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How is your new year shaping up so far? If you are like me, you have been traveling to some of the major dental industry meetings, including the Yankee Dental Congress in Boston and the Midwinter Meeting in Chicago. Perhaps you picked up this copy of roots at one of these meetings.

This issue contains some interesting articles, including a study by Dr. Les Kalman on the use of sodium hypochlorite in endodontic irrigation and a report by Dr. L. Stephen Buchanan on some new technology that enhances the educational experience for those who are learning about endodontic surgery. You can also read about tools that Dr. Howard Golan uses to make digital imaging in his practice more efficient.

Every issue of roots also contains a C.E. component. By reading the article by Dr. Kalman, then taking a short online quiz about this article at www.DTStudyClub.com, you will gain one ADA CERP-certified C.E. credit. Keep in mind that because roots is a quarterly magazine, you can actually chisel four C.E. credits per year out of your already busy life without the lost revenue and time away from your practice.

To learn more about how you can take advantage of this C.E. opportunity, visit www.DTStudyClub.com. You need only register at the Dental Tribune Study Club website to access these C.E. materials free of charge. You may take the C.E. quiz after registering on the DT Study Club website.

I know that taking time away from your practice to pursue C.E. credits is costly in terms of lost revenue and time, and that is another reason roots is such a valuable publication. I hope you will enjoy this issue and that you will take advantage of the C.E. opportunity.

For those of you attending the late winter and spring meetings in Chicago, Atlanta and other places, be sure to say hello to me in person. As always, I welcome your comments and feedback.

Sincerely,

Fred Weinstein, DMD, MRCD(C), FICD, FACD
Editor in Chief
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A fully segmented CT volume in preparation for 3-D printing. (Image/Provided by L. Stephen Buchanan, DDS, FICD, FACD)
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-Rick Cardoza, DDS, El Cajon, CA

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Passive micro-volume management of sodium hypochlorite in endodontic treatment

Author_Les Kalman, B.Sc (Hon), DDS

Abstract

The passive utilization and micro-volume management of sodium hypochlorite as an endodontic irrigant has been illustrated with a laboratory demonstration and several clinical cases. By limiting the volume and pressure of sodium hypochlorite, the injurious effects can be minimized while still benefiting from the ideal disinfecting characteristics. Further studies are required to understand the behavior of fluids, especially sodium hypochlorite, within the context of permeability, fluid mechanics and multiphase fluid flow through porous media.

Introduction

Endodontic treatment addresses the removal of the tooth’s internal pulp and microorganisms, primarily due to infection and necrosis. Once proper diagnosis and prognosis has been established, the patient has the option of maintaining the tooth’s form and function while the vitality becomes lost. Current endodontic treatment consists of utilizing rotary files to remove the pulpal tissue and shape the internal dentin chamber of the tooth. Chemicals, in the form of gels and liquids, are then implemented to disinfect the canal(s) and eliminate bacteria. The chemicals are then dried and the canal space filled with either gutta-percha or resin to create a hermetic seal.

The chemicals employed to clean and disinfect the intracanal space are vast and include file lubricants such as Prolube (DENTSPLY) and irrigants such as...
QMix (DENTSPLY). During clinical endodontics, the canal is filled with a cocktail of chemicals, as file lubricants and irrigants become a mixture.

Chlorhexidine gluconate (CHX) is an uncommonly used irrigant with several desirable properties. It provides antimicrobial activity against certain aerobic and anaerobic bacteria, exhibits no significant changes in bacterial resistance in the oral microbial environment and has no injurious effect to the skin or mucosa. In fact, CHX has a role as an oral rinse at the 0.12 percent concentration.

