possible. We have been able to develop it so that it’s simple to use, and supports the clinical workflow and doesn’t require any additional technical set-up at the clinical site.”

Additive technologies (such as 3D printing) fundamentally differ from reductive technologies (such as milling), because rather than carve something from a block of material, they build it, a layer at a time. The chief benefit is it is more efficient.

“Reducive technology is inherently wasteful, because we are taking a large piece of material, cutting out only the pieces we need, and the rest is unused and thrown out,” Stover observes. “Additive production processes allow labs and dentists to create products from finite amounts of resin. And, speaking about the Carbon Digital Manufacturing Platform specifically, when you upload designed files to our CAM software, the software calculates the precise amount of resin you need for that print job and those restorations.
You’re not guessing and pouring an undetermined amount of resin in the printer, printing the parts, and losing the rest in a purge cycle when you change materials. Our system allows super-fast change-over between builds and most all of the unused resin to be captured, stored, and reused quickly and easily, meaning production is much more efficient and cost-effective for all products.”

**Products**

There are a number of products that dentists can 3D print, ranging from models to surgical guides to nightguards. As new materials become available, look for even more items to be 3D printable.

“Number one would be surgical guides for implants,” Dr. John Flucke, DDS, Technology Editor for Dental Products Report, says. “That has become such a big deal in the industry of doing guided surgery. It used to be, they sit down at their computer and designed these cases on the computer and then they send all of that data to a lab somewhere, and then the lab makes the surgical guide. It’s just so exciting to think about the fact that you could have somebody walk into your office on Monday morning, you could gather the data, both physically and electronically, do your cone beam scan and maybe do a 3D impression scan, and by Tuesday morning you could have the entire case designed, printed and ready to go. That turnaround, now, is probably a week, maybe more. And that’s a big deal. You can also do bruxism guards, orthodontic retainers.”

“You can print models very, very easily—regular, standard models for crown and bridge or for orthodontic,” Collington adds. “For 3D dentures, manufacturers have created materials to print the denture...
base and the teeth at different levels of quality. There are also surgical guide materials available. You can print nightguards and bite splints. There are castable materials of all different viscosities. And then, of course, you have your temporary materials for various applications. All of this is available in multiple, different shades.”

3D printing is also useful for quickly producing even complex items. “One example is the 3D-printed dentures that are being produced now,” Stover says. “A traditional packed acrylic denture requires an experienced denture technician to spend hours of hands-on time to fabricate, very much like fabricating ceramic crowns by hand once did before we had options like zirconia and glass ceramics that can be digitally produced. The Dentsply/Carbon partnership for the Lucitone Print denture is the first time in history that a high-impact denture, which is also highly esthetic, and FDA-cleared for patient use, can be produced on a 3D printer, an indication of what 3D printing offers our industry today and forshadowing the solutions that it will continue to provide as new materials are developed.”

3D-printed items do not have to be, directly, usable by the patient. They can be components of a larger workflow.

“There’s many other uses, even indirectly,” Wainwright says. “So, say, if a practice has an intraoral scanner and they just need a quick diagnostic model used for patient presentation or case planning, that’s very attractive—as opposed to having to send that file out to a lab, have it printed, pay the bill from the lab. This is going to be something that the doctor can have in his hands very quickly and very cost-positive.”

Those models can be a stepping stone to other products, such as the base for clear aligners, Kanerva says, adding that Planmeca’s Dental Care unit will soon introduce more materials for orthodontic splints as well as the individual trays and indirect bonding trays.

For everything that 3D printing offers, the one thing not yet achievable are the final restorations—the crowns, Haldeman says. “The final restoration still, at this moment in time, remains with the dental laboratory, outside of like a CEREC chairside application. When it comes to 3D printing, we’re not seeing a lot of the final restorations, yet, at the dental office,” he says.

At this point, the industry does not have permanent restorations, at least not yet, Rose adds. But that could change as early as next year. “We have long-term temporaries, and this tech is currently up to seven shades. After the first of the year, we will have a new denture base and a new tooth material coming out that will give us increased hardness for both the denture base and the teeth, as well as five different shades of the denture base and seven different shades and the teeth. But also we’re working out the ability to layer and have gradual shading rather than the teeth just being monolithic.”

The 3D-printed files are stored digitally, which means that they are easily and efficiently reproducible. This provides a customer service opportunity to the clinician. If a patient loses his or her appliance, doctors are able to provide the service to replace it free of charge—it’s still a moneymaker and is good for patient relations. “By offering that additional warranty on the product, because it’s only going to cost the dentist maybe $5 or $6 in material, just pull up the file and reprint it, and then the patient can come pick it up,” Niquette says.

Obstacles
If 3D printing is so great, why isn’t it every dental office? Reasons range from the complexity of adding the workflow to something as simple as just not wanting to do the work. “Price is one thing,” Kanerva says. “But I think the bigger thing is that the mainstream of 3D printers are designed for general industry and for specialists and engineers and those types of users. That ease of using the 3D printing and understanding 3D printing, I think that has been a big, big hurdle. That’s why we wanted to create our printer as easy as possible, so you don’t need to play around with different parameters, and so forth.”

3D printing is not an easy implementation into a daily workflow, Jacobs observes. Practices must obtain a scanning device, have the
software to design a surgical guide, an implant case or a denture, and the clinician and support staff must learn each step of the complete workflow, he says. While this kind of new technology probably isn’t being taught in dental schools just yet, Jacobs predicts it will be more universal when the next generation begins to study dentistry because they want everything digital and as predictable as possible. Generally speaking, many dentists are set in their ways. Once they find a certain path, they tend to stick with it. Because 3D printing is a technology that is new enough that some dentists may simply be wary of adopting it. But the industry could be seeing a change to that attitude, Rose says. “There’s an acceptance level,” he says. “How does it work? How well does it work? We all become creatures of habit, and we have to be willing to change our daily workflow, how we do things. Three, four years ago, I was at a dental trade show, and there was maybe one or two other [3D printer manufacturers] there besides us. And a lot of the conversation of attendees was, ‘What is 3D printing? How does it work? How well does it work?’ The last time I counted, there were 29 different printers for sale in the dental industry. And that’s just the desktop printers. So, acceptance is increasing, dramatically.”

The learning curve involved and complementary equipment needed to create items on a 3D printer is another a barrier to clinicians, Wainwright notes. As 3D printing is one cog in a complete digital workflow, the transition into 3D can seem daunting, not to mention expensive, to many clinicians, he adds. “And that is a huge barrier, because if you’re not doing production like a laboratory, it might not justify the reasons for getting into one of those expensive, purpose-built dental CAD softwares,” Wainwright says. “For surgical guides, you need an intraoral scanner, but you also need a CBCT scanner. So, you need to be able to have the bone density scans to go along with the impression. And so those are pretty expensive pieces of equipment, but the prices are coming down.” Resellers, too, will have a vital role in educating dentists and using the equipment. It’s important to partner with a dental laboratory for case design and optimal final outcome. “Is the reseller capable of giving all the training, service and support for transitioning from analog to digital, without any hesitations or problems or learning curves or startup issues?” Jacobs ponders. “Or, is everybody still happy sticking to the old ways? We need more advocates who are sharing their excellent use or experiences.”

Another factor is that dentists simply like being dentists, Jacobs notes. This could be characterized as an unwillingness to work outside a patients’ mouth if possible, meaning the dentist doesn’t have ample time to design, print, and process a 3D print job. “They need to evaluate, if it is a one-man or two-man enterprise, or is it the medium or large office under one roof, that is available to do the design and print and post-cure integrated being implemented into a perfect workflow?” While dentists are able to create a number of items with their 3D printers, the Holy Grail—permanent restorations—is still elusive, so clinicians may be waiting on that capability. “You can do certain things with 3D printers that are amazing, but the biggest hold back, I think, is that we do not yet have the ability to print permanent restorations,” Dr. Flucke observes. “I think that it’s early enough in the curve that mainstream people are still looking at it and thinking, ‘You know, do I want to get involved in this?’”
For some clinicians, it isn’t the right time to buy into 3D printing because the technology might not be ready, Collington adds. However, within the last year, there has been an increase in accuracy levels, she says.

