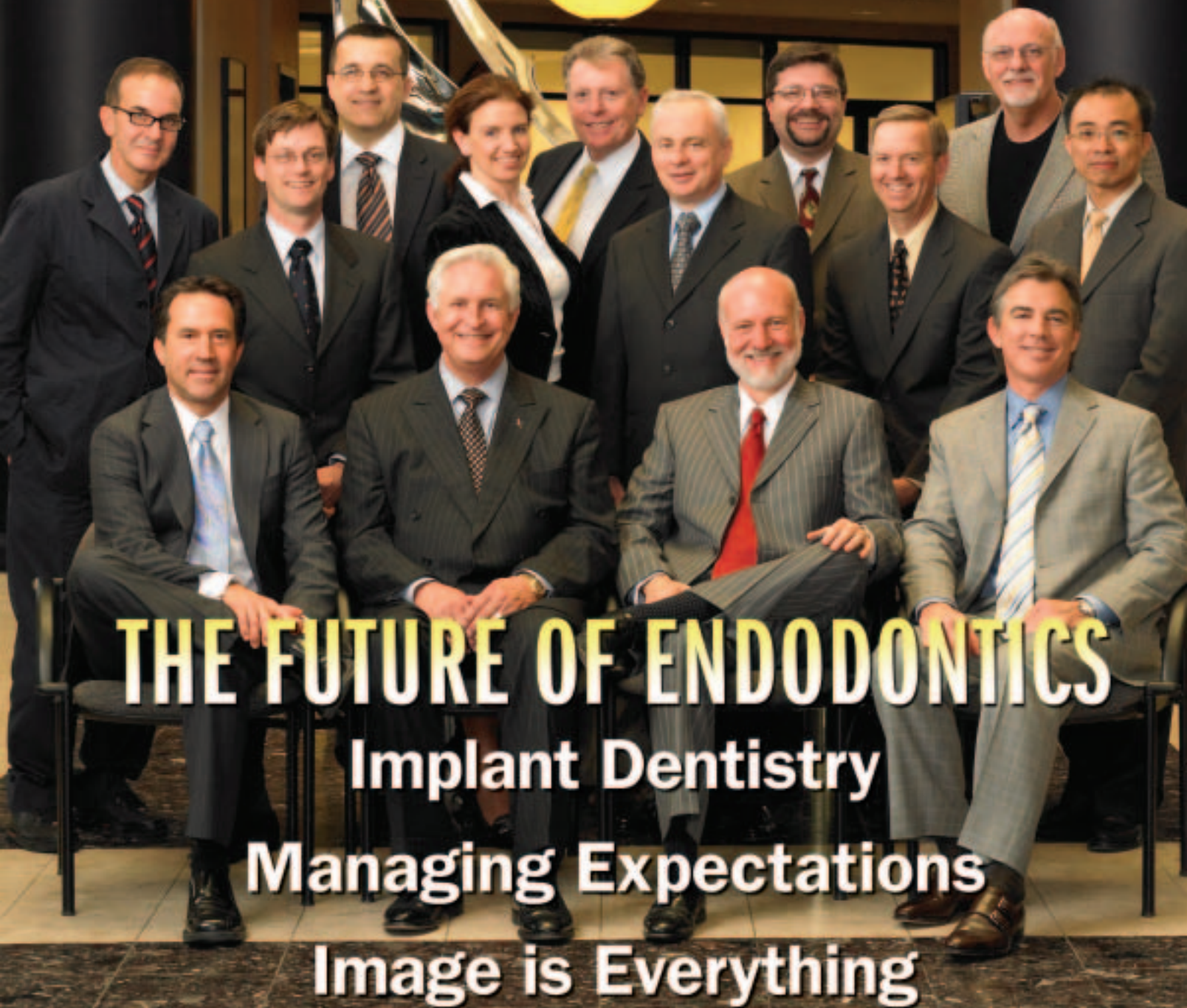


FALL 2006 / WINTER 2007

# IVI Visions



**THE FUTURE OF ENDODONTICS**

**Implant Dentistry**

**Managing Expectations**

**Image is Everything**

# IPS e.max®

# IPS

IPS **e.max**<sup>®</sup>

**all ceramic**  
**all you need**

IPS e.max<sup>®</sup> delivers the ultimate in metal-free esthetics and strength utilizing both Pressable and CAD/CAM technologies.

Designed with versatility and simplicity in mind, IPS e.max lets you select from multiple framework materials including Zirconium Oxide, giving you the **versatility** you want while always veneering with the same ceramic giving you

the **simplicity** you need. IPS e.max provides outstanding esthetics, high strength, and predictable shade matching even with difficult combination cases. Now, the laboratory can produce the highest quality esthetic restorations using the most progressive fabrication methods with the industry's most innovative materials.

**IPS e.max... all ceramic... all you need!**

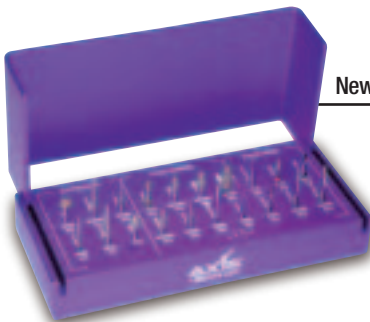
[www.getemax.com](http://www.getemax.com)  
[www.ivoclarvivadent.us](http://www.ivoclarvivadent.us)

IPS e.max<sup>®</sup> is a registered trademark of Ivoclar Vivadent AG. All rights reserved. © 2008 Ivoclar Vivadent AG. All other trademarks are the property of their respective owners. All rights reserved. All other trademarks are the property of their respective owners. All rights reserved.

100% CUSTOMER SATISFACTION  
GUARANTEED

ivoclar  
vivadent

# AXIS Dental... now rolling with the Las Vegas Institute!



New LS-7541 LVI Esthetic Preparation Set from AXIS Dental



**Viva Esthetics! Viva Productivity! Viva LVI!** We don't just sell burs, we sell better dentistry. Better dentistry is the goal of LVI and we're proud to be their new partner. In honor of this occasion, we've developed, with LVI, the new LS-7541 LVI Esthetic Preparation Set with everything you need to more efficiently and effectively enhance every anterior, posterior and finishing procedure. Tell your dealer you want to see this new kit and other NTI Rotary Instruments from AXIS. **GUARANTEED 100% Satisfaction.**



CALL YOUR PREFERRED AUTHORIZED DEALER OR 888.654.2947 OR [www.axisdental.com](http://www.axisdental.com)



FALL 2006 / WINTER 2007

## TABLE OF CONTENTS

- 6** Is Good The Enemy of Great?  
WILLIAM G. DICKERSON, DDS, FAACD, LVIM
- 10** The Weathers Report  
*The Future of Endodontics*  
ARTHUR "KIT" WEATHERS, JR., DDS
- 16** Implant Dentistry  
*Becoming much less mysterious and evolving quickly*  
LEO J. MALIN, DDS
- 31** The Future of Endodontics
- 69** Product Reviews  
MICHAEL MIYASAKI, DDS, LVIM
- 76** Performing Life-Changing Dentistry  
WILLIAM G. DICKERSON, DDS, FAACD, LVIM
- 82** Managing Expectations  
DR. BRETT TAYLOR, BDS; FICD; FPFA
- 88** Image is Everything  
BRAD DURHAM, DMD

The Las Vegas Institute for Advanced Dental Studies (LVI) publishes LVI Visions. Please send any comments or suggestions to 9501 Hillwood Dr., Las Vegas, NV 89134. Telephone (888) 584-3237 or (702) 341-7978. Web address • [www.lviglobal.com](http://www.lviglobal.com).

Copyright ©2007 – Las Vegas Institute for Advanced Dental Studies.

All rights reserved. No part of this publication may be reproduced in any form without written permission from the Las Vegas Institute for Advanced Dental Studies. LVI does not verify any claims or other information appearing in any of the advertisements contained in this publication.





EndoSolutions™

www.endosolutions.net

800.215.4245

Distributor of Quality Endo Products

NiTi Rotary Files Hand Files

Obturation Gutta Percha Paper Points

Sonics Handpieces Sonic Shapers

Motors Contra Angles Mini Latch

Restorative Motors Instrumentation

Medicine Touch & Heat

Obturation

Ha

Cont

Restor

NiTi Rotary



*The Endo Experts*

As Designed by Dr. Kit Weathers

*CHANGING DENTISTRY. CHANGING LIVES.*



E D I T O R I A L  
BY WILLIAM G. DICKERSON, DDS, FAACD, LVIM

---

# *Is Good The Enemy of Great?*



*This is the statement made in Jim Collin's book, "Good to Great" I really believe it is. Way too often dentists don't evolve, or improve because things are going good. Perhaps they are good dentists, but not great dentists, so comfort in status quo provides them no incentive to become better. I mean, how often have we said, "That's good enough"?*

**M**ost great people had some reason to become great. Something motivated them. The truth is that the really great dentists were at a low point in their careers that propelled them to become great. Perhaps they were unhappy in their profession. Perhaps they were not doing the types of procedures they wanted to do. Perhaps something made them seek to become more than they were. All were not satisfied with their current situation even if that situation was considered to be good by others.

So it would seem correct then that good is the enemy of great. If someone is doing good, and they are satisfied with their professional situation, then there would be no motivation to improve things. Doing good stifles the impetus to propel the person toward greatness. With this in mind, it would behoove us all to evaluate (if we are satisfied with our current situation) if we are preventing ourselves from improving and becoming great. Are you content with mediocrity because financially things are going well? Are you

doing "good" and therefore not evolving professionally? Do you know that you can be better, perhaps even great, but just procrastinate because things are going so well?

But being great also requires a great team. We need to consider the team we have on our "bus". In the survey I did of those dentists who were successful, all attributed much of their success to their team. All felt they had the right people on their "bus". It is imperative that we get the wrong people off the bus and the right ones ON the bus.

# *To be great, you need to build a culture of self-disciplined people.*

In Jim Collin's book, he states that it's important to get the right WHO, then tell them WHAT to. Many dentists will hire the WHAT. Someone who knows WHAT to do (dental experience), but is not the WHO that should be working for the exceptional team. Do you have the right people on your bus? Remember, good is the enemy of great in your team members as well.

Some people say you need to motivate your team. That you need to create a system that does just that. Often times I will hear a dentist tell me that my Piece Of the Pie payroll system does not motivate their team (discussed in my book, "*The Exceptional Dental Practice*", and "*In Search of the Ultimate Practice*"). They are afraid of it, or would just rather have a guaranteed salary even if it means making less than they can make under POP. Truth is, you need to get self-motivating people and then just don't

DE-MOTIVATE them. I would say that the people who are afraid of the POP system are not the right people on your "bus". Find a self-motivating person and the POP will then not de-motivate them. Is YOUR team self-motivating? Are you de-motivating them?

To be great, you need to build a culture of self-disciplined people. Who engage in disciplined thought and disciplined action. Are they organized? Do you know what needs to be done to make sure the patient experience is a good one? Is your team self-disciplined?

*no one can be great  
at anything they  
don't like doing.*

And lastly, no one can be great at anything they don't like doing. You can be good at your job, but not great. All the great companies are passionate about what they do. Are you passionate about what you do? Can you be the best at what you do with proper training? Do your clients perceive you to be the best at what you do? Are you providing them the best care and service possible?

If not, then becoming great will be impossible. If you lack the passion about what you do, then find a source that can provide you with that passion. Obviously I believe LVI is that source, but regardless of where you fit in, just find it. Before you know it, your career will be over and you'll know that you were only good, perhaps worse, and missed a chance at really being GREAT. How sad would that be? Remember, good enough... seldom is.



# WILLIAMS DENTAL LABORATORY

NEUROMUSCULAR AND AESTHETIC DENTISTRY

Williams Dental Lab is a small team  
of dedicated LVI trained technicians,  
providing personalized service  
and achieving exceptional results.

*... every day.*

Case completed at LVI  
[ Advanced Functional  
Aesthetics course 2/10/2006 ]



DR. BRAD DURHAM, LVIM

Who does LVI's first Mastership dentist,  
Dr. Brad Durham trust to do his lab work?



BOB CLARK, CDT, IVIM

*... LVI's first Mastership recipient for technicians  
... of course!*

DR. STEPHEN BURCH, LVIM

DR. BURCH AND DR. DURHAM BOTH CHOSE WILLIAMS  
DENTAL LAB TO PERFORM ALL OF THEIR LVI MASTERSHIP  
CASES, AND CONTINUE TO USE THEM EXCLUSIVELY.

800 · 713 · 5390

408 · 842 · 6269

[bob@WilliamsDentalLab.com](mailto:bob@WilliamsDentalLab.com)

# WILLIAMS DENTAL LABORATORY

NEUROMUSCULAR AND AESTHETIC DENTISTRY

7510 ARROYO CIRCLE · GILROY · CALIFORNIA · 95020

# THE WEATHERS' REPORT

THE FUTURE OF ENDODONTICS



Arthur "Kit" Weathers, Jr. DDS

**O**n May 18 and 19, 2006, LVI invited 15 of the top leaders in endodontic education to share their vision of the Future of Endodontics. They came from all over the globe and judging from the wealth of information that was packed into those two amazing days, the future of endodontics is indeed bright and promising.

Topics ranged from a new coating process to make files and other instruments stronger, sharper and highly resistant to breakage, to an irrigation system that floods the root canal with sodium hypochlorite without the usual risk of apical extrusion. Other topics included the consequences of blade geometry to rotary file function and new methods for providing hands-on, endodontic education.