Sodium hypochlorite (NaOCl) still remains the most commonly used chemical because of its availability, cost and effectiveness. Sodium hypochlorite is effective against broad-spectrum bacteria and has the ability to dissolve both vital and necrotic tissue. However, this irrigant is equally damaging to the patient and has a history of injurious effects. Typically the NaOCl is delivered into the canal space with a syringe dose of 2-10 ml that is expelled under pressure. The ability of NaOCl to escape either through poorly sealed isolation or other means can cause serious injury to the patient. Injury from NaOCl is well established in the literature and has been attributed to three main errors: poor handling, injection beyond the apical foramen and allergy. Poor handling injury can result in operator and/or patient injury to the eye and/or skin. Injection beyond the apical foramen can result in the following:

- immediate and severe pain
- edema to adjacent tissue
- edema to the lip, infraorbital region and side of face
- intense bleeding from within the canal space
- skin and mucosa bleeding
- intestinal bleeding
- paraesthesia
- secondary infection.

Allergy from NaOCl is rare but has been reported and may result in severe pain, a burning sensation, edema and transient paraesthesia.

Methodology

Although there is no universally accepted irrigation protocol regarding endodontic treatment, it is the duty of clinicians to apply evidence-based dentistry within clinical parameters to provide their patients with the highest standard of care with minimal morbidity. The use of NaOCl has numerous beneficial factors that maximize treatment success; however, it is the application of the liquid that can cause injury.

Micro-volume management of NaOCl has been proposed. The concept is based on the premise that endodontic instruments have irregular surfaces, crucial for dentinal preparation, and that liquids exhibit surface tension characteristics. By placing an instrument into a suitable container, the NaOCl will be carried within the surface texture of the instrument. As the operator inserts the instrument into the canal (Fig. 3), the NaOCl is carried with it. Upon instrument movement, the NaOCl is released into the canal space (Fig. 4). Surface tension and permeability of porous media (dentin) will also increase the ability of the liquid to percolate into the canal. This approach is radically different than current philosophies, as the NaOCl is introduced into the canal space in a micro-volume amount without any pressure. The operator has control of the minimized liquid while benefitting from its effectiveness.

The micro-volume management of sodium hypochlorite has been applied to numerous clinical cases. Post-operative obturation radiographs of completed clinical cases have been presented.

Discussion

The canal system inside a tooth is very complex. Although there is the presence of one or more canals, there also exist numerous micro tunnels, ribbons and sheets throughout the canal network. The canals are also housed within a porous
dentinal structure, for which the permeability has been distinguished. Although the elimination of the pulp is a relatively predictable clinical procedure, the introduction of liquids into this complex micro-network porous development further complicates matters. If the clinician introduces liquids, then the successful removal of those liquids is key to clinical success. Concepts of multiphase fluid flow through porous media, and capillaries, permeability of porous media and surface tension fluid mechanics must be recognized to validate and further advance canal irrigation.

Micro-volume management of NaOCl has been suggested as a delivery modality to maximize its bactericidal effects yet minimize its injurious effects. Surface tension fluid mechanics and permeability suggest that the NaOCl can be carried within the surface irregularities of endodontic instrumentation and deposited into the canal space and percolate within the complex network of the canal. The passive management of the irrigant in micro-volume would greatly reduce complications due to poor handling. CHX has been suggested as the larger volume, positive pressure irrigant that may be delivered into the canal space. CHX has favorable antibacterial characteristics but minimal injurious effects, if mismanagement of the irrigant has occurred. If positive pressure delivery of CHX is required, the operator should regulate the pressure and avoid the risk of injection beyond the apex. The use of EDTA (ethylenediaminetetraacetic acid) could be employed after NaOCl, to minimize the formation of precipitates.

The application of micro-volume management of NaOCl suggests that the canal space can be effectively cleaned in a conservative manner. Application of NaOCl has several advantages for its role as an endodontic irrigant, but its use must be exercised with caution in order to prevent injury.
of this principle has been applied to clinical cases with little to no post-endodontic sensitivity. Obturation has been completed with ThermaSeal and Thermafil (DENTSPLY). Even though there is evidence of sealer extrusion, the absence of post-operative symptoms and pathology suggests adequate volume for sufficient disinfection.