“That’s been a true game changer. Where you’re starting to see a lot more implementation in laboratories and doctors’ offices, because of this technology companies have brought the price point down and increased the size of build platforms, resulting in more space to print restorations and higher accuracy than ever before.”

Stover observes that appropriate materials—or lack, thereof—can be a hurdle, as can be unreliable printers, themselves. Those two components have to work reliably, especially when patients’ needs are concerned.

“There have been two major roadblocks, historically, which have prevented widespread adoption; a lack of materials for viable applications, and unreliable printers that were unable to produce highly accurate parts consistently,” Stover says. “More recently, we have seen an increase in accuracy and reliability for some printers, and there have been more resins developed for dental applications hitting the market. When a lab or clinician transitions from analog production methods to digital, they shift the entire workload, and the technicians, to the digital production processes. When printers are unable to produce products with the required accuracy, are slow, and take a long time to produce parts—and break down during a build—it is devastating to the production and workflow and instills a lack of confidence. These are a couple factors that have hindered widespread adoption and have also created a ‘once bitten, twice shy’ mentality for 3D printer users who have experienced these disruptions to their workflow in the past.”

Costs
As with anything, cost is an important factor in a technology’s acceptance. But, is price an obstacle to the adoption of 3D printing? The answer is a resounding: It depends.

“I guess it depends on what you consider ‘reasonably affordable,’” Niquette says. “Let’s say a dentist picks a $15,000 or $16,000 printer price point. If they finance it, and it may be a $350-a-month payment. If the dentist does one nightguard in a month, they have more than paid for a payment on a printer. But, it just depends on where you are. We’ve actually transitioned over and we’re offering a lease on the machine. We did that, specifically, because we had a lot of doctors wondering, ‘Hey, if I buy that, three years from now, what’s coming next?’ And it’s a good point, because three years from now, there’ll probably be new players in the market, there’ll be new models. We’ll certainly have next-generation machines. So, by doing a lease, the dentist can basically use the equipment and then, say, 36 months from now, they can replace it with the most current version of our product. Or maybe there’s another one they’ve seen out there that they want to go with.”

But paying for the machine is only one cost consideration, Jacobs says.
Other related costs include post-curing equipment, scanning, software, and training, he mentions.

“So, in total, we’re talking about $10,000 for the printer. But if you need to buy a scanner and the software and the whole package, so that’s around $30,000. So, let’s say you have three-year depreciation periods. It’s $10,000 per year. That’s around $800-900 per month.”

However, the upfront costs could save money down the road, Jacobs says.

“Well, when you talk about a denture and you print the base and you print the teeth and you combine the two parts, then you can save 90 percent of the cost of implementing 3D printing into your daily workflow, compared to the analog ways. So you only have to make two dentures per month. But that’s only dentures. You can print surgical guides for implant operations, and the materials cost only $3. It’s very economical, and we see a lot of doctors in the U.S. buying the system. Economically, it’s an excellent model. It’s predictable and it’s a secure, constant, quality output.”

But it isn’t as straightforward as stating, “3D printing costs $15,000” for instance. There are a number of factors that go into calculating the true cost of bringing 3D printing services in-house, Stover says.

“The price of a printer is subjective because the return on investment is calculated many ways,” he says. “ROI is determined by calculating the cost to produce a restoration on a given piece of hardware; the overall operational costs, which are in part determined by the number of parts you are able to produce in a given unit of time; the material costs; the cost of labor for operators; how reliable the printer is; and the number of applications and products you can produce with it that are currently costing much more with traditional fabrication methods, to name just a few,” Stover says.

“At Carbon, we use cost modeling and deep-dive into each individual business to calculate the true cost savings of printing. If a 3D printer’s price is within reach for dentists, it actually means, ‘Does it make financial sense for a dentist to invest in a 3D printer for their business to produce restorations in-office?’ That determination has to be done on a case-by-case basis and depends on the overall volume of cases/restorations and other factors I listed.”

With new technologies, sometimes it’s hard for practices to decide when is the right time to pull the trigger and spend the money on a new technology. Much of this hesitation can be attributed to the idea that such new technology is very expensive, says Dr. Flucke.

“Something will be on the market for 10 years, and then dentists will say, ‘Well, when are they going to get cheaper?’” he says. “It’s like cars. We’ve been making cars for a hundred years, but are they going to get cheaper than when Henry Ford made them? But the thing is that 3D printers are not very expensive, really. You can get a really nice one for way under $10,000.”

The cost of the technology is negligible, Collington adds, because it is so affordable.

“You see more group practices adopting this,” she says. “It really comes down to where are they making the most return on their investment? Do they take their time to design a unit, which is going to be

“Use the Lab”

Just because a dental office utilizes a 3D printer, doesn’t mean that it has to sever ties with its dental lab. While the office can print certain items, the clinic may not have the equipment or the expertise to create or print other items. As such, there is still a role for the lab.

“Maybe they don’t have that design capability, so they’ve got two choices,” Niquette says. “They can either send out to their laboratory and have the laboratory design it for them or they can purchase a design software package and do it themselves.”

To help bridge that design gap, EvoDent will soon offer a subscription service called EvoLink, a website that will allow a digital prescription, Niquette says.

“The dentist can basically upload their scans. Say they want to do a nightguard for the patient. They check the appropriate box, put the basic information in, upload the files, and then they have a choice of either 30 minutes or 24 hours, and that’s the turnaround time. They’re able to get that product back, not only designed for them, but also nested onto the build platform software for them,” he says.

“Digital dental technology is amazing, and it allows us to fabricate traditional types of restorations today in ways that we could only imagine a few years ago and has created opportunities to fabricate exciting new products and offer new services,” Stover notes. “But there really is no substitute for the experience of and understanding how to fabricate a restoration by hand. We are facing a staggering shortage of experienced dental technicians in our industry, especially removable technicians.

One of the biggest benefits of digital dental manufacturing is that it allows the experienced dental technicians to move out of production roles at the bench and into roles as lab technical consultants for clinicians, technical trainers, and educators to share their knowledge and help less experienced technicians and clinicians adopt technology, while understanding that it doesn’t have to be scary and overwhelming. We need to be mindful of the fact that, what we do is an art form and it’s very unique. We’re making custom pieces that fit in a patient’s mouth only one way and they improve people’s lives. Digital design and additive manufacturing are allowing us to do this better.”

Clinicians may decide that there are products that they want to make, but others that are best for a lab to handle.

“When producing restorations and appliances on a 3D printer, they don’t come out of the printer finished and ready for use,” Stover says. “Parts come out of the printer in a semi-cured state and there is a finishing process commonly referred to as ‘post processing’ that involves cleaning the parts and doing a final UV cure before they can be safely used by clinicians and technicians or placed in a patient’s mouth. For some applications, there is production that needs to happen after printing. For example, denture tooth and base assembly or drill sleeves being inserted into printed implant surgical guides. For certain applications, it is intriguing to think about dentists using printers in-office, and we will most likely see this trend increase in the coming years, but for others it will continue to make more sense to partner with a competent dental lab who has the bandwidth to fabricate restorations with 3D printers at a volume and scale that keeps the costs very affordable.”
the most time-consuming piece of it, or are they just hiring and working with a service to do that? I think you’re going to see more adoption. It’s very easy to use this right now.”

“We’ve seen doctors and we’ve seen practices engage at the $100,000-plus level for lesser technologies,” Haldeman observes. “I think a lot of it is concern of volatility. The concern is, ‘Am I going to buy something today that’s going to be obsolete in six months or a year?’”

Whether the practice buys the equipment now or waits longer, an important component is realizing that they get what they pay for.

“You don’t get the same results with a printer at a lower price point that you would get with a printer at a higher price point,” Collington observes. “So the expectations really need to be set.”