There were three separate forums focusing on the following topics:

## *Materials in Endodontics for the 21st Century*

W. Ben Johnson, DDS-Moderator

## *Conceptual Design and Application*

L. Stephen Buchanan, DDS-Moderator

## *Endodontic Education, Dental School and Beyond*

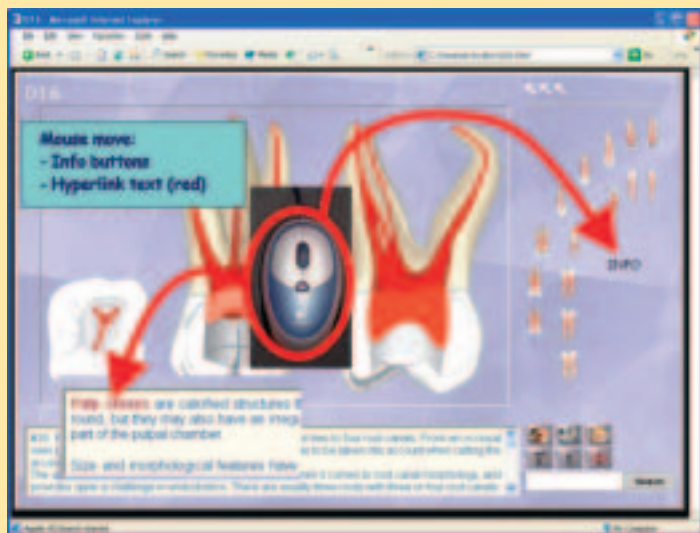
Arthur "Kit" Weathers, Jr., DDS-Moderator

Attendees also learned about a new education program called “Visual Endodontics,” which provides instant access to thousands of topics and images designed to educate the doctor as well as the patient. Using Visual Endodontics, the dentist can instantly create endodontic presentations on virtually any topic, or learn how to perform any of hundreds of procedures, with the

wealth of information contained in the program. There is an extensive index of topics and hundreds of hyperlinks making it easy to navigate throughout this fascinating program. The material is constantly being expanded, and program updates will keep everything fresh and current.

Visual Endodontics is a multimedia program that encompasses the entire

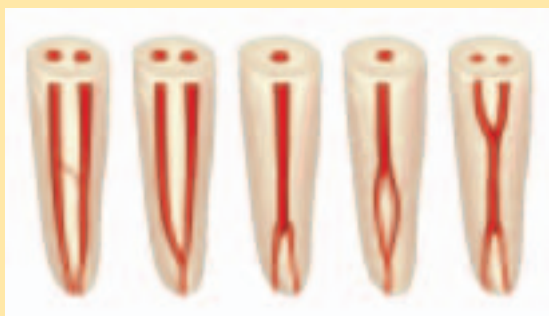
field of endodontics and dental trauma with special emphasis on easy access to photographs, videos and structurally organized clinical and theoretical information. The program contains more than 2400 high-resolution pictures (color photos, radiographs, drawings, transmission electron microscopy (TEM), scanning electron microscopy (SEM),



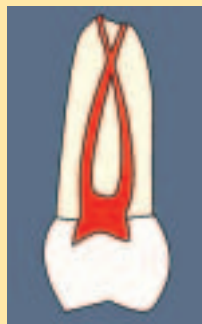
**Figure 1**



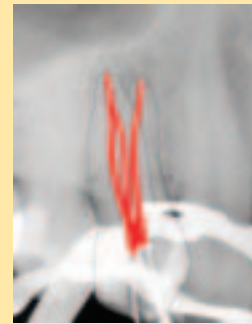
**Figure 2**



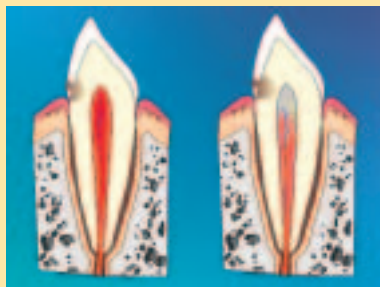
**Anatomical variations of canals in lower premolar**



**Canals sometimes cross each other**



**Canals join in buccal root of maxillary premolar**



**Decay causing damage to the pulp – good illustration for patient explanations**



**Internal resorption**



**Tracing a fistula using a gutta-percha point**

and histological pictures). In addition, the software contains 26 narrated digital videos of a variety of endodontic procedures, taken mostly through the surgical microscope. Among the many features of the program are CT scan animations of real patients giving a unique, three-dimensional understanding of con-

ditions such as resorption, apical periodontitis or invagination.

The Visual Endodontics curriculum is extremely easy to use, and the Help module even contains video presentations showing in detail how to use the various functions of the program. Examples and excerpts from the program are shown in figures 1 and 2.

Attendees and presenters alike agreed that Las Vegas Institute provides a neutral teaching environment where speakers can comfortably present widely diverse opinions on various aspects of endodontics, and we look forward to hosting a series of similar programs at the institute.

*Dr. Kit Weathers  
is featured in LVI's  
Endo Root Camp*

**2007**

January 19-20

February 23-24 (Griffin, GA)

March 9-10

April 13-14 (Griffin, GA)

May 18-19

June 22-23

August 24-25 (Griffin, GA)

September 16-17

October 5-6 (Griffin, GA)

October 26-27

November 30 – December 1

**PAGE 1 SOLUTIONS**

Do YOU dominate the INTERNET?

Websites that Generate Business!

- search engine positioning
- website design

At Page 1 Solutions, we offer sales-driven dental web sites that are fully customized for your practice.

We guarantee 1st-page search engine results. If you don't appear on Page 1 of the search engines, you don't pay.

www.page1solutions.com

Page 1 Solutions is proud to offer several scholarships to the Las Vegas Institute for 2006. Ask us for details!

Get more patients from the web! Call for a no-obligation consultation. 1.800.916.3886

Introducing  
**The LVI Stratos® System**



SYSTEM PRICE  
**\$1,295<sup>00</sup>**

Includes carry case, LVI Calibrated Stratos 100  
and LVI Occlusal Analyzer

*The LVI Stratos®  
Occlusal Plane  
Analyzer accurately  
transfers orientation of the  
maxillary arch in relation to  
the long axis of the body  
to the Stratos articulator*



## LVI Occlusal Analyzer

- Simple to use
- Adjustable hamular support
- Reproducible mounting technique
- Uses anatomic landmarks not variable soft tissue landmarks
- Fixed incisive papilla pin centers the model

## LVI Calibrated Stratos® 100

Based on average anatomical values, the Stratos 100 utilizes fixed 30 degree protrusive and 15 degree bennett angles.

- Stable Easy access design
- Accepts H.I.P mounting accessory
- LVI exclusive calibration
- Magnetic Mounting System eliminates the need to send the articulator to the lab

To order call **LVI Global** at 888-584-3237

© 2006 Ivoclar Vivadent, Inc. Stratos is a registered trademark of Ivoclar Vivadent, Inc.  
LVI is not a registered trademark of Ivoclar Vivadent, Inc.



# **+** ALL THE TOOLS YOU'LL EVER NEED IN ONE SYSTEM



The Bien-Air MX system provides highly efficient, clean and easy to use tools that are:

- **COST EFFECTIVE**
- **FLEXIBLE**
- **HIGHLY PRODUCTIVE**
- **LOW IN MAINTENANCE**

Increase your efficiency with a cleaner, easier operation and more...

**FOR A DEMO CALL BIEN-AIR AT 800 433 2436  
MX SYSTEM: THE ONLY COMPLETE SOLUTION**

Bien-Air USA, Inc./Irvine CA 92614  
Tel. 1-800-433-BIEN/Fax 949-477-6051  
More information on [www.bienair.com](http://www.bienair.com)

The Optima MX is the only system that provides you the ability to perform all procedures, including high-speed, slow-speed and rotary endo with only two attachments. It combines the power of the MX motor with high precision and ergonomically designed attachments. With the aid of touchscreen display enjoy an efficient, fast and flexible solution. The built-in dual glass rod optics provide diffused illumination meaning that there will be virtually no shadows and less eye strain. The Digipad MX & DMX systems upgrades your air-driven unit to electric and saves space.

**Bien Air**  
SWITZERLAND

with [drdental.com](http://drdental.com) everything **just clicks**



- Satisfy Annual OSHA Training Requirements  
Save the average in-office training cost of—**\$600/year**
- Reduce Hygiene Department Cancellations  
Save the average "no-show" amount of—**\$85/day**
- Enhance Case Acceptance Potential  
Potential new production—**\$2,000/month**
- Select from over 130 CEUs with Subscription  
Save an average cost per CEU of—**\$35/unit**

**The DRC Advantage—  
The Numbers Are on Your Side!**

**Only \$499/Year!**



*"In today's environment, the value of education and advanced training is essential for every dental practice and dental team. Access to information that will impact your practice and your patients is imperative to manage your practice successfully and provide the very best oral health care to your patients."*

**— Dr. Bill Dickerson**  
President and CEO, LVI Global

**Visit [www.drdental.com](http://www.drdental.com) or ask your  
Sullivan-Schein Sales Consultant for a Demo Today!**

Instant Access to 15,000 MSDS • 1,300 Equipment Manuals • Daily OSAP Updates • Drug Index • Oral Pathology • Dental Guidelines

**DRC**  
Dental Resource Center  
[www.drdental.com](http://www.drdental.com)

**ADAC·E·R·P**  
CONTINUING EDUCATION RECOGNITION PROGRAM

**A**  
Academy  
of General Dentistry

**Sullivan-Schein**  
A HENRY SCHEIN COMPANY

# Implant Dentistry.

Becoming much less mysterious  
and evolving quickly.

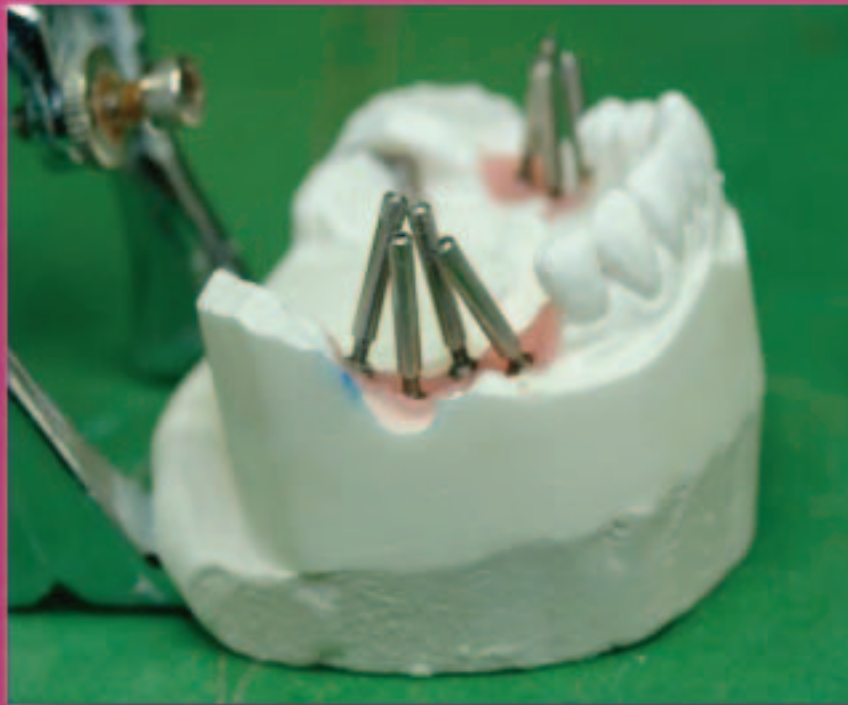


Leo J. Malin D.D.S.





*The diagnostic protocols used in implant dentistry today are dynamic and changing rapidly as more and more clinicians experience the technologies available. These technologies are providing control to clinical cases that clinicians could only dream of a short time ago. This clinical control is engaging our profession in a way that it has not in the past. The technologies that I am referring to are CAT scan technologies and virtual treatment planning software for implant dentistry.*



*Example of a implant disappointment.*

Since I accepted the opportunity and responsibility to teach the implant courses at LVI, implant dentistry has changed dramatically. The clinical courses at LVI are responding to that change. The implant evolution is upon us. At LVI, and in clinics across North America and abroad, patients are receiving higher quality implant dentistry because of this evolution.

Unfortunately, many dental careers come and go with the dental clinicians having very little exposure or success in implant dentistry. Even today, a vast majority of general dentists do not get involved in implant dentistry because they find the process complicated, and full of potential pitfalls. Implant dentistry's biggest challenge has not been the lack of quality implant products but rather a lack of interest from dental providers. Oftentimes the number one reason that dentists do not

offer implant dentistry to their patients is because they feel that they are responsible for the clinical outcome of the case, but do not fully understand how to control that outcome. We as a profession find implant dentistry much less predictable than other procedures that we have developed and endorsed. Most of us as clinicians have had an experience or two where the clinical outcome was not satisfactory either aesthetically or functionally. As a result, many dental providers get out of the implant game. Unfortunately that does not satisfy the needs of the patients that we treat.

The clinical control of implant dentistry that we have been searching for is here. The marginal results that are common in implant dentistry have more to do with lack of diagnosis than lack of ability or desire. The technology that is available today gives us the capability of diagnosing cases com-

pletely before we start treatment. This capability virtually eliminates compromised care, and gives every dentist in our profession the ability to get involved in the process and succeed at a very high level. Let me clarify that last statement. What I am saying is every licensed dentist who endorses this technology should have complete control of his or her implant cases. It does not mean that they should or should not do the surgery themselves, but it does afford them the ability to control their cases and communicate effectively between dental providers. That is a significant freedom and capability we have not had before.

C. T. technology has been around for a long time in the medical community, but rarely utilized in the dental field. The biggest obstacle the dental profession has had to overcome is access to the technology, and the costs associated with this technology. Both of these



*A similar disappointment.*

barriers have been significant to overcome. Currently, CAT scan units are available that are specifically designed for dental radiology. These units are now available in dental offices and radiology labs across the country. The costs associated with owning these units or purchasing the required radiographs is now manageable and profitable in the dental practice. Additionally, these dental CT units supply the images required for implant dentistry with significantly less radiation exposure as compared to the typical hospital CAT scan units.