Further laboratory studies are required to understand permeability, fluid mechanics and multiphase fluid flow through porous media and their relation to the micro-management of NaOCl. Additional clinical investigations should be implemented to assess and validate the efficiency and efficacy of micro-volume management of sodium hypochlorite on endodontic therapy.

**Conclusions**

Introduction of lubricants and irrigants into the canal complex is crucial for endodontic success. The action of fluids in the canal complex must be understood within the context of permeability, fluid mechanics and multiphase fluid flow through porous media.

NaOCl has several advantages for its role as an endodontic irrigant, but its use must be exercised with caution in order to prevent injury. Application of NaOCl as a passive, micro-volume liquid has been illustrated.

Further consideration is required to validate the theory. The potential to minimize morbidity while maximizing clinical endodontic success seems promising for both clinician and patient.

**References**

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**About the Author**

Les Kalman, B.Sc (Hon), DDS, graduated from the University of Western Ontario with a doctor of dental surgery degree in 1999. He then completed a GPR at the London Health Sciences Centre. He has been involved in general dentistry within private practice since 2000. He has served as the chief of dentistry at the Strathroy-Middlesex General hospital. In 2011, he transitioned to full-time academics as an assistant professor at the Schulich School of Medicine and Dentistry. Kalman’s research focuses on clinical innovations, including the Virtual Facebow app. Kalman is also the director of the Dental Outreach Community Services (DOCS) program, which provides free dentistry within the community. Kalman has authored articles ranging from pediatric impression to immediate implant surgery in both Canadian and American journals. He has been a product evaluator for several companies, including GC America and Clinician’s Choice. Kalman is the co-owner of Research Driven, a company that deals with intellectual property development. Kalman is a member of the American Society for Forensic Odontology, International Team for Implantology, Academy of Osseointegration, American Academy of Implant Dentistry and the International Congress of Oral Implantology. He has been recognized as an academic associate fellow (AAID) and diplomate (ICOI). He can be contacted at lkalman@uwo.ca.
In 1985, Dr. Gary Carr introduced microscopes and ultrasonic handpieces to the specialty of endodontics in an effort to improve the quality and outcomes of surgical retrograde procedures. Before this, we used micro-head handpiece attachments that were still too big to use effectively, and their gears were prone to seizing up in the middle of the retro-prep procedure. The best visualization tools we had were headlamps and loupes — making it nearly impossible to retro-fill canals in a definitive manner.

With perfect light and multiple levels of magnification, endodontic surgery became a much more predictable procedure as we became better at finding roots and their canals from an apical approach. Perhaps as important, ultrasonic cutting tips allowed us — for the first time — to literally prepare up the root canal, dramatically increasing the quality of the preparation and the integrity of the following retro-seal. Thank you, Gary.

But a funny thing happened on the way to surgical heaven. As more endodontists trained up and incorporated these tools into their practices, they found out that light, magnification and ultrasonics could also aid us in non-surgical retreatment of failing RCT cases. Suddenly we could find calcified canals that were invisible before, we could remove separated instruments, we could remove cemented posts, and surgery became the procedure that was done only after non-surgical retreatment had been done and had failed.

As much as non-surgical retreatment improved our retreatment successes — placing a perfect retro-seal over a leaking, infected canal is an invitation to failure — there was an unintended consequence of this new endodontic treatment planning concept. Graduate students were trained to first do non-surgical retreatment on every failing RCT case before doing any surgical retreatment; however, the reality of two-year, post-graduate endodontic programs meant that the residents typically graduated before they could see their conventional retreatment cases fail, and were thus cheated of the opportunity to practice their surgical skills before getting out into practice.

Furthermore, while some dental schools such as UCLA and UOP (Westwood in Los Angeles and Pacific Heights in San Francisco, respectively) are situated in nice neighborhoods, most are not, making it less likely that a patient undergoing non-surgical retreatment would have the means to return to the post-grad clinic if that treatment did not work out. At that point, the offending tooth would usually be extracted, again, cheating the resident of the chance to save the tooth.