Materials

3D printing and its capabilities are not just dependent on the machines—the materials used to create items are a necessary component. The current batch of materials are certainly appropriate and get the job done, but there’s always room for improvement, and the future holds more for potential applications. Manufacturers recognize this and are anticipating the needs of the dental industry.

“Obviously, the needs of a dentist are different than the needs of an engineer,” Lakatos says. “The connective tissue is materials. Every single new material formulation is going to open up a new application, which opens up a new industry. That’s exactly how we got into dentistry, as well. So, the way we think about it is that biocompatible material development is a very core part of our dental strategy.

“We actually bought a chemical company in Ohio and are manufacturing our materials, 100 percent from scratch,” Lakatos continues. “And, while materials are good enough to get the current jobs done, they are in a constant state of advancement.”

Materials are constantly evolving, says Jacobs, who adds that 3D Systems is currently working on printing a long-term composite crown.

“And then, what could be interesting in the long-run for doctors, is to print direct metal implant abutments. Ultimately, one day in the future, I’m 1,000 percent sure that it will be possible to print direct clear aligners, for instance,” Jacobs says. Advancements in materials are coming in leaps and bounds, Collington says. Such progress is even happening every few months, she adds.

“You’re seeing incredible leaps and bounds in materials today,” Collington says. “It’s amazing what they’ve done as far as improvement of esthetics and functionality. The first generation of dentures, for example, were printed on more of an economy-type of denture, but you’re seeing improvements now in just overall esthetics, where you’re starting to see layered teeth. So, you get a much more beautiful, natural-looking final restoration. You’re seeing increased strength in physical properties. Your megapascal strength for impact is much higher.”

But, as good as materials are now, there are always a variety of upgrades being made, Rose observes.

“Like any technology, it’s never completed,” he says. “The beauty of 3D printing, especially with EnvisionTEC, is that everything starts with a liquid resin, and the machines don’t become antiquated or out-of-date. As new softwares and new resins are developed, it’s just the next piece of the puzzle that you can add to that machine.”

The future

The future of 3D printing in the industry will occur on two fronts—dentists and manufacturers. For clinicians, an important part is going to be understanding how to use it.

“A huge component of this is about how we teach our users through either written reports or internally developed applications, guides, and videos to enable a more efficient use or better use of our products,” Wainwright says. “And then some-
thing that I’m very excited about is a support team that’s focused and specialized in dental. I think that’s going to really increase the accessibility component of this, because there’s going to be a team dedicated to our customers and users being successful.”

Education is the key to changing doctors’ acceptance of buying into 3D printing technology and integrating them into the practice, Niquette says.

“Right now, you and I can go out and sign up for courses at every major trade show for CAD/CAM training. Right now, we can have the best product in the world, but if there isn’t education on a much bigger scale, that’s what slows any technology’s acceptance down. Look how long intraoral sensors took to get it to get accepted in the marketplace and how long it took dentists to get away from film.”

On the manufacturer front, look for printers to be able to handle larger work loads at higher speeds, Rose says.

“We’re going to see continued increase in size of build platforms as well as speed,” Rose says. “We always want to first, put maintaining how accurate the part is when it’s completed. It is as, if not more important than the size of the build area or how fast we do it. The sky’s the limit with 3D printing.”

The types of products available are also expected to broaden. While there will always be a market for companies such as Invisalign and ClearCorrect, Dr. Flucke anticipates more doctors will be interested in eliminating the middleman and printing these products themselves.

The missing link to all of this is permanent restorations, which are aren’t too far off, Kanerva says.

“We would like to see more biocompatible materials, also implantable materials. Also, more development in the whole process of printing, itself. It will be more and more user-friendly and easier for the users,” he says.

Ultimately, even though 3D printing is somewhat of a nascent technology—especially in the dental world—everyone seems to agree it is the future.

“If you look at the world today and the current methods of manufacturing, it’s pretty clear that additive production and 3D printers are going to completely revolutionize the way products are manufactured, and age-old manufacturing dilemmas are solved,” Stover says. “This transformation is happening daily. It is like a new Industrial Revolution, and there’s honestly never been a more exciting time to be working in the dental industry, and I believe that in less time than some may think, 3D printing will become the primary method of digital manufacturing in our industry and in every other industry.”

A Square’s world and perception of the universe was changed when sphere entered Flatland. Dentists today are facing a similar paradigm shift, but once they embrace it, they can certainly achieve faster, easier, more efficient workflows, that have the potential to save them money.
More applications and more patient comfort

The benefits the Waterlase Express from BIOLASE has brought to one dentist’s practice. [by Renee Knight]

When Dr. Kayvon Javid first invested in the Waterlase Express hard and soft tissue laser from BIOLASE two years ago, he planned to use the technology to perform minimally invasive gum surgeries. He wanted to keep more periodontal services in-house and to expand that portion of his general practice.

“I had several peri patients I would refer out of the practice,” Dr. Javid says. “I started thinking, there’s a source of income we’re not capitalizing on.”

Incorporating the Waterlase Express into his California-based practices has changed that, but it’s also brought many other benefits. He’s able to use the laser for a variety of restorative procedures as well, giving him the ability to offer patients a much more comfortable experience during their visit.

“‘I have three offices and have a Waterlase in every one,’” he says. “‘We use it throughout the day for many procedures, whether it’s a small cavity or gum surgery. If I don’t have it for a day, I feel handicapped. It’s an integral part of my practice.’”

The benefits for the practice

Not only can Dr. Javid use the laser for a variety of procedures, such as crown lengthening and frenectomies, but it’s also portable, making it easy for him to move it between operatories and even from office to office. The high-quality hard and soft tissue laser is also one of the most affordable options on the market, so it was the no-brainer choice when he was looking to add a laser to his practice.

Waterlase Express is also a great marketing tool, Dr. Javid says. He can perform procedures he wasn’t able to before with minimal bleeding and minimal discomfort for his patients, which is a huge selling point for the practice.

“People like to see technology,” he says. “We can do fillings without numbing the patient. We can do small treatments like frenectomies without numbing the patient. It’s great to be able to tell our patients we have the latest technology and we don’t have to use any anesthetic for most procedures.”

The benefits for his patients

With the Waterless Express, Dr. Javid can now perform procedures that were once very painful for patients in a more minimally invasive way. For example, there’s no longer a need to use a blade to remove excess tissue and then place sutures during gum surgery.

“Patients can’t eat or function for a week or two after traditional gum surgery,” Dr. Javid says. “With lasers, you can tell patients they can go back to normal immediately. There is no major discomfort or pain. They can go about brushing and flossing their teeth immediately after treatment.”

The fact he can complete fillings without a handpiece is also a huge benefit, he says. A lot of patients don’t like the noise that comes from a handpiece, and some patients even fear it. While lasers make some noise, they are much quieter and more calming for nervous patients.

Overall, Dr. Javid’s patients love the technology and the fact he can perform more procedures in-house. Using the laser cuts the healing time in half for most procedures, and only causes patients minimal discomfort.

“People are amazed I’m cutting into their mouths and there’s no blood,” he says.

Expanding your list of services

Dr. Javid can now offer services he wasn’t able to offer before, which has helped him grow his practices. Not only is he able to give his patients more treatment options, but he’s also able to provide them in the most conservative way possible.

“My patients come to me because they trust me, and I want to give them the best outcome and the best experience, it’s not only the right thing to do, it’s a way of promoting my practice. Patients will walk out of my office and tell their friends and family about the experience they had, that they had a filling done and the dentist didn’t use a drill or any anesthetic.”

Waterlase Express

Waterlase Express has the smallest footprint ever for an all-tissue laser, and it works as well as a countertop unit. Moving the laser from operator to operator or even office to office can become a reality with optional carts and travel accessories. Waterlase Express is described as the only laser to feature in-depth, step-by-step, 4K HD animations for every clinical procedure on board. The Waterlase Express animation library is an informative training resource that will serve as a great foundation for you.