The second significant advance in implant dentistry is the use of virtual treatment planning software. There are several treatment planning software choices currently on the market. These software choices are used to take CAT scan data and turn that technology into a usable surgical stent. Both the

CT technology and the treatment planning software are essential to gain complete control of an implant case. This technology enables the clinician to look at a clinical case in three dimensions, and evaluate the patient completely before any treatment starts. It is this precise control which enables the dentist to successfully provide functional and aesthetic results that patients are requiring today. Many dentists are now getting involved in the surgical placement of implants because they can fully understand the process and maintain control through treatment. Surgical surprise is virtually eliminated. Compromised care is often eliminated as well.

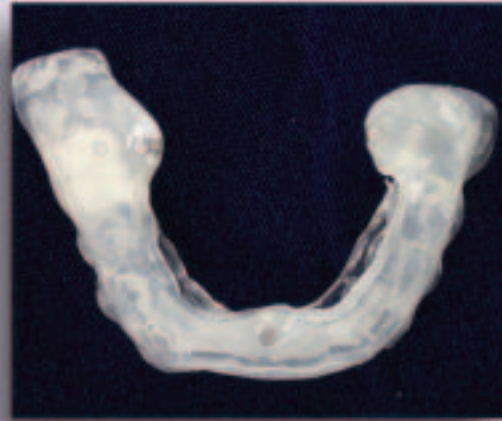
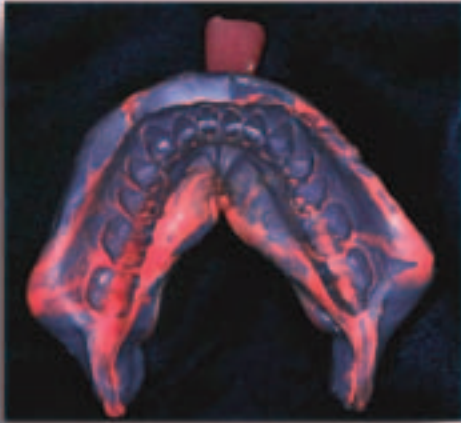
In this article, I will explain the systematic process for engaging this technology into a dental practice. I will also discuss the benefits of this technology,

and show clinical cases where this technology was incorporated.

In my office, and in the classes that we teach at LVI, we used the I-CAT to capture the CAT scan images and use the coDiagnostiX treatment planning software to evaluate those images and turn that data into precise surgical stents. To eliminate surgical surprise, it is mandatory that we evaluate surgical sites in three dimensions. The third dimension is achieved by the CAT scan image. This information is very valuable when the three-dimensional data has to be incorporated into a usable surgical stent. Treatment planning software is necessary to achieve surgical control. Let us evaluate now how that control is achieved.

There are eight basic steps to prepare the patient for implant surgery using C. T. technology and coDiagnostiX software.

# Eight Simple Steps to a Safe



*Capture an accurate impression for the laboratory fabrication of the scanning appliance.*

*The laboratory constructs the scanning appliance.*



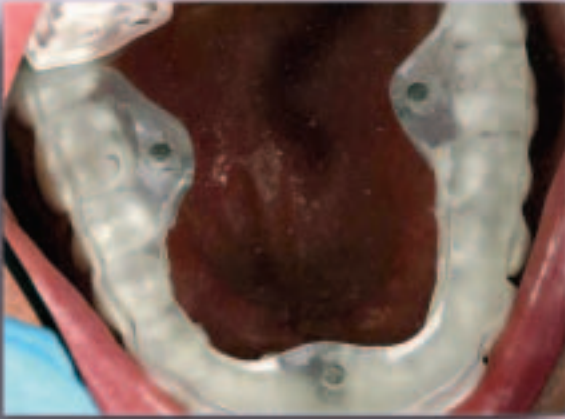
*Surgical drilling stint constructed by the laboratory from the treatment plan derived from the doctor.*



*Surgical drilling stint ready for surgery.*

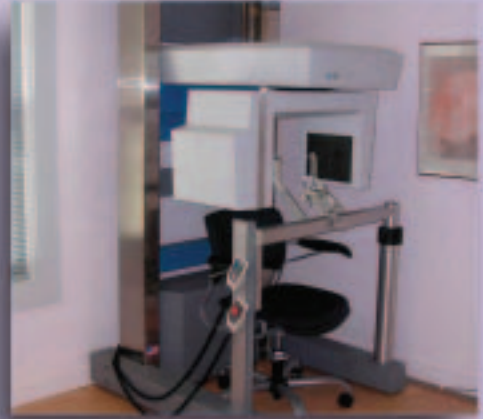
**End:** One successful implant case!

# Precise Implant Procedure:



3

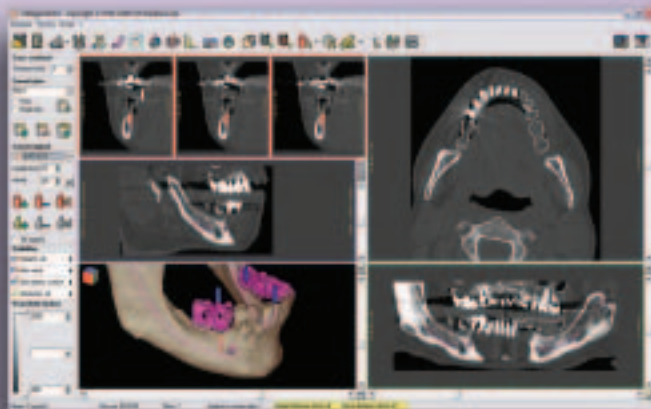
*Scanning appliance tried in the patient's mouth to ensure precise fit.*



4

*Patient's CT scan completed using scanning appliance.*

6



*Doctor plans case using coDiagnostiX software.*

5



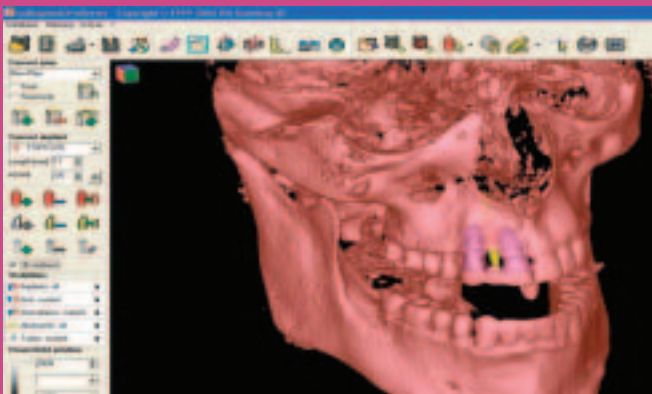
*Information from CT scan converted into coDiagnostiX software.*



*P.A. radiograph of proposed implant site.*



*Scanning appliance for single implant site.*



*Treatment planning software showing proposed implant placement.*

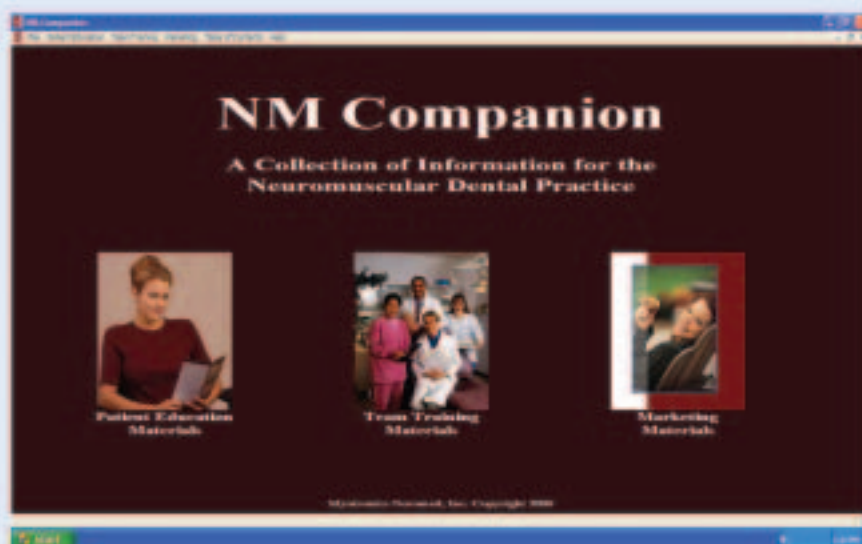
- 1. Get a very good impression and construct a model of the dental arch, which is requiring dental implants.*
- 2. Send that impression or model to Implant Solutions or Aurum Ceramic Dental Laboratory for construction of a surgical scanning appliance.*
- 3. Once the scanning appliance is returned from the laboratory, insert the appliance in the patient's mouth to ensure proper fit.*
- 4. A CAT scan is taken of the patient with the scanning appliance in place. This CAT scan can come from virtually any source. It can be a CAT scan in your office, at an office down the street, at a radiology lab, or in the hospital.*
- 5. Once the CAT scan is taken, data files are taken from the CAT scan source and inserted into the virtual treatment planning software or coDiagnostiX software.*
- 6. The doctor treatment plans the case using coDiagnostiX software.*
- 7. Surgical stints are fabricated by the laboratory using the data provided from the doctor's treatment plan, which he or she developed using the treatment planning software.*
- 8. The laboratory then provides the surgical stint to the doctor for implant surgery. The surgical stints precisely guide the implant placement procedures.*

The coDiagnostiX surgical stint is significantly less expensive than most other guided surgical protocols. The scanning appliance and the surgical stint for a single implant site cost a total of \$165 for the two appliances combined. Each additional site costs an additional \$35 per site. For example, a surgical stint used to place two implants would cost the clinician only \$200. That cost is significantly less than any other CT guided surgical stint that I am aware of. The average cost of the CAT scan in many areas is around \$250-\$400. The cost becomes certainly manageable if a clinician can get a CAT scan and a surgical stint made for approximately \$500, to place two implants precisely as planned. As the number of implants placed per patient goes up the cost of the technology becomes very inexpensive.

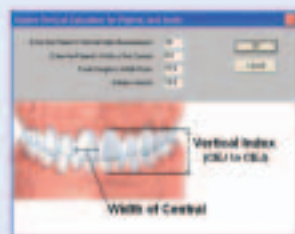
Using this diagnostic and surgical protocol, all implant sites are evaluated in three dimensions. The clinician knows the available quality and quantity of bone he has to work with. He knows from the surgical scanning appliance where the proposed tooth needs to be and if the patient has adequate bone to support that position. The clinician can choose the precise placement of the implant. He or she can determine the

# Neuromuscular Dentistry Powered by Myotronics

Now! The all-new **NM Companion<sup>®</sup> Software** provides you with a broad range of tools to help you implement NM dentistry into your practice. The software contains a multitude of practice aids including patient education, team training, marketing material and many other useful tools such as the Golden Vertical calculator.



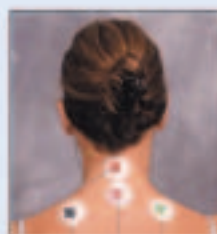
Whether you have just ordered your J-5 Myomonitor or are a veteran NM dentist, be sure to get the NM Companion<sup>®</sup>. You will be amazed at how much information and assistance the "Companion" will provide!



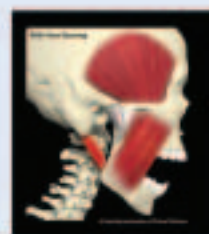
Golden Vertical Calculator



Practice Marketing Templates



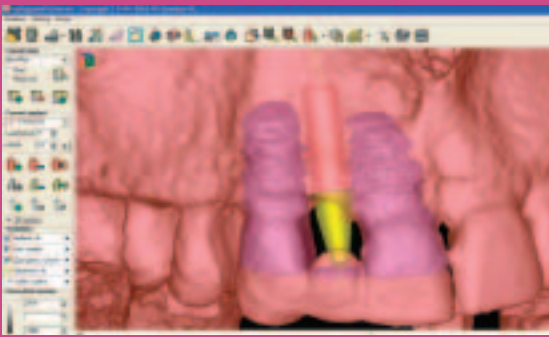
Team Training



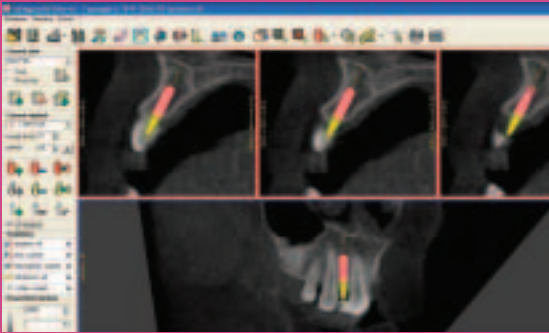
Patient Education Videos



**MYOTRONICS**  
*Helping Build the Perfect Bite*  
[www.myotronics.com](http://www.myotronics.com)



*Treatment planning software showing proposed implant placement.*



*Cross-sectional view of proposed implant placement site.*



*Start of surgery, tissue punch used to remove tissue over implant drilling tube.*



*Reducer placed in the guide tube to guide pilot drill.*

exact depths and angulations of each implant prior to placement. The clinician is fully informed on the position of adjacent teeth or adjacent vital structures as they relate to the implant site. It is very easy to predetermine which implant to place in terms of both diameter and length. Furthermore, if the implant site is not adequate to support the implant and a grafting procedure is necessary it is predetermined as well. Nothing is left to chance, all of the unknowns become known, prior to surgery. The protocol remains the same for a single implant case or a case that involves multiple implants.

A distinct advantage of this protocol is that surgery can become very noninvasive. Often, surgery is accomplished using a flapless approach. The clinician knows exactly what he or she is drilling into; therefore, there is no need to reflect the tissue to further evaluate the site. The surgical procedure is generally very quick. The surgery completely planned out, becomes a predictable mechanical procedure. This non-invasive approach routinely eliminates any significant postoperative discomfort.

The first case presented in this article is a surgical case performed by a dentist who never placed an implant before in his career. He followed the protocol that we teach at LVI to diagnose and precisely place this single implant in a difficult clinical situation. The implant was placed using a flapless surgical approach. As you can see, the system is precisely accurate. One can certainly argue about the appropriateness of this case for one's first surgical implant case but should not argue with the clinical results.