Author: L. Stephen Buchanan, DDS, FICD, FACD

Above: A fully segmented CT volume in preparation for 3-D printing.

Fig. 1. Segmentation begins with the canals, roots and crowns of the teeth. (Images/Provided by Stephen Buchanan, DDS, FICD, FACD)

Fig. 2. The PDL was segmented next as a separate object surrounding the roots.
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For some of us in the specialty, that’s just fine. Me? I fear for our specialty’s future. 

Clinicians typically treatment plan procedures they know and avoid those procedures they do not know how to do. That’s why implant surgeons replace teeth with implants when it would be more ideal to save some of those teeth, it’s why endodontists became known for treating and retracting hopeless teeth, and it’s why so many cases are retreated with complex and laborious non-surgical procedures, cutting off well-done crowns, posts, and cores — despite the fact that the added cost of restoration afterward makes it cheaper to remove the tooth and drop a titanium bolt in. 

So how do we train our endo residents to be better surgeons? The best solution I’ve heard is what Dr. Tom Levy has done at USC — all RCT failures are retreated non-surgically, then they are cut — and several positive things have come from this. Most important, endodontists who come out of USC now are much more confident when the flaps are back and the bleeding begins. 

The other payback for this teaching strategy — non-surgical retreatment, followed immediately by the surgical placement of apical retroseals — was that retreatments done in USC’s program became much more successful. That’s not surprising in light of the study by Andreasen, Rud and Jensen in 1972 — a computer-driven, multi-variate analysis of the factors involved in success and failure of root canal therapy. They found that when well-done RC treatment failed, apical surgery usually resolved the case. Why? Because most of the anatomic complexities in root canals are found in the apical third, so removal of the root apex removes the etiologic factor. 

It was with these issues in mind that I resolved to find better ways to teach endodontic surgical skills, not only to residents but also to those endodontists already in specialty practice. Of all the challenges I see when residents begin their surgical experience, it’s the sheer terror of the unknown that most inhibits them, specifically, where are the dangerous places underneath the soft tissue flap? In considering the best way to address this challenge, I was reminded of how pilots and astronauts are trained to do the most dangerous things in a safe, predictable manner — with flight simulators. So why can’t we do this in endo training? 

We can train on cadavers, as Dr. Carr did when developing his ultrasonic surgical technique, but that is a whole can of worms, so to speak. Cadaver heads are gross, expensive and they are hard to come by. But until recently, cadavers were our best option, short of training on living humans; however, 3-D printing technology has come into its own over the past couple of years and now offers an alternative. In a previous article published in this journal, I described how 3-D printing can be used to create anatomically authentic tooth replicas, complete with all the accessory canals, fins, isthmii and canal curvatures.
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This same technology can also be used to create replicas for teaching surgical concepts and procedures; however, printing a complete jaw section requires more preparation as well as a more sophisticated printer, because several different replica materials are needed to model hard and soft tissues. Before that can happen, each of the different anatomic structures to be represented must be "segmented" from the full CT volume. In other words, a computer-savvy anatomist must discriminate between the different structures. In the illustrations shown, first the canals, roots and crowns of the teeth were segmented together (Fig. 1), followed by the PDL (Fig. 2), the bony structures (Fig. 3) and, finally, the soft gingival tissues (Fig. 4).

Seen in Figure 5 is the first 3-D printed prototype from this segmented CT dataset. The surgical replica has the soft tissues modeled with a clear, rubber-like material (colored with a red felt-tip marker), that incises nicely with a standard 15C blade (Fig. 6), after which it is easily reflected with a periodontal elevator (Fig. 7).