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Quicker, efficient glide path forming

How KaVo Kerr’s Traverse™ Orifice and Glide Path File helps make forming the glide path easier, and reduces time and manual labor while improving the efficiency of endodontic procedures. [by Stan Goff]

**Bernice Ko, DDS**

**CLINICIAN TEAM MEMBER INDUSTRY**

**With** an endodontic-periodontic practice in West Los Angeles, Dr. Bernice Ko is well aware of the importance of having the best endodontic tools at her fingertips. That’s why she incorporated the KaVo Kerr Traverse™ Orifice and Glide Path File solution into her practice in the spring of 2019. Designed to make forming the glide path easier, the nickel titanium rotary file is said to reduce time and manual labor while improving the efficiency of endodontic procedures. There are often challenges when establishing the glide path using stainless steel hand files, but Dr. Ko lists the sizes of the Traverse files among the product’s many benefits. “They’re uniquely sized. 13/06 for small canals and .18/06 for large canals,” she says. “This allows an uncomplicated, effortless transition from a #10 hand file to a rotary shaping file.”

The Traverse files streamline the process of glide path creation, enabling Dr. Ko to deliver successful endodontic treatments more efficiently. A triangular cross-section allows for greater cutting efficiency. “The non-cutting tip with variable heat treatment enhances superior flexibility with stable torsional strength,” says Dr. Ko, who first implemented the Traverse files into her practice in April 2019. “This allows smooth navigation through tight constraints and curved canals while minimizing transportation. Also, the maximum flute diameter minimizes excessive removal of coronal dentin during glide path creation.”

Additional features noted by Dr. Ko include:
- Allows preservation of sound tooth structure
- The triangular cross-section retains file cutting efficiency to improve the clinician’s efficiency and allows less procedure time
- Pre-sterilized

The Traverse files allow reduced risk of cross-contamination with single-use recommendation only, and are readily available, says Dr. Ko, who received her DDS and her postgraduate training in Hospital Dentistry and Endodontics at UCLA.

**Patients and practice benefit**

As previously stated, using the Traverse files benefits the practice by increasing efficiency in endodontic procedures. This reduces procedure time and manual labor, which is a plus for both the clinician and the patient.

“The Traverse Glide Path Files allow significantly less file inventory and manual labor. This allows less procedure time and improved patient comfort,” adds Dr. Ko, who is a Diplomate of the American Board of Endodontics and is a lecturer with the Section of Endodontics and Special Patient Care at UCLA. “Traverse Glide Path Files are well-designed, user-friendly and engineered with all the safety features to enable a very smooth transition to a rotary shaping file while eliminating the manual labor of traditional hand filing using multiple files.”

**DISCLOSURE**

Dr. Bernice Ko is a paid consultant for KaVo Kerr. The opinions expressed in this interview are those of Dr. Ko.

KaVo Kerr is a medical device manufacturer and does not dispense medical advice. Clinicians should use their own professional judgement in treatment of their patients.

Additionally, Dr. Ko was interviewed by Dental Products Report for a Closer Look article on the elements™ e-motion endodontic motor that was published in September. The above disclaimer was inadvertently left out of that article. To read this article online, go to http://www.dentalproductsreport.com/dental/articles/power-provide-quality-treatment.
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INCREASE PREDICTABILITY FOR FASTER TOOTH MOVEMENT

Using Propel’s combination of micro-osteoperforations (MOPs®) and high frequency vibration can help clinicians deliver predictable, fast orthodontic treatments. [by Nazeli Tarjan, DDS]

In my practice, the combination of MOPs and VPro allows patients to switch their aligners every 3-7 days, depending on specific needs and to ensure that aligners are tracking consistently. MOPs has been very effective at facilitating the more difficult movements and jump-starting struggling cases all in a short office visit with minimal pain being reported by patients afterwards.

The VPro ensures proper seating of the aligner, which allows for fewer office visits due to better tracking. It also serves as a pain reducer so my sensitive patients are not relying on pain relievers to get them through the discomfort of advancing trays.

Some studies note the simultaneous sensory effect of vibration on nerves can cause reduced pain. Personally, I believe the blood flow to the area caused by high frequency vibration is mainly what contributes to this, which is the reason we tell patients not to take anti-inflammatory for pain reduction.

When I first discovered Propel’s products, I thought solely of acceleration because as mentioned previously, patient demands were all about time. Since incorporating these techniques into my cases, the treatment of complex cases has become more predictable, and that makes me more confident in treating those types of cases. Specifically, I personally think intrusion and crossbite cases are so much more predictable than just using Invisalign® without Propel treatment options. Realizing how pre-

HOW TO

IN THIS ERA OF INCREDIBLE INNOVATIONS, it is an exciting time to be a dentist. Upon graduating from dental school, I had the advantage of joining a state-of-the-art, high tech dental office that emphasized quality of work, which in turn made me into the continuing education and technology aficionado I am today.

One focus of my first orthodontics class was to discover the types of information patients would be seeking regarding orthodontics and how to properly address their concerns. Ten years later, I believe understanding the “why” of orthodontics helped to establish my career. I evolved into being a restorative dentist who ensures I am working with a solid infrastructure. Foundation first, then build the rest of the house.

The majority of my downtown Denver patient population is comprised of busy professionals who have both high demands and very little time. They want their Instagram-ready smile makeover by “tomorrow” and have usually shopped around by the time I actually see them for a consult. I start each consult by stating “I want you to make decisions knowing what I know.” I want them to make the best choices that fit their lifestyle, while having as much information about options and treatments as possible.

When I say, “I want you to get the best possible result,” even in the light of my “informational talk,” they immediately ask, “How long?” The bottom line is they have already done their research on dentists who will provide a reasonable price, modern technology, and fastest completion time, so I must provide all three.

Two technologies that allow me to fulfill their wish for faster treatment are Propel’s combination of micro-osteoperforations (MOPs®) and high frequency vibration. The concept of MOPs is fascinating, and the research makes sense. Micro-osteoperforations are tiny perforations along the patient’s gumline made with a Propel Excellerator® series driver. These MOPs activate a cytokine cascade which increases osteoclast activity and accelerates bone remodeling. As orthodontic forces are applied, teeth can move more easily through remodeling areas. The result is faster, more predictable movements.

While the MOPs accelerate the bone remodeling, the VPro High Frequency Vibration (HFV) device activates the biology causing a reduction in treatment time by up to 64%,1 obstructs pain and assures ultimate aligner seating. The sum of these advantages also increases predictability. I personally use VPro to help accelerate treatment as well as to facilitate seating of aligner trays.

In my experience, the high frequency vibration also increases comfort for patients—my patients who use VPro report less discomfort as they progress through aligner tray changes. As for the retention, studies showing the effects on the alveolar bone in retention make it a tool they can utilize from start to finish.

For treatment options I use with these techniques, I offer options of brackets versus clear aligners as well as extraction versus non-extraction. During the consultation, I explain the pros and cons of each. I explain rubber bands and IPR, and the possibility of doing treatment with and without these procedures. I want patients to choose an option they would commit to so we can achieve good results. Of course, I always give patients the option to see an orthodontist first, especially for more complex cases.

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CIRCLE RS #40

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CASE 01– JUAN

1-4. Twenty-eight-year-old patient, Juan, wanted his teeth straightened and whitened prior to his wedding.

5-8. The patient was happy about the results for wedding photos and especially impressed with progress of tooth #7. Previously, this tooth was positioned so far palatally that it was hardly visible in the facial view.

CASE 02– DANIEL

5-8. The patient was happy about the results for wedding photos and especially impressed with progress of tooth #7. Previously, this tooth was positioned so far palatally that it was hardly visible in the facial view.

9-10. Daniel presented with chief complaint of wanting to align his teeth. After his 40 trays, the patient showed great improvement.

CASE 03– KARA

9-10. Daniel presented with chief complaint of wanting to align his teeth. After his 40 trays, the patient showed great improvement.