Impressions were taken for the final restoration immediately following the surgical procedure. The clinician has the opportunity to place the final restoration using his desired protocol. The entire process took four appointments. The first appointment for impressions, the second for a CT scan, the third for surgical placement of the implant and final impressions, and the fourth appointment to seat the restoration.

Cases that are more complex are accomplished in the same way. They certainly may incorporate more implant sites but the protocols remain the same. The surgical stints are fabricated with one to fourteen implant sites per arch depending on the patient's needs and desires. The next case is an example of a patient who had 28 teeth extracted, and 20 implants placed, in one appointment. Some grafting procedures were also done in the extraction sites during that appointment. Her treatment



# TEAMING UP TO DESIGN

## Mastership Smiles

Respected LVI trained clinicians all over the country like LVI Mastership recipient Dr. H. R. Makita are teaming up with Protech Dental, and its founder, Duckee Lee. They know Protech's reputation for excellence and commitment to creating the most natural looking, highest quality dental restorations available. "We have a mission," Mr. Lee affirms, "to make every doctor's vision a reality." Together, LVI Masters like Dr. H. R. Makita and Protech Dental Studio create smiles of unparalleled health and beauty.



"Advancing the Art of Aesthetics"

H. R. MAKARITA,  
DDS, MAGD, FAACD  
2006 LVI MASTERSHIP RECIPIENT



*"I relied on Protech Dental Studio for all of my cases in attaining my LVI Mastership. Through continuing education and a desire for excellence, Protech understands and meets the high expectations of the Neuromuscular, Aesthetic Clinician."*

DUCKEE LEE  
CDT, CERTIFIED LVI MASTER TECHNICIAN



*"As LVI-trained technicians, we focus on neuromuscular and aesthetic dentistry, enabling us to partner with some of the best clinicians in the U.S., like Dr. Makarita. Our work is the execution of art and science, with results that exceed the exacting demands of both our clients and their patients."*

DR. MAKARITA'S  
MASTERSHIP SMILE CASES



21145 WHITFIELD PLACE . SUITE 201. STERLING, VIRGINIA 20165  
877.737.7883 . TOLL FREE . 703.430.5556 . VA/MD/DC



EMPRESS ESTHETIC (LAYERED) . e.MAX . PORCELAIN VENEERS . ORTHOTICS  
NEUROMUSCULAR FULL MOUTH RECONSTRUCTION . CRISTOBAL+ . ZIRCONIA  
PROCERA . FULL RANGE OF IMPLANTS . PFM . PRECISION APPLIANCES

WWW.PROTECHDENTALSTUDIO.COM



*Final implant osteotomy.*



*Tissue formed over implant placed immediately to avoid second surgery to uncover implant.*



*P.A. showing final implant position.*



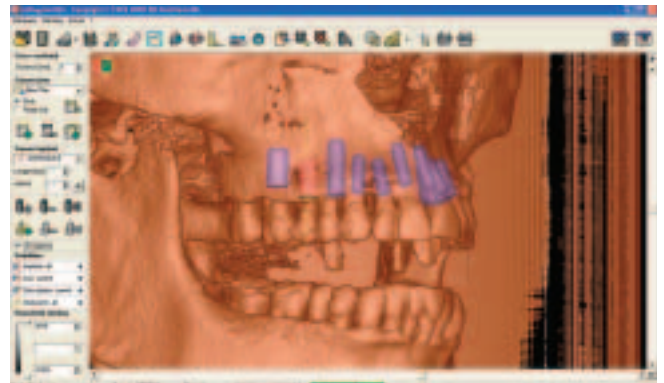
*Clinical case number two.*

plan was accomplished using the C. T. technology and treatment planning software. The patient wore interim dentures for four months. Final impressions taken and the final restorations placed eighteen weeks after the extractions. The final restorations consisted of 12 individual crowns on the upper arch, six individual crowns on the lower arch, and a bridge from 22 to 27.

As I stated earlier, this technology is here to stay. Its access and popularity is growing quickly. Regardless of how gifted we may be in this profession, as general dentists or as dental specialists, this technology will make us dramatically better. I encourage you to embrace this technology regardless of your implant experience. You will experience a new level of control in your implant practice. The dental profession and the patients who we treat will be better served by the use of this technology.



*Treatment plan is to extract 28 teeth and replace with 20 immediate implants.*



*Three dimensional view of proposed implant positions.*

SEARCH: *Dentistry*

**99,200,000 results**

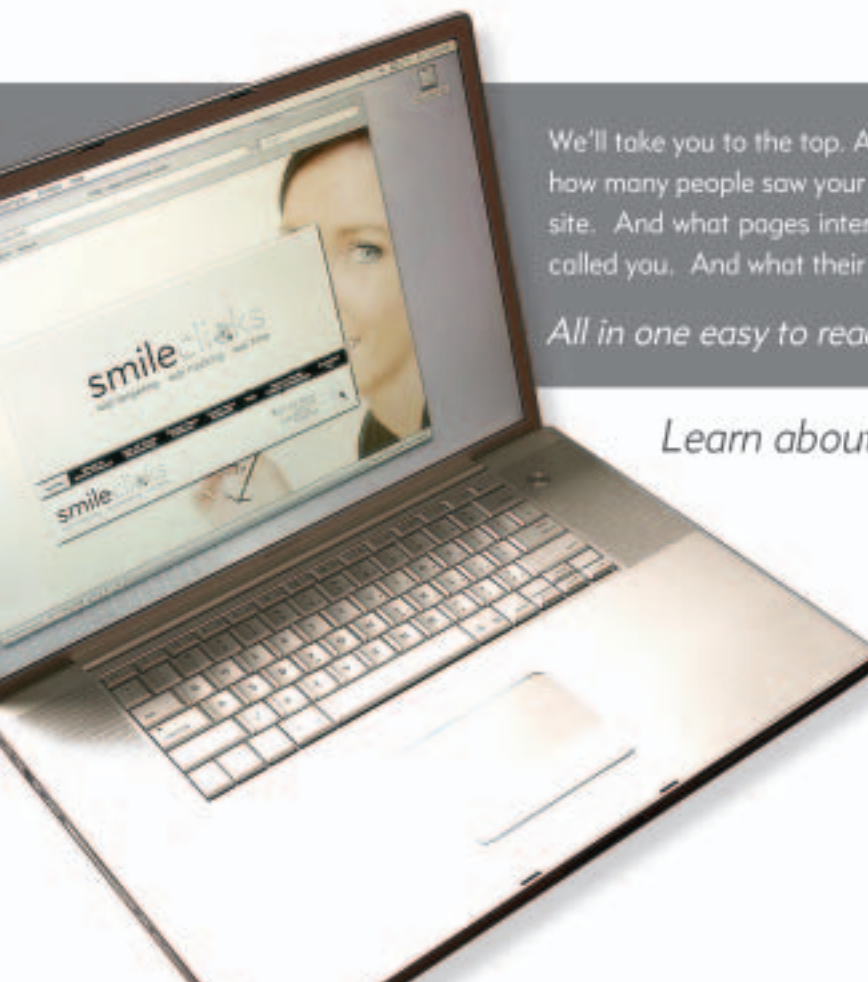
SEARCH: *Cosmetic Dentistry*

**13,400,000 results**

SEARCH: *Cosmetic Dentistry, Washington, DC*

**1,620,000 results**

*How can you move your website to #1  
for the most highly searched terms?  
With SmileClicks. Guaranteed.*



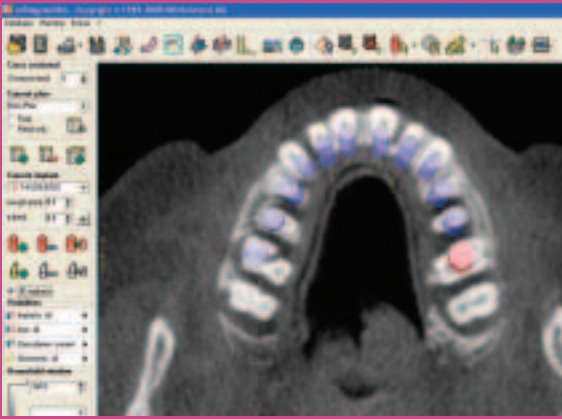
We'll take you to the top. And then we'll go one step further. We'll tell you exactly how many people saw your SmileClicks listing. And how many of those visited your site. And what pages interested them the most. And how many of those visitors called you. And what their phone number was. And if they emailed you.

*All in one easy to read report emailed directly to you.*

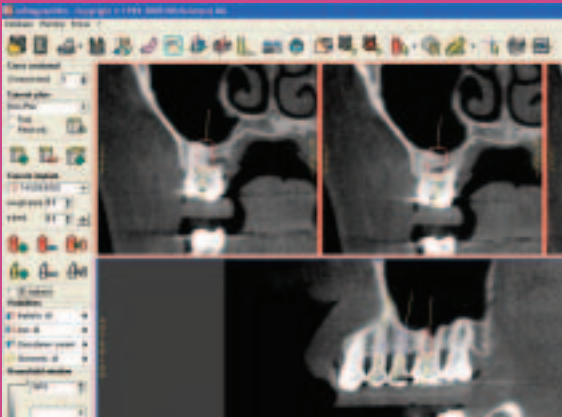
*Learn about the next evolution in web marketing.*

**smileclicks**  
real targeting real tracking real time

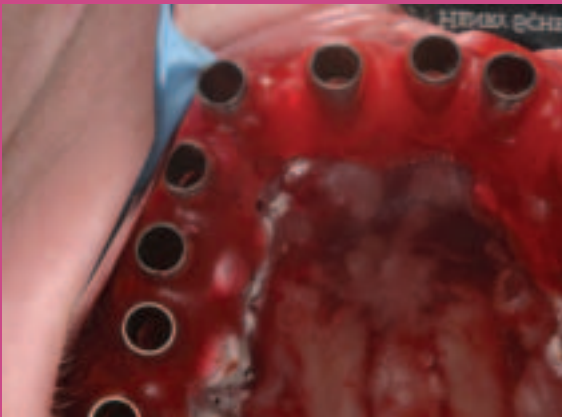
Call 1.877.70.CLICK (702.5425)  
or visit [smileclicks.com](http://smileclicks.com)  
and sign up today.



*Axial view of those proposed implant sites.*



*Cross-sectional view of proposed implant sites.*



*Surgical stint used to precisely guide the placement of all upper implants following edentulation of that arch.*



*Final restorations. 18 individual crowns and a six-unit bridge from tooth number 22 to 27. The photograph was taken less than 6 months after the teeth were extracted. Tissue response is dramatic.*



*Dr. Leo Malin graduated from Marquette University in 1991. He maintains a private practice in LaCrosse, WI where he has been utilizing occlusal based dental concepts since 1998. With the help of other experts in the fields of radiology and occlusion, he has developed an implant placement technique which focuses on occlusion (and cosmetics) for implant placement and crown restoration. Dr. Malin lectures throughout North America on full mouth reconstructions and implant placement.*

**LVI Courses Featuring Dr. Leo Malin**

- Implant I
- Implant II
- Bone Grafting



2006 Conference, Montreal

Capture . . .

Your PRACTICE  
Your VISION  
Your DREAM

. . . ON DVD

Presentations by:

Kit Weathers	Jeanne Godett
Norm Thomas	Prabu Raman
Michael Silverman	Omer Reed
Tony Tomaro	Ross Nash
Anita Jupp	Kevin Jenkins
Sam Kherani	Mike Miyasaki
Randy Bryson	Lori Kemmett
Toni Margio	Jeff Bailey
Dianne Hornberger	Matt Bynum
Bob Fazio	Larry Winans
Ashley Johnson	Leo Malin
Heidi Dickerson	Ron Jackson
Wendy Hughes	Russ Elloway
Bill Fukui	Sue Jenkins
	Erich Herber

*Place your order now to own this incredible event on DVD. You can have access to every presentation from the 2006 conference at your finger tips. Make sure to reserve your copy today!*

**Call 1.866.669.4222 to order today!**  
**[www.theIACA.com](http://www.theIACA.com)**

PRESENTED BY



# LVI Clinical Course

## “The Art of Direct Resin”

### OVER-THE-SHOULDER TRAINING PROGRAM

THURSDAY - SATURDAY, SEPT. 21 - 23, 2006 • LAS VEGAS  
THURSDAY - SATURDAY, NOV. 30 - DEC. 2, 2006 • LAS VEGAS

#### Giving Your Patients Something To Smile About

Our patients today want their dentistry less invasive and more aesthetic. Direct Resin accomplishes both. However, aesthetic standards have been raised. Restoring anterior teeth with a single shade and opacity is no longer acceptable.

Indeed, the greatest impact of cosmetic or aesthetic restorative dentistry is providing patients with beautiful smiles that enhance self-esteem and encourages them to refer friends.

This course will illustrate the value of using direct composite resin for treating anterior restorative and cosmetic needs. The simple, conservative techniques shown will lead to results that please the patient and the dentist.

#### Topics Mastered and Learning Objectives

- To gain an appreciation of conservative direct resin restorations
- To learn the essential features of a naturally shaded composite system
- To understand the stratification of opacities to achieve life like restorations
- To be able to apply these conservative techniques efficiently in a general practice
- To increase the joy of dentistry by enhancing patients' smiles



Before Veneer



After Veneer

#### DAY ONE: LECTURE

- Treatment planning and smile upgrade
- Predictable smile design concepts
- Rationale of additive vs. subtractive
- Materials and systems
- Color, opacity, translucency and texture
- Correcting minor defects can make a difference
- Advanced procedures, instant orthodontics, veneering the dark tooth, etc.
- Fees, Function and Longevity

#### DAY TWO: PARTICIPATION WORKSHOP EXERCISES

- Placing an invisible Class IV
- Diastema Closure
- Veneering a peg lateral
- Veneering an A5 to an A1
- Veneering maligned teeth

#### DAY THREE: DEMONSTRATION (1/2 DAY)

- Participants will view a live patient demonstration by Dr. Jackson where one or more teeth will be treated using principles learned in the course



#### Faculty

Ronald Jackson,  
DDS, FAGD, FAACD

#### CE Credits

Approximately 21  
21 FAGD Credits  
8 MAGD Credits



Recommended  
Private Education  
Course\*

“Absolutely the best resin course I've ever taken. You've made my least favorite dental procedure now my favorite.”