Like the TrueTooth Replicas, the model material is a bit softer than dentin, so handpiece burs are run at half speed to better replicate the tactile feedback from cutting bone tissues. Cutting through the replicated bone reveals the MB root end of the MB (Fig. 8), and further osseous access reveals the MB1 and MB2 canals in the simulated cut root surface (Figs. 9, 10), after which an ultrasonic retro-prep tip is used to prepare the canal ends for filling (Fig. 11). Suturing the soft-tissue material (Figs. 12, 13), again, simulates very accurately the experience of closing surgical flaps in patients.

While this prototype has been printed with clear soft tissue and white bone and tooth structure, following replicas will be printed with red-colored soft tissue, PDL and intra-trabecular medullary tissue polymers, the teeth will be colored light yellow, and the bone and enamel will be printed in white model medium.

Editorial note: A complete list of references is available from the publisher.

Fig. 9 _Apicsection of the MB root showing the MB1 canal.
Fig. 10 _Further apicsection of the MB root showing the MB2 canal.
Fig. 11 _Ultrasonic tip ready to cut a retroprep in the MB1 canal.
Fig. 12 _Suturing begins.
Fig. 13 _Suturing completed.

L. Stephen Buchanan, DDS, FICO, FACC, is a diplomate of the American Board of Endodontics and an assistant clinical professor at the postgraduate endodontic programs at USC and UCLA. He maintains a private practice limited to endodontics and implant surgery in Santa Barbara, Calif., and is the founder of Dental Education Laboratories, a hands-on training center serving general dentists and endodontists who want to upgrade their skills in new endodontic and implant technology. Dr. Buchanan can be reached through his business, Dental Education Laboratories, www.DELendo.com, info@endobuchanan.com.
Endodontics made more efficient with the ScanX Swift

Author: Howard Golan, DDS

Technology has made endodontic treatment faster and more efficient. However, there are still parts of the endodontic protocol that cannot be avoided that add time to the procedure.

Taking radiographs is a fundamental part of endodontics. When traditional film radiographs are exposed and processed, there is a unit of time that goes by that the practitioner has to get up from the chair, leave the room and wait for the X-rays to be exposed and processed.

Digital sensor technology has significantly decreased this unit of time. The instantaneous processing of the digital image allows the practitioner to step out of the room and within minutes return to the procedure. No longer does the auxiliary have to process the film in another room, sometimes at the other end of the office, wait for the processing time, either dip or automatic, then return to the practitioner for evaluation.

However, digital sensor technology does have its negatives. First, the sensor girth makes it sometimes very difficult for placement in the patient’s mouth. Now compound that by trying to fit this sensor around a rubber dam and clamp. As a practitioner who has done his fair share of endodontics, placement of the film is of utmost importance in order to see the apex of the tooth being worked on. When a rubber dam clamp is placed, a rigid sensor can be difficult to place in the right position. If it moves or the patient moves it because he/she is uncomfortable, then repeat exposures may be needed.
A second disadvantage of sensor technology is cost. These sensors are expensive, and when they break down, which is inevitable, or they are out of warranty, their replacement cost is high.

An endodontic clinician has another option that takes advantage of digital technology, reduces the cost in the future and will not have any placement or exposure issues like one can have with sensors. Phosphor storage plates (PSPs) are thin, flexible digital sensors that are exposed similarly to traditional dental film. With similar dimensions to film, PSPs allow for ease of placement and can be used with rubber dams and ring systems. Like other digital radiological technology, the dosage required to expose PSPs is less than traditional film. Furthermore, the plates are disposable. The replacement cost of the plates per the number or exposures per plate ends up being similar to traditional film costs. The processor for these plates, although an initial investment similar to sensors, has no moving parts and has a lifespan years and years longer than sensors.

As with sensors, PSP technology can have disadvantages. One is the separate processing and exposure mediums. Once a PSP is exposed in the patient’s mouth, the PSP is delivered to the processor that is usually in a non-treatment room or hallway with a computer attached. Thus, the auxiliary or clinician exposes the PSP, removes his/her gloves and walks the plate to the digital processor. This prevents the instantaneous advantage that sensors have over PSPs.