11-12. This patient wanted to take care of spaces that resulted from congenitally missing laterals. Teeth movement, whitening, and veneers were completed.

CASE 04– VICTORIA

11-12. This patient wanted to take care of spaces that resulted from congenitally missing laterals. Teeth movement, whitening, and veneers were completed.

13-14. Chief complaint was crowded teeth, but patient also wanted an implant to replace a missing tooth. In refinement stage after six months; there is no crossbite on the left, the right-side teeth are end-to-end with slight crowding still present.

AT A GLANCE
dictable some results are can help gen-
eral dentists be able to more carefully
choose the cases they are able to treat and
which cases they should refer out to an orthodontist. The value added by incorporating both products into my practice has me looking at ortho-
dontics in a whole new light.

CASE 01 – Juan
This 28-year-old patient presented to
our office in April 2018 stating he
would be getting married in a year,
and he wanted his teeth straightened
and whitened prior to the wedding.
He had very narrow upper and
lower arches with an anterior and
premolar cross bite, slightly Class III
occlusion bilaterally by 1 mm.

After evaluating diagnostic
models, options were given to the
patient with pros and cons. The
dentist decided to proceed with the
extraction of tooth #24. We decided
to expand both the upper and lower
jaw for a rounder appearance and
align as much as possible prior to the
wedding, then take attachments off
and whitened prior to the wedding.

This 28-year-old patient presented
to our office in January 2019 stating she
was going to be getting married in a year,
and he wanted his teeth straightened
and fine tune his occlusion. At the
time she contacted us, she had a
class II occlusion and a 3 mm
of crowding on the mandible. We
completed 36 trays in six months and
completed MOPs at month five to expedite
treatment.

I completed perforations premolar
to premolar on maxillary and
mandibular areas with one perforation
between all teeth at 3 mm deep, and two perforations mesial and distal of maxillary canines and premolars. We started MOPs and
VPro halfway through his treatment
because his teeth were not moving as
fast as we needed them to if we were
to meet his treatment timeline.

We removed all attachments for
the wedding in April and whitened
his teeth, using take-home whitening
trays and Venus® products from
Kulzer Dental. At this time, he
was Class II bilaterally and had no
cross bites. After the wedding, we
rescanned his teeth and devised a
round of refinements to improve
his overjet and upright anterior
teeth, improving on the faciolingual
angulations of his anterior teeth and
improving on the overjet.

The patient was very happy about
the results for wedding photos and
especially impressed with progress of
tooth #7. Previously, this tooth
was positioned so far palatally that
it was hardly visible in a facial view.

Before the wedding, we did one
round of trays, so the total treatment
involved 40 trays and one refine-
ment. Figs. 1 to 8 show the before and
afters for Juan’s treatment.

CASE 02 – Daniel
Daniel, a 23-year-old patient,
presented to our office with chief
complaint of wanting to align his
teeth. He had a Class I occlusion
on the right and Class III on the left
by 3 mm. He had an overbite of 90 percent;
tooth #27 was in cross bite, and tooth #7 was very palatally
positioned. His upper midline was
2 mm to the left. He had 8 mm
crowding on the mandibular and
10 mm on the maxillary.

After evaluating diagnostic
models and measuring the jaw size
discrepancies, we give patients options
of extraction versus no extraction,
adjusting the pros and cons. After
the consultation, the patient decided
to extract the premolars. We
decided to extract tooth #5 and tooth #28
because his midline was already
off, and that would provide enough space
for the treatment plan as well
as help with aligning the midline.

I completed MOPs two weeks after
the first aligner delivery, one
perforation premolar to premolar,
and maxillary and mandibular.
That is my protocol, so the patient
can become accustomed to the
aligners first and then we can add
more to process. At that point, I also
asked him to start VPro vibration.

After starting treatment at
the beginning of April, Daniel pro-
gressed through 40 trays in six
months at the time of first refine-
ment. After his 40 trays, he showed
great improvement. At that time,
we planned to align his midline
and fine tune his occlusion. At that
point, he still showed crowding
and spaces that need to be
aligned, and we are correcting those
issues while keeping the midline in
mind and moving teeth to help us align
the midline as well. Figs. 9 and
10 show the before and afters for
Daniel’s treatment.

CASE 03 – Kara
This patient, a 32-year-old female,
presented to our office in January
2019 stating she might be moving
in the summer and wanted to take
care of spaces that resulted from
congenitally missing laterals before
she moved. She had a molar Class II
occlusion bilaterally, 2 mm of crowd-
ing on the mandible, and 5 mm
of spaces on maxillary.

After discussing options, we
decided to retain the posterior occlu-
sion at Class II and close the anterior
spacing and place veneers on tooth
#7 and tooth #10. The veneers were
purely to make canines look like
laterals because the patient expressed
her want for this to happen.

We prepared one round of 18
aligners with MOPs changing trays
every five days. We did MOPs on
the maxillary mesial and distal of
tooth #5 and #3 and tooth #11 and
#12 on mandible 23-26. The two
perforations on the maxillary and
one perforation of the mandible were
3 mm deep. This was followed by
whitening and veneers just on time
for her to move in July.

This patient also used VPro high
frequency vibration to ensure the
aligners were seating well. Because
of the time constraint, she was
changing aligners every three
days, and they tracked every time.

Kara specifically wanted me
to finish treatment on her timeframe.
Due to trust we had built through-
out her treatment in the past, timing
was very important because the goal
was to finish all teeth movement,
whitening, and veneers prior to her
departure (Figs. 11 and 12).

CASE 04 – Victoria
This 30-year-old female patient
presented with the chief complaint
centred and lower midline moved 2
mm to the left. Her lower left molars
had shifted with very limited space
for implant.

We did MOPs two weeks after
the first aligner was delivered, and
recommended use of the VPro. Did
MOPs on the first premolar to first
premolar, all were one perforation. I
usually don’t do any perforations on
midlines so there were no perfora-
tions between tooth #8 and tooth
#24 and #25. She started using
VPro at the same time as the MOPs,
two weeks after the first aligner.

After completing her first set of 34
aligners, we planned to do the first
refinement. The refinement entailed
adding IPR on upper left and lower
anteors to align the midline and to
improve on overjet and close poste-
rior occlusion.

We are at the refinement stage
right now after six months, and
there is no crossbite on the left, the
right-side teeth are end-to-end with
slight crowding still present (Figs. 13
and 14). We will be starting refine-
ments soon.

Someone once told me they were
amazed by how much I postpone
pleasures in life for the sake of doing
something “right.” As someone
who endured two rounds of braces,
I know the end cannot come fast
enough! It is extremely satisfying to
be able to comfortably tell someone,
“Yes, you will have the smile you’ve
always dreamed of in time for your
wedding.” Or, “Yes, we will have
your veneers done right before your
upcoming move.” Nothing beats
the feeling when I’ve delivered on
my promise, and they express their
gratitude for changing their life. It’s
the reason I became a dentist.

ABOUT THE AUTHOR
Dr. Nazeli Tarjan, graduated from the
University of Iowa College of Dentistry in
2009. She is the owner/operator of ICON
Dental in downtown Denver and is a
Gold Plus Invisalign provider.

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With the Osstell Beacon, clinicians can measure implant stability and know exactly when an implant is suitably osseointegrated to support the planned restoration. [compiled by Noah Levine]

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In 2019 our program members provided access to dental care and preventive services for 529,116 kids in need. Find out all the ways our donors helped restore smiles and prevent decay for low-income kids and underserved communities last year at ATKids.org.
COMFORT PLAYS A MAJOR ROLE in the success of any dental appointment and this is as true for clinicians as it is for patients. While many important pieces of dental equipment help make things more comfortable for patients, and others make things more comfortable for clinicians, it is the patient chair that is (often literally) at the center of the operatory, and it is these chairs that can provide that critical comfort to both clinicians and patients.