Dr. Bobbi Stanley  
Cary, NC

“Invaluable course presented in a very systematic easy to follow manner. Gave me the confidence to place direct composites that will be as natural as a patients own teeth.”

Dr. Guri Dhalival  
San Ramon, CA



**PACE**  
Program Approval for  
Continuing Education

\*An individual course that displays the AACD Recommended Private Education Course logo has a curriculum recommended by the American Academy of Cosmetic Dentistry; it may prove helpful in gaining knowledge necessary for the Academy's Accreditation credential. Successful completion of this course does not guarantee Accreditation. Additional information about the Accreditation credentialing process is available by contacting the AACD (800.543.9223).

LVI Global (code A206412) is designated as an Approved ACD Credential Program Provider by the Academy of General Dentistry. The formal continuing education programs of the program provider are accepted by ACD for Fellowship, Membership and membership maintenance credit. Approval does not imply acceptance by a state or provincial board of dentistry. The current term of approval extends from June 6, 2004 to May 31, 2007.

To register for this program call LVI today at **1.877.776.7374**  
or visit our website at **www.lvilive.com**

LVI GLOBAL  
DENTAL INNOVATIONS FORUM  
PRESENTS

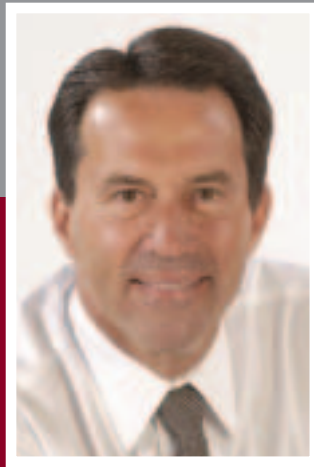
# THE FUTURE OF ENDODONTICS



S P O N S O R E D B Y :



*schick*



*As the Founder of LVI Global,  
I am proud to present these excerpts from  
the first Dental Innovations Forum:  
"The Future of Endodontics."*

**W**e addressed three critical areas that will impact the future of endodontics, inviting world-renowned experts to be a part of this premiere event. These leaders discussed innovations in Materials, Techniques and Education that will affect the endodontist and general practitioner alike. I am especially pleased that the Dental Innovations Forum provides an environment in which the presentations highlight that the quality of patient care supersede all other issues.

It is my belief that symposiums presented by the Dental Innovations Forum should be designed to provide opportunities for LVI Global to complement its mission to be the preeminent international institution for the advancement and integration of the dental profession and the dental industry.

LVI is most grateful to our Forum Sponsors, Aurum, EndoSolutions, and Schick for their generosity of resources and spirit in supporting our efforts to enhance endodontic education.

The LVI Global faculty is proud of the positive outcome of our first Forum, "The Future of Endodontics." I trust you will enjoy reading this synopsis of the two days of presentations and colloquy that took place. We welcome your comments about this forum and your thoughts about topics you recommend we address at events like this in the future.

**William G. Dickerson, DDS  
CEO and Founder, LVI Global**

[www.lviglobal.com](http://www.lviglobal.com)



# THE FUTURE OF ENDODONTICS

*On May 18-19, 2006*

*LVI Global Dental Innovations Forum hosted*

*“The Future of Endodontics,”  
a comprehensive discussion of  
innovations in materials,  
techniques and education  
in the rapidly changing field  
of endodontics.*

The meeting consisted of three panels of experts, moderated by W. Ben Johnson, DDS, L. Stephen Buchanan, DDS, and Arthur “Kit” Weathers, DDS, discussing the latest advances in endodontic materials for the 21st Century, conceptual designs and applications, and education beyond dental school.

The first panel “Materials in Endodontics for the 21st Century,”

featured Brad Heckerman, Vladimir Gorokhovskiy, PHD; Gary Cheung, BDS, MSC; and John Nusstein, DDS, MS. Moderated by W. Ben Johnson, DDS from Tulsa, Oklahoma, the panel was charged with discussing recent advancements in NiTi alloys, breakthroughs in surface technology and instrument designs, along with irrigation techniques designed to significantly improve patient care.



*Mr. Heckerman is the President and Managing Partner of Arcomac Surface Engineering, LLC of Missoula, MT., which is a research and development company for high-tech surface engineering with technology that has vast applications across numerous industries. He is also the CEO of American Eagle Instruments, Inc.*

## Innovative Treatment of Existing Materials in Endodontics

Brad Heckerman,  
CEO, American Eagle Instruments, Inc. • Missoula, Montana

Mr. Heckerman is the President and Managing Partner of Arcomac Surface Engineering, LLC of Missoula, MT. ASE is a research, development, and technology transfer company for high-tech surface engineering, with technology that has vast applications across numerous industries. He is also the Chief Executive Officer of American Eagle Instruments, Inc.

Heckerman introduced the audience to the concept of using nano technology to mix virtually any composition of elements in a plasma flow to create a “coating” that bonds one material to another at the molecular level. This technology is already being used by the American Eagle Instrument Company to deposit a smooth, hard coating on dental scalers, producing a cutting edge that does not require sharpening for months. Historically, scalers had to be sharpened frequently, but after applying the new coating technology, scalers keep a sharp edge for months and are then replaced

Surface technology is also being used by the military to extend the life of gears, bearings and even the leading edge of airfoils on airplanes. The military is spending millions on developing this technology, and some of their research may translate to improvements in endodontic instruments.

Plasma immersion technology involves the use of a cathode (metal target) and the application of a very high voltage to bind positive ions to a negative substrate at the atomic level. This “bonding” combines the two materials, atom by atom and the resulting thickness is measured in angstrom units. How large is an angstrom unit? The average atom is approximately one angstrom, which is equal to 0.1 nanometer. To put it another way, a nanometer (nm) is one meter divided by one billion! Think of a human hair divided in 50,000 parts along the diameter, and that's a nanometer.

*“Nanotechnology produces a hard coating on dental instruments that does not require sharpening for months.”*

To make anything smaller than one nanometer, leaves very few microns to hold the substrate together. Therefore, going to smaller particle size is not necessary or even desirable.

The metal target can be titanium, aluminum, or virtually any element in the periodic table. Research is just beginning to “scratch the surface” of possibilities for new and exciting combinations of materials.

### A Little History

In partnership, Heckerman and renowned materials expert Vladimir Gorokhovskiy created a process to bend the plasma flow 90 degrees with magnetic steering coils and baffles to prevent the typical “splatter” commonly seen when welding two materials together. Only single atoms can make the turn, so the result is a perfectly pure combination of any elements on the periodic chart at the atomic level to make new elements.

For the first time, multilayered coatings can be mixed to prevent fractures that start in the surface coating and penetrate to the substrate below. Every other layer can be a softer material that forces the crack horizontally, whereupon the crack must then reform and turn in order to travel through the many layers. Over 700 layers can be laid down in the space of one micron.

There can be as many layers as desired at any depth, and composed of any material desired. Heckerman compares the coating to stain versus paint. Paint can be scraped off, but stain penetrates deep into the wood substrate and is not easily removed.

If a crack on a file starts to appear, the layers can be engineered in such a way that the crack is mitigated and even starts to “heal” as it tries to pen-

etrate the various layers. This new process has the ability to eliminate the greatest fear dentists have of using rotary instruments: breakage.

This technology is already being used on cures manufactured by the American Eagle Company. By applying a Titanium nitrite layer on the surface of the curette, a curette was produced that stayed sharp for months, rather than for one or two uses.

To explain how hard these new coatings are, consider the following:

A common method of measuring surface hardness is known as the Rockwell Hardness Test. A diamond, which is the hardest material known to man, has a Rockwell Hardness (RC) of 100. Stainless steel measures approximately RC 58, carbon steel, which lasts three or four times longer than stainless steel is RC 61-63, Titanium nitrite is RC 89, and carbon boron nitrides and boron carbides are extremely hard metals measuring RC 90 to 95.

According to Heckerman, “We now have materials that test at RC 120, which is harder than diamond.” These are military materials rated “classified” or “secret,” but it appears we may have created a material that is harder than diamond.”

---

*“This new process has the ability to eliminate the greatest fear dentists have of using rotary instruments: breakage.”*

## Rockwell Hardness Test

The Rockwell scale characterizes the indentation hardness of materials through the depth of penetration of an indenter, loaded on a material sample and compared to the penetration in some reference material. It is one of several definitions of hardness in materials science. It involves the application of a minor load followed by a major load, and then noting the hardness value directly from a dial. Its chief advantage is its ability to display hardness values directly, thus obviating tedious calculations involved in other hardness measurement techniques. Also, the relatively simple and inexpensive set-up enables its installation in college laboratories.

It is typically used in engineering and metallurgy and is most common in the USA. Its commercial popularity arises from its speed, reliability, robustness, resolution and small area of indentation.

There are several alternative scales, the most commonly used being the “B”, and “C” scales. Both express hardness as an arbitrary dimensionless number.

The B-scale is used for softer materials (such as aluminum, brass, and softer steels). It employs a hardened steel ball as the indenter and a 100kg weight to obtain a value expressed as “HRB”.

The C-scale, for harder materials, uses a diamond cone, known as a Brale indenter and a 150kg weight to obtain a value expressed as “HRC” or “RC”.

The depth of penetration is converted to a scale in which the harder the material the higher the number.

### COMMON VALUES

- Very hard steel (e.g. a good knife blade) RC 55 to RC 62 or so
- Axes, chisels, etc. RC 40 - 45
- Carbon Steel – RC 61 – 63
- Titanium Nitrite –RC 89
- Diamond – RC 100

Readings below RC 20 are generally considered unreliable, as are readings much above RB 100.



*Dr. Vladimir Gorokhovskiy is the Executive Partner and Head of Research and Development of Arcomac Surface Engineering, LLC of Missoula, MT. Dr. Gorokhovskiy has created numerous technologies being researched and developed at Arcomac with the mission of delivering advanced surface engineering technologies for different applications to markets worldwide. He was previously the Chief Scientist for Superhard Materials Section for the Institute of Sciences in Kiev, Ukraine.*

## Advanced Surface Engineering Technology for Endodontic Instruments and Related Applications

Vladimir Gorokhovskiy, PhD,  
Founder, Arcomac Surface Engineering, LLC • Bozeman, Montana

The application of physical and chemical vapor deposited coatings (PVD and CVD) affects cutting efficiency and abrasion resistance of a wide variety of dental instruments, including scalers and curettes, ultrasonic tips, scissors, scalpels, implant drills, endodontic files, and various types of burs. The unique, patented Large Area Filtered Plasma Deposition (LAFPD) technology offers coatings of virtually unlimited compositions and architectures deposited atom-by-atom on complex shaped substrates made of different materials: from plastics to stainless steel to carbides and ceramics.

In addition, this process is capable of pre-deposition ion plasma treatment of substrates by modifying its surface layer with different alloying elements. The LAFPD process is capable of forming coatings from materials that cannot be created by conventional metallurgical processes. Among such materials are superhard diamond-like (DLC) and related coatings, nanocomposite and multilayer metal-ceramic films, polycrystalline diamond coatings, and many more.

Vladimir Gorokhovskiy, who began working with surface engineering in the 1970s, says that the results of surface engineering are almost invisible to the naked eye. For example, less than one micron of thickness added to glass can create a CD. During the 70s, Gorokhovskiy worked with a researcher who determined that iron found in soil from the moon will not oxidize. For millions of years, this iron has been subjected to high-energy bombardment from cosmic rays, which forms a protective coating on the iron.

Graphite and diamond are both made from carbon, but the difference is in the structure of the element. It takes an application of pressure exceeding 50,000 atmospheres (approximately 750,000 pounds per square inch) for many, many years to form a diamond.

When two materials, each with a different surface hardness, are rubbed together, the softer material will be worn down by the harder material. A good example of this can be seen in river rocks. If you place a rock and a diamond in the same stream, the diamond, the hardest material known to man will remain unchanged, while the

*“The results of surface engineering  
are almost invisible to the naked eye.”*

rock will be worn smooth and round.

Gorokhovsky said that 300 billion dollars are lost each year to corrosion. Even stainless steel will corrode with repeated sterilization. If we can protect the surface, it will mean huge savings for society.

One interesting application of surface technology is in the manufacture of implant drills. New, coated drills show no wear after 100 holes. More importantly, what happens to the metal that wears off during the drilling process with old style drills? Do metal

filings in the implant site affect the longevity of the implant? How does drilling a clean, non-traumatized hole affect healing of the implant site? Citing Newton’s third law of motion (for every action, there is an equal and opposite reaction), Gorokhovsky said that, “Dull instruments equal damage to tissue.”

Heckerman and Gorokhovsky concluded that nano technology is here to stay, and we are just beginning to reap the benefits of this exciting technology.

---

*“300 billion dollars are  
lost every year  
to corrosion.*

*Even stainless steel will corrode  
with repeated sterilization.  
If we can protect the surface,  
it will mean huge savings  
for society.”*



*Within a few years following the completion of his Masters Degree in Endodontics in 1991, Dr. Cheung founded the Hong Kong Endodontic Society. Dr. Cheung is an Associate Professor and Postgraduate Program Director in Endodontics at the Faculty of Dentistry of the University of Hong Kong. He serves as the Chairman of the Specialty Board in Endodontics in Hong Kong. Dr. Cheung has published more than 40 papers in peer-reviewed journals, and has lectured extensively in Europe, Asia, and the U.S.*

## From NiTi Alloy to Rotary Instruments

Gary Cheung, BDS, MSC • Hong Kong, China

There are many different manufacturing, milling, and polishing techniques to transform NiTi wire blanks into rotary instruments, and each phase of manufacturing influences the final properties of the instruments.