However, a new PSP processor has been developed to close the gap between the exposure and the processing. The ScanX Swift™ (Air Techniques) is a one-slot PSP processor that is small enough to fit on a countertop in a dental treatment room. Thus, the auxiliary does not need to leave the treatment room after exposing the film. Once the plate is exposed, the auxiliary places the plate into the ScanX Swift, and in seconds, the image is in front of the operator ready for evaluation. In addition, there is a protective barrier that is placed over the ScanX Swift’s slot so that the auxiliary exposing the film does not have to deglove in order to process the image.

The ScanX Swift provides the endodontic practice with almost instantaneous digital X-ray processing by moving the digital processor into the treatment room. This saves time. The one-slot processor provides a more economical option for those practices, such as endodontics, that do not take a large amount of X-ray series.

The ScanX Swift enhances infection control and lowers the cost of gloves and disposables by allowing the exposurer of the X-ray to remain in the treatment room and contain possible cross-contamination.

Finally, the PSPs are disposable, reducing high replacement costs in the future. Endodontic practices should seriously consider incorporating the ScanX Swift into their X-ray protocols. They will enjoy its convenience, long-term cost savings and quality of image processing.

Howard Golan, DDS, is a graduate of the University of Michigan School of Dentistry. He completed a general practice residency at North Shore University Hospital on Long Island, New York. After his GPR, Golan completed a two-year implant surgery and advanced prosthetic fellowship at NSUH. He has maintained a busy private practice on Long Island that he shares with his father, Marshall Golan, DDS. Golan implemented lasers into his practice in 2004 and has attained his mastership certification in the World Clinical Laser Institute. Golan has been fortunate to be asked to lecture and teach laser-assisted dentistry throughout the United States and internationally. He is the co-founder of the Center for Laser Education and is a faculty member with the World Clinical Laser Institute, teaching certification training courses for that organization. Golan has instituted CAD/CAM technology into his practice for seven years and has lectured on the subject. He is a graduate of the Alleman Center for Biomimetic Dentistry. He graduated from Concord Law School and has passed the California Bar Examination, obtaining his license to practice law in that state. Golan excels in teaching quick and productive integration of laser-assisted dentistry, minimally invasive concepts and CAD/CAM technology into dental practices. He practices and teaches a biomimetic philosophy and is passionate about conserving tooth, soft tissue and bone.
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Author_Lasers4Dentistry staff

Lasers4Dentistry, a division of Technology-4Medicine (www.T4Med.com), recently launched the X-Runner™ digital laser scanning handpiece. The X-Runner was designed specifically for the award-winning LightWalker AT Dual Wavelength dental laser. X-Runner is the first ablative all-tissue laser scanning handpiece in the dental industry. The X-Runner has automated all-tissue ablation capabilities and lets the user instantly adjust spot size and shape of the cutting area.

X-Runner is the perfect tool to use whenever precise, deep or wide cuts need to be made in hard or soft dental tissues. The shape and size of an ablation area can be selected in advance to optimize the cutting process, enabling dentists to work more precisely, faster, with enhanced patient comfort and with greater ease than ever before. The new X-Runner is ideal for a wide range of treatments, from standard cavity and veneer preps to high-precision surgical and implantology procedures.

All parameters and settings that are available with the Lightwalker AT’s standard laser handpieces (energy, frequency, mode, spray) can also be used with X-Runner. Dentists can instantly switch between the new automated modality and the classic handpiece modality without the need to swap handpieces. X-Runner offers a variety of treatment shapes (circular, rectangular/linear and hexagonal, etc.) that can be set according to a number of parameters, such as the size of the ablation area (width and length, or diameter in the case of the circle and hexagon) as well as the number of laser passes needed to produce the desired ablation depth. X-Runner can also produce a precise linear cut, for instance, to cut the root apex or to perform an incision in soft-tissue surgery. You can watch the X-Runner in action at www.t4med.com.