Specialized chairs for dental treatment date back as far as the late 1700s. Features such as integrated instrument trays, and head and foot rests for patients were common on chairs dentists used, and designs allowed chairs to tip backwards to provide easier oral access. Still, the modern dental chair that is so well-known today is actually a 20th century development, as the first chair with a split in the seat and a full recline was invented by Dr. John Naughton in 1958.

Today dental chairs offer a range of functions and features, as well as an endless selection of upholstery materials and finishes to match any operatory décor or clinician’s sense of style. Today’s dental chairs are designed to provide both patient comfort and ergonomic clinician positioning and access. Features can include automated movements and pre-set positions, massage and heat functions for patients, and even integrated delivery systems with connections to clinical software and other systems. Numerous chair options are available, but here is a roundup of some of the current models ready to help enhance patient and clinicians comfort.

A SEAT AT THE CENTER OF EVERYTHING

(compiled by Noah Levine)
**A6 Radius Package**
- An affordable ambidextrous Left/Right Swing Mount package that can be converted easily in the operatory without the use of any tools
- A Hybrid Chair, it features a hydraulic lift for the base movement and electromechanical movement for the backrest
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**6700M Marathon Chair**
- The first U.S. dental chair with built-in Wi-Fi, USB access, and cloud based remote diagnostics
- The chair was designed to provide durability, efficiency, and modern technology at an affordable price
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January 2020 | DENTALPRODUCTSREPORT.COM | 53
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- The armrest mounted touch pad to control four manual chair movements, three programmable positions, and the home position.
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**BDS**
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### CORE Chair
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- Designed to bring sophistication to the operatory with its sleek and fluid appearance.
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**Belmont**
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A sterilizer with speed, capacity, and connectivity

The STATCLAVE G4 from SciCan aims to provide the room to sterilize the instruments of a busy practice, the efficiency to process them quickly, and the connectivity to provide practices with peace of mind. [compiled by Noah Levine]

Information provided by SciCan.

THE PROBLEM

Sterilization takes too long and doesn’t completely dry instruments

Dental sterilizers can operate with long process cycles and even longer drying cycles that can keep instruments out of service when they are needed.

THE SOLUTION

STATCLAVE G4 Chamber Autoclave

- A Class B vacuum sterilizer, it features pre-sterilization vacuum for enhanced steam penetration and post-sterilization vacuum for enhanced drying
- Designed for fast processing, the STATCLAVE G4 can sterilize and dry wrapped instruments in as little as 38 minutes
- Closed-door drying and vacuum technology work to ensure every load is dried completely
- The unit can sterilize up to four full-size cassettes, four exam cassettes or up to 20 pouches in its 11-inch chamber
- A part of SciCan’s G4 line, the sterilizer can connect to the internet and send cycle data and notifications to smart devices
- The system is designed to use fresh water every cycle to reduce oil and debris buildup
- The unit is designed to be versatile to fit into any practice’s sterilcenter with a variety of filling and draining set up options

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A simple solution for mirror glare, strain, and fatigue

Hu-Friedy’s HD Black Line Mirrors offer a visual advantage for any dental procedure. [compiled by Kristin Hohman]

Information provided by Hu-Friedy.

THE PROBLEM

Traditional dental mirrors cause glare which can lead to strain and fatigue

Head lamps and loupes emit brighter light, preventing visual acuity within the oral cavity

THE SOLUTION

Hu-Friedy HD Black Line Mirrors

- Features a unique Diamond Like Carbon (DLC) coating on the handle and mirror frame, meant to reduce glare by up to 80 percent
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Interested? Circle Product Card No. 64
Dr. Tanya Brown was already sold on Zirc’s colorful Mr. Thirsty isolation products and mouth mirrors when she decided to give the Zirc Color Method a try. As the name would suggest, the Color Method uses color to organize the procedural workflow in a dental practice. The system’s color-coding scheme groups instruments and materials by procedure for efficiency and to save time.

The Color Method has now been in use for approximately 18 months at Dr. Brown’s Cosmetic and Restorative Dentistry Practice in Chesapeake, Va. The practice has made full use of the system’s color-ful anti-microbial resin trays, tubs, cassettes, and bur blocks, along with other identifiers, to streamline the daily work of their practice.

To get started, Dr. Brown consulted with a Zirc efficiency expert who analyzed the organizational needs of her practice. Once their needs were identified, the practice was able to get up and running quickly with the Color Method. “It took us just a day to take things apart and reorganize everything into the Color Method cassettes and tubs,” she says.

Taking efficiency to the next level
Even for a practice as well organized as Dr. Brown’s, the Color Method took its efficiency to the next level. “We were already pretty well organized, but [the Color Method] helped fill in the missing links. We now have a consolidated set-up. We don’t have to restock treatment rooms to be ready for the day,” Dr. Brown says, adding that set-up is done the night before.

As the Color Method recommends, Dr. Brown’s practice utilizes its sterilization center as the bulk storage area for restocking procedure materials into the trays and tubs. All instruments and materials flow through this central hub for reprocessing and restocking. The next day’s procedure set-ups are grouped by color code and staged in racks in the sterilization center for easy retrieval.

Prior to the Color Method, Dr. Brown’s biggest pain point was the time spent searching for materials and instruments during a procedure. “Now it’s rare that we have to leave during a procedure to look for some-thing,” she said. The ability to stay chairside throughout a procedure has been the greatest benefit of the system, she said.

Dr. Brown said the color-coded trays and tubs work like portable operatory drawers. Rather than stocking the drawers in the operatory cabinets with instruments and materials, these items are organized by procedure into the Color Method tubs, which can easily be carried between sterilization and treatment.

A true time-saving method
Time savings by the practice since using the Color Method has been significant—a total of 30.4 hours per week, according to an independent time study conducted by Dr. Brown. Dr. Brown’s staff compared time taken before and after Color Method implementation in four different functional areas of the practice—the treatment room, central sterilization, at chairside, and inventory control.

Dr. Brown’s staff calculated daily time savings per treatment room set-up was 22.8 minutes, and tear-down was 34.8 minutes, totaling almost an hour.

Between sterilization and ultrasonic cleaning, the practice saved 24.6 hours per week.

Additional time savings were realized chairside. Instances of leaving the room mid-procedure were reduced by 80 percent (from 10 instances to two) for total time savings of 2 hours.
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Handling and storing sterile instruments

The act of cleaning, disinfecting, and sterilizing instruments and equipment is just one battle in the war against infection. How the team handles equipment after reprocessing is just as important. Mistakes seem to be pervasive, but they are not insurmountable. [by Robert Elsenpeter]

Instrument handling

It all starts with how one handles instruments. It is not uncommon to see practices manhandle them. The results can be non-sterile instruments or even damaged equipment.

“There’s a little bit of abuse in the dental world— an abuse of peel pouches, the sterilization paper, plastic pouches,” Peggy Spitzer, dental hygienist and clinical education manager for Certol International, says. “The abuse involves, perhaps, putting too many items in the peel pouch and overloading it. That increases the chances of items poking through, creating holes or tears.”

The best practice is to use pouches exactly according to the manufacturer’s instructions.

“Don’t overload it,” Spitzer says. “The items have to have steam reach all the items inside the package to actually sterilize it. So, if they’re crammed full, that’s defeating the purpose.”

Careless handling extends to something as seemingly minor as team members touching those instruments without gloved hands. “Not only do you want to make sure that you’re handling sterile items with clean hands, but the less you touch them, the better off,” Joyce Moore, RDH, an infection control consultant and clinical instructor at Bristol Community College in Fall River, Massachusetts, says. “If they get bumped during transport, the packaging can get perforated. I’ve had students bring some instruments to a rotation and the blue wrap has been torn. So, it’s always best to use clean hands and maybe a transport container in order to get those to the end location, and not get them compromised in the process.”

When offices are bustling, that’s when little things can fall through the cracks. One such detail that can compromise the practice’s infection control efforts is falling behind on instrument sterilization.