This special alloy, also commonly known as “Nitinol”, exists in a number of crystalline forms, each with its own physical and mechanical characteristics. Transition from one crystal phase to another is possible when certain criteria are met. This transition is the basis for the two special properties of this material; “superelasticity” (or “pseudoelasticity” in metallurgical literature) and shape memory.

Factors that control the phase transition can also affect the performance of NiTi rotary instruments. The amount of cold-work, specific heat treatment, the manufacturing process (twisting vs. grinding) and the surface finish all influence the final properties of NiTi instruments.

According to Dr. Cheung, there are several misconceptions concerning the properties of NiTi. This article will examine the structure and properties of nickel titanium alloy, the manufacturing process, and how various manufacturing techniques can influence an instrument’s properties.

NiTi shape memory metal alloy can exist in two different temperature-dependent crystal structures (phases) called martensite (lower temperature) and austenite (higher temperature or

parent phase). Several properties of austenite NiTi and martensite NiTi are notably different. When the alloy is present in its martensite phase, it is easily bent. Upon heating, the alloy is transformed into its austenite phase, and the alloy returns to its original shape. Unlike most phase transitions (e.g., ice to water), this is a solid-to-solid transition.

The temperature range for the solid-to-solid phase transition depends upon relative amounts of nickel and titanium in the alloy, and when NiTi is manufactured it is very sensitive to changes in concentration. Raising the nickel content by 1 percent, will shift the AF temp (austenite finish temperature) range by 100 degrees Centigrade. One common alloy used by Dr. Cheung (se508 NiTi), is composed of exactly 50.8 percent nickel and 49.2 percent titanium.

During the manufacturing process from raw material to final rotary instruments, several factors influence the final instrument properties. There are only a few manufacturers of the raw material ingots of NiTi and contamination during manufacturing is a major concern. Titanium is extremely reactive at high temperatures. During one phase of manufacturing, the material reaches 1450 degrees Celsius, and at that temperature the NiTi may take on particles from the crucible.

Lubricants applied during drawing of the wire or cutting of the NiTi blanks can also contaminate the surface coating. These contaminants can be vapor-

ized; however, by heating the material to approximately 500 degrees Celsius.

Corrosion can also affect NiTi, and according to Cheung, NiTi instruments tend to break sooner if they are cyclically fatigued in NaOCL rather than in water. Also, the instruments are more likely to corrode. When Dr. Cheung tested NiTi in water, none of the instruments showed corrosion, but approximately 13-15 percent showed corrosion when tested in sodium hypochlorite. Until newer coatings are perfected, it might be safer to lubricate rotary NiTi files with something other than sodium hypochlorite, saving the NaOCL for irrigation when the files are not turning in the canal.

Instruments that are mechanically polished are the most susceptible to corrosion. Electro polishing may improve corrosion resistance, and is accomplished by passing a DC current while immersing a file in an electrolyte. Although electro polishing is better than mechanical, it does not sufficiently enhance corrosion resistance. Nitride coatings will provide better corrosion protection.

Concern about fracture of nickel-titanium instruments during treatment is still a major challenge confronting manufacturers and practitioners, which often happens without prior warning signs from permanent deformation. Transformations between the austenite and martensite phases occur rapidly at the atomic level and are reversible for stresses below the onset of permanent deformation. An intermediate R-phase is also sometimes observed for the transformation between austenite and martensite. The nickel-titanium rotary instruments are intentionally manufactured in the superelastic condition hav-

ing the fully austenitic structure, which provides the capability of accommodating extensive elastic strain without fracture under clinical conditions normally associated with conventional root canal therapy.

When working in a curved canal, the file is probably in the Martensite or superelasticity phase of the instrument.

Cheung commented on other aspects of NiTi manufacturing, including the attachment of the file shaft to the handle. Joining NiTi to aluminum or other metal can be done via laser welding, but is very difficult, and the heat affects the weld, making it more prone to cracking. Most NiTi rotary blades are joined by frictional swaging to their handles.

NiTi is a superelastic material. Every aspect of the manufacturing process can affect the final properties of any given instrument, particularly the heat treatment temperature, the amount of cold work, and the machining groove and cross sectional shape. Cracks in NiTi files initiate along the machined grooves, but most seem to be self-limiting, and no significant differences were found among different brands of instruments.

Torsion and bending forces are additive and will not be discussed here, but they are being studied separately. Torsion and rotational stresses are additive, but this may become a moot point because in Australia, the law mandates single use, and other countries such as the UK are considering similar regulations.

Dr. Cheung expresses hope that manufacturers will either provide us with an inexpensive, single-use instrument or a strong, multi-use instrument at a slightly higher cost.

## MEMORY METAL

is sometimes called Nitinol, which is short for Nickel Titanium Naval Ordnance Laboratory, and which acknowledges the site of its discovery in 1965.

There are numerous metal alloys that can display shape memory properties. However, NiTi alloys have been the most commercially successful because of their ability to display large reversible strains and undergo transformations at near room temperature.

### Shape Memory:

The ability of certain alloys to return to a predetermined shape upon heating via a phase transformation.

### Superelasticity:

The springy, "rubber-like" behavior present in NiTi shape memory alloys at higher temperatures relative to the particular alloy's transformation temperature. The superelasticity arises from the formation of stress-induced martensite.

### Phase Transformation:

The change from one alloy phase to another with a change in temperature, pressure, stress, chemistry, and/or time.

### Austenite:

The stronger, higher temperature phase present in NiTi.

### Martensite:

The more deformable, lower temperature phase present in NiTi.



*Dr. Nusstein is an assistant professor at the Ohio State University College of Dentistry in the Advanced Endodontics section, where he also acts as graduate clinic director. He was awarded the Edward Osetek award for an Outstanding Young Educator by the American Association of Endodontists (AAE) in 2006. He has authored numerous articles and has lectured extensively in the U.S. and abroad. His primary research interests are in the areas of ultrasonic instrumentation, pain control, and nickel-titanium instruments.*

## Ultrasonics in the Debridement of Root Canals

John Nusstein, DDS, MS • Columbus, Ohio

Success in endodontic therapy depends on adequate bio-mechanical preparation of the root canal space. Related factors for achieving this success include reduction in the numbers, or elimination of organisms and their by-products and elimination of vital tissue.

The intricate nature of root canal anatomy has complicated the instrumentation procedure. Small isthmuses and irregularities within the root canal system harbor tissue, microbes, and their by-products. These areas have been shown to be inaccessible to conventional hand and/or rotary cleaning and shaping techniques.

The use of ultrasonics has been proposed as a possible solution to the problem of debriding the root canal system. Studies by Martin and Cunningham, et al, found that teeth instrumented ultrasonically were cleaner than teeth cleaned and shaped by hand. The use of hand instrumentation prior to ultrasonics reduces the potential constriction of the vibrating file inside the root canal space.

Ultrasonic energy is generated by one of two methods:

1. Magnetostrictive devices – Metals expand and contract when placed in an alternating magnetic field, but these devices generate

quite a bit of heat and due to size limitations, current models are limited to 20 kHz.

2. Piezoelectric – These are the most widely used systems. Electric energy is converted directly into mechanical energy, resulting in a higher energy output of 25 – 30 kHz.

Ultrasonics have been used for many things other than canal irrigation, including locating canals, shaping and cleaning canals, filling canals, removing posts, removing filling materials such as silver points, and retro-fill preparations.

Research has shown that ultrasonic irrigation results in cleaner and smoother walls as well as more efficient cutting during preparation. Neither hand nor rotary files can reach all of the areas of the root canal system, while ultrasonic irrigation forces irrigants into areas that are otherwise unreachable.

Prior ultrasonic irrigation techniques added 15 to 18 minutes to root canal preparation times, and although canals were significantly cleaner, most clinicians were reluctant to spend the extra time required.

Ultrasonic devices clean by cavitation and acoustic streaming. The vibration of the instruments in the canal causes small bubbles to form, and as these bubbles implode, they



release a great deal of pressure and energy causing shockwaves in the fluid, which removes the debris. The implosion also creates temperatures that can exceed 10,000 degrees F and pressures up to 10,000 psi on a microscopic level. For cavitation to occur, there must be freeway space in the canals to allow room for the files to vibrate.

Recently, an ultrasonic irrigating system has been developed at The Ohio State University's College of Dentistry, Section of Endodontics. Using an irrigating needle connected to a MiniEndo™ piezoelectric ultrasonic system, results in a high ultrasonic output which can produce cavitation in an instrumented canal. This more powerful ultrasonic unit is capable of producing a faster rate of acoustic streaming, and has been shown to debride canal systems significantly better than hand filing alone.

#### **Ultrasonic Irrigation – Initial Conclusions**

- Ultrasonic irrigation produces cleaner canals and isthmuses following hand/rotary instrumentation after only one minute of application.

- Necrotic canals are seven times more likely to have no growth of anaerobic bacteria following one minute of ultrasonic irrigation.
- Root temperatures do not increase above the critical 10 degrees C during ultrasonic irrigation.

#### **Future Research**

- Removal of smear layer using ultrasonic irrigation.
- Removal of biofilm using ultrasonic irrigation.
- Effect of different irrigating solutions on removal of vital and necrotic tissues and elimination of bacteria.
- Use of ultrasonic irrigation for removing existing gutta percha.

As a cumulative work, it appears that ultrasonics may become a necessary part of the cleaning and shaping procedure utilized in today's endodontic therapy. Ultrasonic debridement and irrigation has been shown to more completely remove tissue from canals and isthmus areas of instrumented root canals as well as lead to a marked reduction in the number of viable bacteria present in the canals of teeth with necrotic, infected pulps.

---

*“Ultrasonics have been used for many things other than canal irrigation, including locating canals, shaping and cleaning canals, filling canals, removing posts, removing filling materials such as silver points, and retro-fill preparations.”*



After graduating as class valedictorian at the University of the Pacific School of Dentistry, Dr. L. Stephen Buchanan completed the Endodontic Graduate program at Temple University in 1980. Since then he has maintained a private practice limited to endodontics and implant surgery in Santa Barbara, California.

In 1983 he established Dental Education Laboratories and built a state-of-the-art teaching laboratory devoted to hands-on endodontic instruction, where he continues to teach today. Through Dental Education Laboratories he has lectured and conducted participation courses around the world, published numerous articles and produced an award-winning video series, *The Art of Endodontics*.

Dr. Buchanan began pursuing 3-D anatomy research early in his career, and in 1986 he became the first person in dentistry to use micro CT technology to show the intricacies of root structure. He continues this work today, using his own micro CT scanner to produce research, leading-edge multi-media and educational resources.

In addition to his activities as an educator and practicing clinician, Dr. Buchanan holds a number of patents for dental instruments and techniques. Most notably, he was the first to introduce variably-tapered shaping instruments for use in endodontic therapy and pioneered a system-based approach to treating root canals.

He is a Diplomate of the American Board of Endodontics (AAE) and a fellow of the International and American Colleges of Dentistry. He also serves as an assistant clinical professor at the University of Southern California School of Dentistry, Department of Graduate Endodontics.

## Design Concepts: Original Thinking in Endodontics

L. Stephen Buchanan, DDS • Santa Barbara, California

Dr. Buchanan opened his presentation with a video retrospective of his 20 years in designing endodontic innovations, from the micro CT scans of root canal anatomy first modeled in 1986 to the GT Series X file whose design was finished in 2006. He compared his design work to being the leader of a marching band, "...seeing the direction the band is heading, jumping out in front, starting to wave your baton and occasionally looking back behind you." And he acknowledged that true innovations require participation by "hundreds of different intellects, thousands of clinicians who have taken our courses, and phenomenal support by manufacturers that have done the hard thing by prototyping and making those designs."

### On the shoulders of giants: Micro CT Imaging

"We stand on the shoulders of giants when we see a little bit further," observes Buchanan. His research into new ways of imaging root canals was built on a foundation provided by Swiss dental pulp researcher Dr. Walter Hess. "He did amazing studies of endodontic anatomy back at the start of the last century. Ironically, his re-

search may have helped bring along the focal infection era in dentistry when we lost heart that we could predictably treat root canal systems and save teeth. When we saw the intimidating anatomy of roots and root canals in the early 1900s, I can't imagine that this was really great news."

Prior to mCT scanning technology, textbook drawings and illustrations of root canal morphology were artists' renditions that did not fully or accurately capture their complexity. In 1986, Buchanan and one of his patients, Jean Pierre Herbert, sent extracted teeth to General Electric's Nondestructive Testing Center in Cincinnati, Ohio. The teeth were scanned using a \$5 million CT device originally designed to scan turbine fan blades for incipient fractures. The scanner allowed them to look through a tooth via 500 serial cross-sections, and the data set resulting from those images was used to create Voxel models of root canal anatomy. The sophisticated mCT images reinforce Hess' concepts and illuminate future possibilities for three-dimensional cleaning, shaping and obturation of complex root canal systems.

Buchanan also cites examples of how he and others have used mCT imaging to show the shaping outcomes seen with different rotary files, as well as how it continues to inform research into canal anatomy. His computer-generated animation clips demonstrate file function, the continuous wave technique and a dimensionally-accurate video showing bacteria left at the end of a root canal—all done in the virtual anatomy of CT-reconstructed teeth.

“Dentists are visual animals. We don’t read the directions; we look at the pictures. Being able to visually describe this is a really effective shorthand method of sharing techniques with dentists.”