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LVI Core I three-day course is designed for doctors and their teams to learn together

As a patient, I expect the best care I can find. As a doctor, I want to deliver the best care possible. That takes us to the power of continuing education, and as doctors we are faced with many choices in continuing education.

As a way to introduce you to the Las Vegas Institute for Advanced Dental Studies, or LVI, I want to outline what LVI is about and what void it fills in your practice. The alumni who have completed programs at LVI were given an independent survey, and unlike the typical surveys, 99.7 percent said they love practicing dentistry, and of those surveyed, 92 percent said they enjoy their profession more since they started their training at LVI. That alone is reason enough to go to LVI and find out more.

While the programs at LVI cover the full breadth of dentistry, the most powerful and life-changing program is generally reported as being Core I, or Advanced Functional Dentistry — The Power of Physiologic-Based Occlusion. This program is a three-day course that is designed for doctors and their teams to learn together about the power of getting their patients’ physiology on their side. In this program, doctors can learn how to start the process of taking control of their practice and start to enjoy the full benefits of owning their practice and providing high-quality dentistry.

Whether he or she works in a solo practice or in a group setting, every doctor can start the process of creating comprehensive care experiences for his or her patients.

We will discuss why some cases that doctors are asked by their patients to do are actually dangerous cases to restore cosmetically. We will discover the developmental science behind how unattractive smiles evolve and what cases may need the help of auxiliary health care professionals to get the patient feeling better. The impact of musculoskeletal signs and symptoms will be explored and how the supporting soft tissue is the most important diagnostic tool you have. Not simply the gingiva, but the entire soft-tissue support of the structures not just in the mouth but also in the rest of the body.

A successful restorative practice should not be built on insurance reimbursement schedules. An independent business should stand not on the whims and distractions of a fee schedule but rather on the ideal benefits of comprehensive care balanced by the patients’ needs and desires.

Dentistry is a challenging and thankless business, but it doesn’t have to be. Through complete and comprehensive diagnosis, there is an amazing world of thank-yous and hugs and tears that our patients bring to us, but only when we can change their lives. The Core I program at LVI is the first step on that journey.

That’s why when you call, we will answer the phone, “LVI, where lives are changing daily!”

Author: Mark Duncan, DDS, FAGD, LVIF, DICOI, FICCMO, Clinical Director, LVI

Las Vegas Institute for Advanced Dental Studies offers Core I, a three-day course for doctors and their teams. (Photo/Provided by Las Vegas Institute for Advanced Dental Studies)
Please note that all the textual elements of your submission:

- complete article
- figure captions
- literature list
- contact info (email address please)
- author bio

must be combined into one Microsoft Word document. Please do not submit multiple files for each of these items. In addition, images (tables, charts, photographs, etc.) must not be embedded in the text document. All images must be submitted separately, and details about how to do this appear below.

If you are interested in submitting a C.E. article, please contact us for additional instructions before you make your submission.

Text length

Article lengths can vary greatly — from a mere 1,500 to 5,500 words — depending on the subject matter. Our approach is that if you need more or less words to do the topic justice, then please make the article as long or as short as necessary.

We can run an extra-long article in multiple parts, but this is usually discussing a subject matter where each part can stand alone because it contains so much information. In addition, we do run multi-part series on various topics. In short, we do not want to limit you in terms of article length, so please use the word count above as a general guideline and if you have specific questions, please do not hesitate to contact us.

Text formatting

Please use single spacing and do not put extra space between paragraphs. We also ask that you forego any special formatting beyond the use of italics and boldface, and make sure that all text is left justified.

If you would like to emphasize certain words within the text, please only use italics (do not use underlining or a larger font size).

Boldface should be reserved for article headlines, headers and subheads please.