“The biggest risk is if instrument reprocessing gets behind and then you’re running multiple loads, trying to move those sterile items in and out of there as quickly as possible,” Moore observes. “Some instrument processing areas are really small, and that just increases the risk that something would be likely to happen.”

Let them dry

Just because instruments have completed their machine sterilization cycle doesn’t mean that they are ready to go. Proper protocol requires that they be completely dry before being removed, or even handled.

“This is a problem across health care,” Spitzer says. “It’s not even just in dentistry. People are in a hurry and they don’t, maybe, have enough of a particular item. Let’s say it’s the dental handpiece. They are expensive and they only have a certain number of them. And now this particular load is just finished in the sterilizer, so they know that the sterilization heat and steam parts of the process are concluded, and they opened the door. It’s just too easy to pull out all these items that are hot and wet. That allows microorganisms to easily penetrate the pouch from our hands, from the surfaces that you might lay the pouches on. We look at it and we’d see that the pouch is intact and there are no holes, and we think, ‘Oh, it’s safe.’ But it’s not, it’s really porous. So if it’s still wet and hot, it does allow all sorts of very tiny contamination going in and out of that pouch.”

The make and model of one’s sterilizer will dictate when instruments can be removed. As always, refer to the manufacturer’s instructions for use for correct guidance.

“The newer sterilizers have specific dry cycles, dry times,” Spitzer notes. “They may have alarms or signals or a little bell or something is built-in. The dry cycle on the newer models is a little bit more specific. On an older model, it might be more at the discretion of the user to understand that they do have to allow this period of time to dry and cool.”

Resist punctures

Instruments may seem safely wrapped in peel pouches, but that doesn’t mean that they should be handled any less gingerly. If damage does occur to those pouches, instruments are at risk of becoming contaminated.

“Most dental instruments are sharp or pointed and, frankly, it’s a miracle that our pouches can take as much as they do,” Spitzer says. “The reality is, you’ve got a bunch of burs, sharp scalers, you’ve got a curved Shepherd’s Hook Explorer. I mean, everything is sharp. And, again, this
happens more readily when the pouch is a little bit damp and everything is hot. So that’s another good reason for waiting for items to dry and cool. It reduces the risk of puncturing or punching through. But as soon as there is a visible hole in the package, that should be a signal to the user that the bag, pouch, and contents need to be opened, rewashed and re-rinsed, re-dried, repackaged and reprocessed. That’s what reprocessing means is to put everything back to the process again because now it’s contaminated. You don’t use them.”

**Manage items**

In the dental practice, quarters can be tight. But even when that is the case, proper handling of instruments is necessary, but, regrettably, easy to overlook.

“Especially in a dental office, space is at a premium; there’s just never enough space, even for the basic steps of processing. There’s just never enough storage space,” Spitzer observes. “A lot of supplies and new things come in and you’re trying to keep the new fresh supplies in a clean place. You want to try to keep all the dirty separate from the clean. So, people, in their minds, they’re thinking, ‘Well, I’m going to put these fresh supplies over here on this clean side where I’ve also got my sterile packaged items.’

“But that can be a big mistake because our supplies that are coming in might be clean, but they are often-times in boxes in which the outside of the box is very contaminated from shipping,” Spitzer continues. “So, you just do not want to have even clean supplies stored in the same drawers or cabinets with the sterile items. Keep the sterile items in their packages and keep them separated from all your other supplies. At least use separate drawers or shelves. Try to keep the dirty-to-clean concept in mind, because you really do want to make sure that your traffic flow does not create more contamination in the area where you’d store the sterile items.”

The best way to manage that space, Spitzer says, is for everyone to get together and discuss safe handling procedures.

“A really good way to approach it is to have all of the people who are actually handling both the dirty and sterile items to have their own little meeting, or get-together in the area where they’re actually working, and do some workflow,” she recommends. “A couple of other people can watch them and comment to each other, but actually try the workflow to see where the problems might be. The most important thing is that the workflow doesn’t add to the contamination so that they’re not putting themselves in a situation where they’ll be re-contaminating those sterile items simply because of the way they have their workflows set up.

“Even if space is tight, there’s almost always a way to make it work effectively,” she continues. “And, frankly, at a certain point, an office may just need to invest in more efficient and effective storage. Yes, you can do a lot without spending money, but there will be a certain point that the office simply has to invest in better storage, new cabinets, maybe covers over shelves. There’s just at that point where it’s worth investing in better storage. It’s no different than bringing in your California closet.”

**Let patients see**

There is value in letting patients see, exactly, how instruments are handled. There may not be a clear, practical value in it, but there is something to be said when patients know that their safety is valued.

“I’m a big fan of the PR value of doing the right thing,” Spitzer says. “So your office is investing in infection prevention. You’re training people, you’ve got better equipment, you’ve upgraded this thing, you do that thing. Don’t take for granted that people know and understand that you are doing the right thing. You want to make sure that your patients know about all the good things you’re doing — wash your hands in front of them; open your sterile packages in front of them. I think you want to moderate some of that, sometimes based on patient fear. You sometimes would prefer maybe to open the anesthetic syringe behind the patient. Maybe not in front of them, but there’s plenty of opportunity there for the dental staff to make sure that the patient visibly sees all the good things that they’re doing.”

The fact that the practice knows best procedures for instrument safety doesn’t mean that patients will automatically know. Letting them see how instruments are handled can send a reassuring message.

“It shouldn’t be automatically assuming, ‘Oh, the patients know our office is safe,’” Spitzer says. “You’re putting a lot of effort into infection prevention. Make sure that people see it and that they know it. There is a lot of power in that. That’s the kind of thing that people talk to each other about. They’ll tell their friend or relative, ‘Hey, you should go to my dentist. They’re really nice and I see all this stuff they’re doing. They sterilize this thing, they wash that thing. They’re always washing their hands in front of me. I know they’re really clean and they’re really safe.’ So, they may have a limited understanding of the science or the specific details, but I think that this PR value is really important for offices. It’s very powerful and you’re already doing it, so just do some of it in front of them.”

Reprocessing instruments goes beyond simply loading the sterilizer and pressing ‘Start’. How those instruments are handled – and what patients see – is key to maintaining their safety.
Exercise for the New Year: is a personal trainer the right choice for you?

Exercise is good for your health, but certain workouts can actually cause pain for the dental professional. [by Dr. Bethany Valachi, PT, DPT, MS, CEAS]

Dear Bethany: I have been going to a personal trainer whom my friends have recommended as the “best in the area.” Since going to him, my neck pain has worsened. Could it be the exercises?

Dear Doctor: You are wise to be concerned. While there are many excellent personal trainers out there, most of them do not understand the unique muscle imbalances to which dental professionals are prone. Therefore, an exercise that may be beneficial to the average person can throw a dentist into the vicious pain cycle.

One of the best examples of this that I see repeatedly among dentists with neck pain is the upright row, which can actually worsen neck pain in dentists. It should be removed from dentist’s exercise routine. While this exercise is usually fine for the average person, dentists are highly prone to an imbalance between the upper trapezius and middle/lower trapezius muscles. This is just one of several unique muscle imbalances to which dentists are predisposed. The reason the upper trapezius is so vulnerable to ischemia is because it is the most active muscle during the delivery of dental care, and it is also the most responsive muscle in the body to emotional stress. Your shoulder stabilizing muscles tend to fatigue quickly with forward head, rounded upper back, and elevated arm postures—all commonly seen among dentists. When these muscles fatigue, other muscles compensate and become overworked, tight and ischemic. One of these compensating muscles is your upper trapezius muscle (Fig. 2).

An effective exercise regimen for dentists will target specific shoulder girdle, trunk, and back stabilizing muscles without engaging the muscles that are prone to tightness and ischemia. This requires expert knowledge of biomechanics and kinesiology. In addition, specific muscles that are prone to tightness and ischemia must be targeted with stretching exercises and avoid over-strengthening.