**Thinking outside the box:  
the inventive process**

We’ve all had great ideas in the shower or on a long drive, and that’s a really fun part of the inventing process, said Buchanan. “The part beyond that is hell,” he joked. He summarized the process like this: “You start out with a great idea, you talk someone into prototyping it and it stinks. You think you’re a failure. You think some more about why it didn’t work, then you talk them

into doing more prototypes. They fail. Your self esteem plummets. But you are persistent, clever, and are willing to change direction based on new information, you can eventually push the rock up to the top of the hill and over to the downhill side. That part on the downhill side is also really fun, but it can seem like forever before it comes—the average invention takes seven years from conception to market introduction”

**LA Axxess Diamond**

“This started out as kind of a hohum project and turned out to be literally the most useful single instrument I have in my instrumentation series,” Buchanan noted. He knew that a lot of instrument breakages were caused by poor access preparations, either by novice dentists or by clinicians unwilling to take the time to do it well. He developed the LA Axxess bur with a unique .2 mm diameter radiused pilot tip. Most important, it is small enough to drop into canal orifices and thereby create a smooth transition from the access cavity into the canal and also to allow the bur—when rotated around that pilot tip—to cut an ideal line-angle extension of the preparation and straight-line file path into each canal.

---

*“Dentists are visual animals. We don’t read the directions; we look at the pictures. Being able to visually describe this is a really effective shorthand method of sharing techniques with dentists.”*

*“We were using relatively nontapered files to make tapered shapes with a serial step-back method. Then I said to myself, why don’t we have files that have a taper just like the finished canal shape we’re looking for?”*

It took a year of prototyping to get the burs manufactured right. First, the team discovered it was necessary to heat-treat the blanks to avoid breakage. Then there were problems etching the blanks to adhere diamonds to them. They even had a problem masking the diamonds at the small end. The good news after all that work? “These have cut my access time for anterior teeth from about 10 to 12 minutes down to about 30 to 90 seconds. Molars used to take me 15 to 25 minutes and today it’s taking me less than three or four minutes with more ideal results.”

#### **Ultrasonic BUC Tips by Spartan Company**

Thanks to pioneers such as Gary Carr, microscopes and ultrasonic instrumentation are further simplifying the process of creating a great access. Working with Obtura/Spartan to create a set of ultrasonic tips, Buchanan’s objective was to have the smallest number of instruments address the widest range of conventional endodontic problems. He recommends using a round-tipped instrument to trace the isthmus and even straighten the coronal portion of the root canal. (Using a sharp-tipped instrument will create an artificial groove and you may wind up “chasing yourself” into the furcation when looking for MB2 canals in upper molars.)

**Negotiating instruments**  
Buchanan’s first endodontic inven-

tion was to solve the problem of file bending. Whenever I met an impediment, I had to bend files with hemostats. It was so difficult and time consuming that I decided to design a plier specifically for bending endodontic instruments. After having paid three prototype engineers to unsuccessfully fabricate my design, I sat in my garage and carved it out of a block of wax with a handpiece and sent it off to a casting company. That draft of the design became the EndoBender Plier by SybronEndo.”

Buchanan noted that a lot of attention is paid to nickel titanium files, but stainless steel files also need improvement because clinicians use them as often as shaping files.

With an eye to improving dentists’ experiences when initially working to the ends of canals, he is working with prototypes of the new plasma-coated negotiating files from American Eagle.

#### **GT Rotary Files**

“I’ll always be grateful to Ben Johnson for his backing during the development of my GT File line.” He was interested in manufacturing tapered files. It took 38 rounds of prototyping and we spent more than \$300,000. Without Ben it never would have occurred.”

Introduced in 1996, GT Rotary Files were the first file that, in certain cases (not too wide, not too curved and with a small apical diameter), could create a

complete preparation using only one file. Buchanan showed a case where he used a single 20-10 GT file to shape a canal in only 90 seconds.

“My inspiration for the concept of variably-tapered files was to ask myself, ‘Why are tapered shaping procedures so difficult?’ We were using relatively non-tapered files to make tapered shapes with a serial step-back method. Then I said to myself, why don’t we have files that have a taper just like the finished canal shape we’re looking for?”

Buchanan summarized his approach to file design: “GT Files were specifically designed around the tapering anatomy of roots and root canals. To use these new, amazing rotary files to create an old, outdated shaping objective such as the “Stop Preparation” rather than the more forgiving tapered objective is a lost opportunity.”

### **GT Series X File**

The GT series X utilizes the same system-based approach as regular GT files and the same external geometry (tip diameters and tapers). Notwithstanding the similarities, there are significant changes in the new file blades. “We opened the blades of the instruments which doubled the size of the flute spaces. So, instead of filling up with debris and stalling in four to six seconds, they cut for 10 to 12 seconds before they are done with each cutting cycle. We thinned the lands at the tip and shank ends of the GT Series X Files which al-

lows them to cut twice as fast. Most importantly, they still have lands on the blade’s edges and the same radiused tip geometry so they stay just as centered in the canal as standard GT Files, despite their amazing cutting speeds.”

### **GT Obturators**

Endodontists are now using carriers in their worst cases. “GPs are saying, ‘I don’t want anything real complicated, so I’ll use a carrier.’ Endodontists are saying, ‘This is a really complicated case, a long, narrow curving canal with an apical delta of accessory canals at the end, so I’ll use a carrier.’” GT obturators are different from Thermafil in that the carriers are matched to fit canals prepared with the GT Files. Buchanan is now working on GTX Stopless Carriers, which incorporate bumps that automatically stop it at the perfect length with no need to measure, and no handles to get in the way in multiple canals.

### **The “lazy perfectionist”**

Buchanan summarized his design philosophy by describing himself as a “lazy perfectionist. I ask myself how we can accomplish consistently ideal clinical outcomes in the least amount of time with the least number of instruments and the least amount of training. If I could do a perfect root canal procedure in two seconds, I would do it tomorrow.”



*Professor Giuseppe Cantatore trained at the University of Rome "La Sapienza" in both Medicine and Dentistry. He is currently an Associate Professor of Endodontics at the University of Verona-Italy. Dr. Cantatore has authored extensively in Endodontics. As an international speaker, Dr. Cantatore has given pre-congress courses, workshops, and presentations during many international meetings; including, American Association of Endodontists (AAE), the International Federation of Endodontic Associations (IFEA), and the European Association of Endodontists (ESE). Currently, Dr. Cantatore serves as President of the European Society of Dental Microscopy (EFAM), President-Elect of the Italian Society of Endodontists (SIE), and board member of the Italian Association of Restorative Dentistry. Dr. Cantatore lives and works in Rome with his clinical practice limited to Endodontics.*

## Preservation of Tooth Structure During Definitive 3D Treatment of Root Canal Systems

Giuseppe Cantatore, DDS, MD • Rome, Italy

According to Dr. Cantatore, devitalized teeth are weakened by endodontic treatment, and are more fragile, for two basic reasons.

- Removal of dental tissues - 84 percent
- Dehydration - 16 percent

Caries and coronal preparation are responsible for 42 percent of tooth weakening, access prep 10 percent, and 48 percent of tooth weakening is due to the root canal preparation itself. We can't do much about the tooth structure that must be removed due to caries or creating good straight-line access, but we can keep our endodontic preparations conservative.

Critical points to remember:

Dr. Cantatore recommends conservative root canal preparations to preserve the structural integrity and offer a greater, long-term prognosis for endodontically treated teeth.

To prevent undue weakening of the tooth, the remaining tooth structure should never be less than one millimeter. Upper premolars with two or three roots, mesiobuccal roots on upper molars, lower premolars with two or three canals, and mesial roots of lower molars with two roots are at a higher risk of having less than one millimeter of wall thickness following endodontic treatment.

Cantatore calls his approach to endodontic preparation, "Rational Intervention Endodontics." His basic concepts include straight-line access, conservative coronal prepara-

tion, and a continuous tapered root canal preparation with enough room for the apical flow of irrigants and obturation materials.

Cantatore also recommends reinforcing the tooth prior to treatment with adhesive materials, and respecting the initial canal position as well as the position of the apical foramen.

Clinicians should adjust the size and taper of the root canal preparation depending on the individual clinical situation. The obturation technique should also be adjusted to conform to the final taper of the preparation rather than adjusting the canal instrumentation to fit the obturation technique.

In one study, residual dentin thickness lower than 1 mm was reported in 44% of the teeth studied, mainly at the apical level, but also at the coronal and middle level. "C" shaped canals usually correspond to "C" shape roots. Never try to convert a "C" shaped canal to a round preparation.

When irrigating with sodium hypochlorite, clinicians will frequently observe "micro-cavitation" (bubbling) of the solution, which indicates there is still organic material being broken down. Obturation must be postponed until the solution remains clear and bubble-free.

Cantatore prefers the following basic sequence of treatment.

Obtain straight-line access, and remove coronal interferences using

either Hedstrom files, Gates-Glidden burs, LA Axxess burs, Ultrasonic tips, or NiTi rotary instruments with sharp blades.

Pre-flare with hand instrumentation to a size 20 to significantly decreases the fracture rate of rotary NiTi instruments.

Use hand files size 8, 10, 15 and 20 to the canal middle third, followed by ProTaper S1-SX used at full torque with a brushing motion this is repeated until all interferences are removed.

Scout, pre-flare, and create guide path to size 20 using stainless steel, not NiTi. Stainless steel hand files (8-10-15-20) are used to full working length, and verified with an electronic apex locator. Cantatore verifies the final obturation with a radiograph.

If you do not scout the anatomy using hand files, you will be much more likely to straighten the canals, and miss subtle changes in canal direction. You will also be much more likely to fracture rotary files if you do not pre-flare with hand files prior to using the rotary instruments.

Basic shaping and gauging of the apical foramen is done with ProTaper S1 and S2 to working length, followed by a ProTaper F1 to working length or one millimeter short of the working length in curved canals.

Apical size gauging is accomplished using progressively larger .02 NiTi hand files, which are inserted to working length and rotated 90 degrees. At some point, one of the files will engage the canal at the apex causing the file to spring back when released. The first file that springs back denotes the apical size.

Definitive shaping is done with rotary GT files 20 .06 and 20 .08 (apical size to .2 mm), rotary GT files 30.04 - 30.06 (apical size is .3mm), and rotary GT files 40.04 - 40.06 (apical size to .4mm).

Cantatore uses instruments with radial lands for the definitive shaping because they are less aggressive, but he uses instruments without radial lands for coronal shaping because the sharper flutes allow more accurate control of which portion of the canal is being cut.

He verifies apical patency with a #10 hand file after each successfully larger instrument, and copiously irrigates after each instrument.

Even in severely curved canals, the use of NiTi rotary instruments significantly lowers the risk of ledging or straightening in comparison to hand instrumentation.

By following the above procedures, root canal preparations will be more conservative and less prone to fracture or perforation.

In a study using 400 plastic blocks, Cantatore found that the average number of blocks that could be prepared without subsequently breaking a rotary file was ten. This number was increased to 59 if the blocks were pre-flared prior to utilizing rotary files. Another study utilizing extracted teeth with canal curvatures greater than 30 degrees, found that the rate of fracture was reduced from 29 percent to 12 percent with manual pre-flaring to a size 20.

#### **Conclusions:**

The preflaring with hand files used up to a diameter of .2 mm and the creation of a glide path for the rotary instruments, significantly reduced the risk of breakage of ProTaper S 1 allowing more uses before separation occurs.

“Statistical analysis of the data showed that preflaring with hand files followed by rotary instrumentation allowed more uses before separation compared with the crown-down technique recommended by the manufacturer.”

ProTapers are more resistant to torsional stresses, while ProFiles are 30 percent more flexible than ProTapers.

*“Dr. Cantatore began by asking, “Are devitalized teeth weakened by endodontic treatment?””*  
*“And, the answer is, “Yes, endodontically treated teeth are more fragile...””*



*Dr. Peters received his degree in dentistry (Doctor of Medicine and Dentistry) from the University of Kiel, Germany, in 1990. He received his postgraduate endodontic training at Zurich University Dental School, Switzerland, from 1997 to 2001. Dr. Peters attended UC San Francisco from 2001 to 2003 and while teaching undergraduate and postgraduate endodontics, he received an MS certificate in Oral Biology. At present, he is affiliated with the postgraduate program in Endodontics at UCSF Dental School in San Francisco. His main scientific interests are the performance of Nickel-Titanium rotary root canal instruments assessed by micro-computed tomography and torque-testing devices, which was also the topic of his PhD thesis. Dr. Peters has published extensively in peer-reviewed journals and lectured both nationally and internationally. He serves on the review panel and editorial boards of several endodontic journals.*

## The Consequences of Blade Geometry to Rotary File Function in Root Canals

Ove Peters, DDS, PhD • San Francisco, California

There are many types of nickel titanium rotary instruments, blade geometries, and functional characteristics, and many research methods for analyzing file behavior. This article will examine which current file designs provide the safest, simplest, and most ideal shaping results, with the broadest range of clinical expertise, which may help forecast future trends in file design.

Dr. Peters emphasizes the importance of the chemical elimination of bacteria from the root canal system. "The removal of biofilm and bacteria is at least as important if not more important than mechanical shaping of the root canal."

Dr. Peters poses the question, "What are the specific properties of instrument design that determines success? Is it the cross-sectional design, the design of the flutes, the materials used in manufacture, or is it the individual user that determines success?"

Research shows that most cross-sectional designs can work, and it is the canal anatomy more than anything else that determines which procedure will be most effective. Preoperative anatomy is likely the single most important factor for shaping outcomes.

Peters also says the idea of using torque-control motors as a panacea for eliminating breakage cannot work. But

the good news is, "If everything else is done perfectly, fracturing of an instrument may not even matter, other than for our self esteem."

There are two potential ways to prevent fracture of rotary files. First, secure a glide path by using hand instruments up to a size 20. This will prevent binding the tip of the rotary instrument, which is not meant to be engaged during preparation, and second is to work laterally to avoid having the instrument thread into the canal.