Please do not "center" text on the page, add special tab stops or use underlines in your text as all of this must be removed manually before layout. If you require a special layout, please let the word processing program you are using help you to do this formatting automatically rather than doing it manually.

If you need to make a list or add footnotes or endnotes, please let the word processing program do it for you automatically.

There are menus in every program that will help you apply all sorts of special formatting.

Image requirements

Please number images consecutively by using a new number for each image. If it is imperative that certain images are grouped together, then use lowercase letters to designate the images in a group (i.e., Fig. 2a, Fig. 2b, Fig. 2c).

Insert figure references in your article wherever they are appropriate, whether that is in the middle or end of a sentence, but before the period rather than after. Our preference is to have figure references noted in the appropriate place within the text, as it helps the readers to orient themselves when moving through the article. In addition, please note:

- We require images in TIF or JPEG format
- These images must be no smaller than 4 x 4 inches in size at 300 DPI
- Images should be 1 MB in size each

If you have an image that is greater than 1 MB, please do not bother "sizing it down" to meet our requirements, but send us the largest file size available. The larger the starting image is in terms of bytes, the more leeway the designer has in terms of resizing the image to fill up more space should there be room available.

Also, please remember that you should not embed the images into the body of the text document you submit. Images must be submitted separately from the textual submission.

You may submit images through a zipped file via e-mail, unzipped individual files via email or post a CD containing your images directly to us (please contact us for the mailing address as this will depend upon where in the world you will be mailing them from).

Please do not forget to send us a head shot photo of yourself that also fits the image requirements noted above so that it can be printed along with your article.

Abstracts

An abstract of your article is not required. However, if you choose to provide us with one, we will print it in a separate box.

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At the end of every article is a contact info box with contact information along with a portrait photo of the author.

Please note at the end of your article the exact information you would like to appear in this box and format it according to the previously mentioned standards.

A short bio (50 words or less) may precede the contact info if you provide us with the necessary text.

Questions? Comments?

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Core I: Advanced Functional Dentistry –
The Power of Physiologic Based Dentistry
The Future of Dentistry Awaits You

The LVI Core I program encompasses the principles in physiologic restorative concepts creating excellence in care for your patients and prosperity for you. This program will start you on a path to greater understanding and enjoyment of our profession while creating loyal, enthusiastic and grateful patients!

This exciting three-day, hands-on program shows you how to evaluate cases and educate your patients for advanced restorative dentistry and more comprehensive case acceptance. For many of your patients you will learn how to eliminate a lifetime of pain that no other medical professional has been able to address, and for some learn how you can actually save their lives!

In essence, become a mouth doctor with ability to do things you never were taught in dental school. You have patients in your practice RIGHT NOW that can benefit from these concepts and you have the opportunity to change their lives starting the day you return to your office.

Dr. Bill Dickerson, Dr. Heidi Dickerson and Dr. Mark Duncan will present this information in a practical, easy to understand manner where you will feel comfortable presenting these exciting and practice building new options to your patients on Monday. Don’t miss this golden opportunity to find out about this incredible world of dentistry that awaits you!

Core I guarantee: We are so sure you will be satisfied with this course that we offer a money back guarantee!

“LVI has given me a new driving force in my career. It has recharged my enthusiasm for dentistry and made me realize that my career choice was not a mistake.”
—Dr. Charles Shin, Siouxville, ON

“I wish I would have attended LVI earlier in my career. I still have time to make a difference but this info is too valuable to not be used throughout an entire dental career.”
—Dr. Tim Sümeman Algonquin, IL

“Not only did I learn what I didn’t know about dentistry, I learned how to help my own long history of pain in the head and neck. Thanks for the missing link.”
—Dr. Paul Bell, Denver, CO

Upcoming 2014 DATES
February 19-21 - LVI (Las Vegas)
March 27-29 - Toronto
June 18-20 - LVI (Las Vegas)
October 1-3 - LVI (Las Vegas)
December 10-12 - LVI (Las Vegas)

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