Additionally, studies show strength-training or heavy weight training is not protective against pain syndromes caused by prolonged, static postures, as in dentistry. However, research shows a method called muscular endurance training can help dental professionals reduce neck, shoulder, and back work-related pain, but only if the technique is applied to the correct muscles.

Dr. Valachi’s CE Video Course, “Home Exercise for Dental Professionals” is the result of 15 years of research on the muscle imbalances of dental professionals. This evidence-based video addresses and corrects the painful muscle imbalances to which dentists are uniquely predisposed, enabling dentists to work with better posture without pain or fatigue. Concepts from muscular endurance training, yoga, and Pilates are fused with the latest research on dental ergonomics, neck pain, back pain, and biomechanics to produce targeted exercises that can change your life.

This online video course includes three complete exercise routines and describes which exercises, routines, and gym machines can worsen dentists’ health. Educational narrative throughout the course helps the operator apply concepts to his or her everyday practice. (The CE course is available at posturedontics.com. Enter Discount Code OTR2020 upon checkout to receive a Dental Products Report special discount.)

Conclusion
Embarking upon an exercise program requires prudence and discretion, considering team members’ predisposition to certain muscle imbalances. Selecting improper exercises can lead to imbalance, ischemia, and nerve impingement (Fig. 1). Developing balanced musculoskeletal health with an exercise program can help dentists prevent work-related pain, extend their careers, and improve their quality of life.

ABOUT THE AUTHOR
Dr. Bethany Valachi, PT, DPT, MS, CEAS is author of the evidence-based CE video course, Home Exercise for Dental Professionals, and clinical instructor of ergonomics at OHSU School of Dentistry in Portland, Oregon. A physical therapist who has provided ergonomic & wellness coaching to dental professionals since 1997, she is recognized internationally as an expert in dental ergonomics, and lectures worldwide. She has published more than 80 articles in peer-reviewed dental journals and offers evidence-based dental ergonomic CE video training on her website at www.posturedontics.com.
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Don’t put off your network evaluation

As the IT world switches away from the older break/fix model to the more modern managed services model, dentists need to make sure to remember to evaluate their networks on a regular basis.

[by Dr. Lorne Lavine]

As the IT world switches away from the older break/fix model to the more modern managed services model, dentists need to remember to evaluate their networks on a regular basis.

I recently had the pleasure of speaking for a practice management software company’s annual meeting in Nashville and the title of that course was “Cybersecurity: What You Don’t Know CAN Hurt You” and I thought that would be an excellent tie-in for this month’s article.

Security holes. Unauthorized or outdated users. Unknown devices. Unlicensed software. Ports on your firewall that are open to the internet. These are just a few of the big liability issues that I see on at least 90 percent of the networks that I evaluate. And, this is true even for dental offices that are supposed to be monitoring their networks on a regular basis. When is the last time you had a third-party individual or company come into your practice (or remotely) and take an objective look at how your network is configured?

Many of us in the IT world have switched away from the older break/fix model (you call us when there’s a problem) to the more modern managed services model, where you pay monthly for ongoing services. Break/fix is inherently more costly in the long run for both service and repairs, not to mention putting a dollar value on any downtime that you suffer. But, more importantly, with that older model, there’s nobody that is monitoring your critical network settings that control access to your patient data.

If you’re one of the many offices that have made the switch to a managed services model, that’s a great first step. But, it still never hurts to have someone who is an expert in HIPAA and cybersecurity take another look. Often, that second set of “eyes and ears” will find things that your regular IT providers might have missed, or at the very least, they can validate if your current IT is using best practices for protecting your data. This is not to suggest your current IT doesn’t know what they are doing—far from it. But, given how complex modern dental networks are and the multitude of things you need to monitor for HIPAA compliance, even the best local IT people can occasionally miss something important.

The good news is most Office Managers and HIPAA Compliance officers welcome these types of evaluations. In my experience, the local IT company will also normally be receptive to this, if you phrase it in such a way that you’re not looking to replace the services they provide for you but rather, to supplement what they are offering. At the end of the day, you, as the Covered Entity, are ultimately responsible for your entire IT systems—you can’t point the finger at your IT folks if the HIPAA auditors ever come calling.

The other good news is these scans can often be quick and painless. When we do this for an office, we call it a “tech audit”, it normally takes no more than 20 to 30 minutes and when done, it will give you a treatment plan of where your office isn’t meeting accepted standards for data protection and security. It’s done remotely, we simply run some software on a few computers and ask your staff a few questions to get a clear picture of where you are at. You should not confuse this tech audit, though, with a full-blown risk assessment. Risk assessments normally take at least 4 to 5 hours, not to mention the time needed to then develop a HIPAA Management plan.

As HIPAA audits are becoming more common and the fines and penalties rising on a regular basis, you should ask yourself when is the last time you did a network evaluation, and if it’s been longer than six months, what are you waiting for?

ABOUT THE AUTHOR

Dr. Lorne Lavine, founder and president of The Digital Dentist, has more than 30 years invested in the dental and dental technology fields. A graduate of USC, he earned his DMD from Boston University and completed his residency at the Eastman Dental Center in Rochester, N.Y. He received his specialty training at the University of Washington and went into private practice in Vermont until moving to California in 2002 to establish TDD, a company that focuses on the specialized technological and HIPAA needs of the dental community. He can be reached at dlavine@thedigitaldentist.com or 866-204-3398.
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TOP 5 REASONS TO CONSOLIDATE YOUR BUSINESS DEBT

[ by Zach Raus, Bankers Healthcare Group ]

Whether you’re a practice owner or dental associate, managing business debt on top of other responsibilities can only add to your stress. If you carry credit card balances or have outstanding business loans, having to deal with multiple balances, payments, and due dates can be time-consuming and costly. Here are five reasons why consolidation could be an easier way to manage your debt.

01 Free Up Cash Flow
By reducing your monthly liabilities, you may end up with a lower cumulative monthly payment, which means more money stays with you. Having extra cash can help you stay focused on the big picture without worrying about delayed insurance reimbursements, co-pays and deductibles. It can also help you plan better for taxes or rising or unexpected operational costs. Calculate what your potential savings could be and set it aside for another purposes, like practice investments or taxes. With a debt consolidation loan, borrowers know exactly what they’re paying every month, which can enable better financial forecasting.

02 Save on Interest
One of the benefits of consolidating your debt is the opportunity to potentially get a better—fixed—interest rate. Compared to having to pay multiple APRs, this can be an additional cost savings. If you’re carrying multiple smaller loans with high interest rates, consolidating your debt into a single loan with a lower interest rate can free up cash for more immediate needs at your practice. You can then take these savings to reinvest back into your practice or profession.

03 Ease the Payment Schedule
With consolidation, you no longer have to track multiple due dates. This frees you from having to remember to make several different payments from multiple creditors. With a debt consolidation loan, borrowers only need to make one single payment per month to one account. Merging multiple debts into a single monthly payment also reduces the likelihood of missed payments. This simplicity can make your books easier to keep and help lower your stress.

04 Improve Your Credit Score
Consolidating your debt can potentially help you improve both your personal and business credit score by decreasing your revolving debt and helping you pay down all of your debts in a consistent manner. Credit utilization—the ratio of your balances versus the combined limit across all of your accounts—represents up to 30 percent of your credit score. The cumulative effect of debt consolidation is a lower utilization ratio that lenders prefer—and a potential boost to your score.

05 Reduce Collateral
Multiple debts can mean multiple collateral assignments and restrictions assigned to the business. You can cut that down (and maybe even eliminate it) by consolidating your debt with one lender.

As a dental professional, you already have a lot on your mind—and your schedule. If you’re finding it challenging to juggle multiple payments, multiple due dates, and a lack of cash, then debt consolidation might be a good solution for you.

ABOUT THE AUTHOR
Zach Raus is President of BHG’s Lending Division. An expert on financing for dentists and other licensed healthcare professionals, Raus oversees the lending team responsible for funding financial solutions for licensed healthcare practitioners and other highly-skilled professionals. Bankershealthcaregroup.com.
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