There are a great many more lateral canals than we realized in the past, and some file designs tend to burnish debris into dentinal tubules and lateral canals. While more aggressive cutting designs tend to "chip" away the dentine, the burnishing type instruments are less prone to fracture. However, burnishing type instruments are more likely to block lateral canals with debris.

Research points to the fact that we cannot render a canal sterile, but there may be a threshold that is biologically acceptable. Something in the relatively low range of 10 to 100 units of colony forming bacteria per millimeter sampled seems to be the maximum safe number.

What about apical diameter? Most molars start at apical size 20.

With less aggressive instruments, such as those with radial lands, even a



*“If everything else was done perfectly,  
fracturing of an instrument  
may not even matter other than  
for our self esteem.”*

novice operator can quickly achieve good or even great preparations that are centered in the canal. These preps will be virtually free of preparation errors if the proper guidelines are followed and the preoperative anatomy allows it.

Preparation errors can be caused by the restoring forces in curved canals as a result of the memory of NiTi instruments. Using active cutting tips and aggressive handling, along with apical compression of dentin mud makes it difficult to maintain patency.

Bacteria can remain on walls, even in canals that have been excessively thinned, as a result of the smear layer that is created with virtually all rotary instruments.

Problems can also occur when the clinician has limited training and a limited level of expertise. This can result in a higher incidence of instrument fracture, shorter life span of instruments and improper case selection. Dr. Peters recommends single usage of rotary instruments, but acknowledges the reality that the majority of dentists tend to reuse instruments multiple times. If dentists could see the debris left in the flutes as seen under scanning electron microscopy, they might not be so quick to reuse their files, said Peters

Finally, Dr. Peters re-emphasized that proper irrigation is the key to successful endodontic therapy and maximizing bacteria removal.

---

*“Bacteria can remain on walls,  
even in canals that have been excessively thinned,  
as a result of the smear layer that is created  
with virtually all rotary instruments.”*



*Since completing his endodontic residency and receiving his Masters degree at Harvard in 1980, Dr. Schoeffel has maintained a private practice limited to endodontics in Southern California. He has lectured globally and often on clinical endodontic techniques. As an author of clinically relevant endodontic techniques and methods, his work has been published in both peer-reviewed and other publications. In addition to serving as an endodontic consultant to several companies, he has been awarded two U.S. patents for technologies and methods in the field of endodontics.*

## New Methods of Cleaning Root Canal Systems

John Schoeffel, DDS • San Diego, California

The shaping of root canals has been dramatically reduced in both time and complexity. Twenty years ago, preparing an ideally tapered shape in a root canal required approximately eighteen instruments, twenty to sixty procedural steps and twenty to forty minutes. Today, the same procedure can be accomplished in less than five minutes, using one to five instruments, with only six to ten steps. We've seen three-dimensional obturation procedures reduced from 30 to 40 minutes down to less than six seconds.

But the cleaning of root canals requires a lot of time today to be done effectively and still is done in a relatively crude manner by using chemical irrigants supplied into the canal with syringes and cannulas that have been in use for decades. Like doctor Neusstein, John continues to examine the physics of irrigation processes, and has moved endodontics toward an improved functional paradigm.

Schoeffel uses a specific irrigation device and technique that he developed over a period of years. He began working on this device in 2002, and it has subsequently gone through many iterations before reaching its current design.

Dr. Schoeffel describes the challenges of adequately cleaning complex root

canal spaces, and says a great portion of these spaces can never be cut with instruments that exist today. He explained the disadvantages and dangers of traditional cleaning methods, the limitations of lasers in endodontic cleaning, and his own reverse-pressure irrigation technology.

According to a recent article in the *Journal of Endodontics*, the single most important requirement for proper chemical cleaning of the canal is the use of 6 percent NaOCL, which removes not only the biofilm and organic materials, but disinfects the dentinal tubules.

Louis Grossman established the endodontic triad in 1940, which refers to 100% debridement, 100 percent disinfection, and 100 percent obturation of the entire root canal system.

Despite all of the wonderful advances in endodontics, our success rate from 1955 to the present has remained at 80 percent - something is missing, something is wrong.

In 2002, the rules of endo changed forever, when we learned that plaque can form outside the root canal system (*JOE, March 2002, page 184, Siqueira*) under clinical conditions, we never clean the walls in the apical third of the root canal. This and other studies support the suggestion that larger preparations (as large as the

root anatomy permits), and frequent and abundant irrigation with antimicrobial substances (such as NaOCL) play an important role in maximizing the effectiveness of chemo-mechanical preparation. However, despite the irrigation regime or irrigation techniques, most specimens still contained living bacteria.

According to Schoeffel, "Study after study has shown that under clinical conditions, we never clean the walls in the apical third of the canal." There are some studies, however, that do show perfect cleaning of the apical region. In these studies, the apex was left open and irrigants were allowed to "free-flow" out the end. He referenced an article from Iran, which claims you can totally clean all the way to the apical terminus (as long as you wedge a needle in the canal and squirt NaOCL through the apex).

A major problem with current, passive irrigation techniques is the creation of a "vapor-lock," which prevents solutions from reaching the apical region when the apex is closed. The solution to this problem is "apical negative pres-

sure." Place a cannula to the apex, and using the high vac suction, create a negative pressure that will draw the irrigating solutions down to the apex and out of the canal without the possibility of irrigants going beyond the apex. Literally sucks the debris out of the canal and produces a torrent of Sodium hypochlorite rushing to the holes in the cannula and pull debris off the walls of the canal.

Dr. Schoeffel invented a device, which he calls the "EndoVac System" to solve the problem of inadequate irrigation in the apical portion of the root canal.

The device uses a micro-cannula measuring 0.32 mm in diameter, with an array of 12 holes all contained in the last 0.70 mm of the cannula. Sodium hypochlorite will dissolve tissue and bacterium to nothing more than carbon dioxide and ammonia.

With negative pressure, and a small cannula placed at working length, it's now possible to draw irrigant all the way down the canal and safely clean and debride canals more effectively than ever before.

---

*"Dr. Schoeffel said that in dental school, half of what we learned was wrong, but, we don't know which half."*

*Then he quoted Will Rogers who said,*

*"It ain't what you don't know that hurts you... it's what you know that ain't so."*



*Dr. Gary B. Carr, widely recognized as the “Father of Microscopic Endodontics,” began practicing endodontics in San Diego in 1982. He is a Diplomate of the American Association of Endodontists (AAE), and the author of over 40 articles and code chapters on endodontics. He has authored two chapters in the well-known Endodontic text, Pathways of the Pulp. Dr. Carr maintains a private practice in the Sorrento Mesa – Del Mar area of California. He resides with his wife and son in Rancho Santa Fe, California.*

## Interactive Charting Software as a Treatment and an Evidence-Based Research Tool

Gary B. Carr, DDS • San Diego, California

**D**r. Carr created a software program called TDO (The Digital Office for Endodontists), which he markets and sells to the endodontic specialty. TDO is the most widely used endodontic software in the world today with over 400 users in 22 foreign countries.

Dr. Carr created The Digital Office (TDO), a software program designed specifically for charting the diagnosis, treatment, and clinical outcomes of endodontic therapy. He presented the various digital imaging technologies and their ideal applications in endodontic practice, the advantages of a paper-less dental office, and the six-sigma possibilities available to dentists who use state-of-the-art data capture and manipulation in our specialty.

One of the biggest problems facing the endodontic community today is the lack of data to substantiate the success rate of endodontic therapy. Because of this lack of data, many prominent clinicians are recommending extraction and implants rather than re-treatment for endodontically treated teeth with lingering pain.

According to Carr, the specialty of endodontics is “under attack” not only from GPs promoting 15-minute molar endo, but from endodontists who are recommending extraction rather than retreatment for failing endodontically treated teeth.

We hear success rates for endodontics ranging from 53 percent to 98 percent but these numbers are not based on scientific research of a large base of properly documented cases.

Carr says, “If you really look at the endodontic literature, we can prove almost nothing.”

The answer is to move beyond anecdotal thinking, and establish a proper data base for scientific research. This means collecting data “real-time” rather than relying on memory to write information in the chart after the procedure has been completed and the patient has been dismissed. He says we need randomized control trials with sufficient numbers of statistical data with long-term recalls.

Talking about his own practice, Carr says, “I am convinced that retreatment endodontics, done to a very high standard, has to be well over 90 percent successful, and I bet it’s closer to 95 or 96 percent. Endodontics that is well done is very, very successful, and we need to be able to prove that.”

According to Carr, the problems now facing endodontic record-keeping include the following:

- 1. Lack of standardized diagnosis records**
- 2. Lack of standardized treatment records**
- 3. Paper records**
- 4. Lack of contemporaneous record-keeping**
- 5. Poor recall rates**

According to Carr, “There is not one single study in all of endodontics that can give us a level of evidence necessary to draw proper conclusions. If you examine the best studies that have been done to date, the numbers are very small and the

recall rate is less than 50 percent. Researchers have no idea of what happened to more than half of the people in their studies. The studies really cannot give us any clinical guidance, or answers for the implant people who in many cases have 100 percent recall rates.

Even when the paper record is legible (which it rarely is), it's too labor intensive to extract the data in any meaningful way for statistical research. It's too expensive to gather the data, and the original method of collection of that data is questionable.

Dr. Carr's vision was to address these problems in a systemized way, and that is why he developed the TDO software. TDO is a relational database that allows the practitioner to query the data that has been stored in discrete fields that can be linked in any way specified by the user. This linking of fields allows for the rigorous analysis of the data as well as for the presentation of the data in multiple formats.

One of the big advantages of TDO software is that it forces the doctor and assistants to adopt a more structured approach, and it makes it difficult to skip over critical areas of treatment. The software makes it easy to take, store and retrieve digital images of the patient's treatment. Images can be labeled with a number of keywords making it easy to quickly locate all images of upper right molars with four canals that have been re-treated, for example.

The software also makes it easy to show patients why it is important for them to return for recall. Most patients return for their routine cancer screening, especially if they have had cancer. The same is true of patients who have had endodontic treatment, and want to avoid going through the pain of an abscessed tooth that could have been prevented by early detection.

Having access to the right sets of

data can make it possible to prove almost any premise. For example what is the difference between completing the case in one visit or multiple visits; long vs. short; one irrigant vs. another; vital vs. non-vital; reduce occlusion or not; retreatment vs. extraction and implant; causes of post-op pain; effect of antibiotics and analgesics; thermoplastic vs. single cone; one sealer vs. another; eugenol vs. no eugenol, etc.

TDO is the only software that was created with a view as to what the ultimate clinical queries would be.

Finally, the real key to collecting and maintaining good data on all patients is to do it contemporaneously. In other words, don't ask a bunch of questions and plan to enter the answers in the computer later on. Start by handing the patients a laptop or tablet computer and let them check the boxes directly. Follow that by having the dental assistant record everything that happens as it happens. What anesthetic did you use, how many cartridges, what was the results of your diagnostic testing, what about the perio probing, length measurements, what files did you use, how long did each phase of the treatment take, and so on...

Using TDO, Dr. Carr is able to accurately capture, track and maintain data on all of his patients. Analysis of the captured data has produced some very interesting results. For example, in his practice, Carr has found that most of his patients are retreatment cases, and most of the original treatment was done by endodontists; there isn't as large a discrepancy between the results obtained by endodontists vs. general practitioners, most instances of post-op pain occur with patients have prior pain for two days or more; and no other factors seem to matter, plus there are too many other interesting findings to cover at this time. Dr. Carr plans to share these findings at a future time.



## Interactive Computer Technology Applications in Endodontic Education

Unni Endal, DDS • Oslo, Norway

*Dr Unni Endal studied dentistry at the University of Oslo, Norway, where she graduated in 1985. She received her specialist degree in endodontics in 1994 in Oslo. She has worked as a part-time clinical instructor at the Department of Endodontics in Oslo since 1993. She is presently a Clinical Assistant Professor in Endodontics, and is in charge of clinical and surgical training of the endodontic postgraduate program in Oslo. Dr Endal is also in charge of the Continuing Education Program in Endodontics in Norway run by the Norwegian Dental Society. Dr. Endal is the editor of Visual Endodontics multimedia software, together with Dr. Haapasalo and Dr. Friedman. She has published articles on pulp diagnostics and root filling techniques, which is now her main area of interest in research. She also works in a private practice limited to endodontics.*

The field of dental education is facing some of the greatest challenges ever in our modern society. Demand for improved, cost-effectiveness in education is a fast-spreading global “epidemic.” Together with the exponential growth of the amount of information on the various fields of dentistry, it forces educators and educational institutions to look for new ways to effectively stimulate the learning mind to be able to continuously adapt to and intelligently filter new information, to process and transform it to organized knowledge and dynamic hypotheses. These, in turn should support and guide rational and optimal professional activities for the benefit of our patients and our profession.

Visual Endodontics multimedia software had its first lines of programming code written for more than ten years ago with an ambitious goal: to help endodontic education develop from our best traditions of learning and teaching into a polydimensional dialogue in the “endodontic cyber space”. Yet, it is crucial not to forget our roots in education and therefore to combine and connect what we have had to what we will have in the

future. The great success among colleagues around the world enjoyed by the continuously evolving versions of Visual Endodontics Curriculum is a strong indication of right choices and philosophy of the software.

Visual Endodontics is a multimedia title covering the entire field of endodontics and dental trauma with special emphasis on visuality and easy access to structurally organized clinical and theoretical information. The newest version of Visual Endodontics contains more than 2400 high-resolution pictures (color photos, radiographs, drawings, transmission electron microscopy (TEM), scanning electron microscopy (SEM), and histological pictures), which corresponds to over 30 fully loaded Kodak carousels of slides. In addition, the software contains 26 narrated digital videos of a variety of endodontic procedures, taken mostly through the surgical microscope. Among the many special features of the program are CT scan animations of real patients, giving a unique, three-dimensional understanding of conditions such as resorption, apical periodontitis or invagination.

The Visual Endodontics program is continuously evolving and new

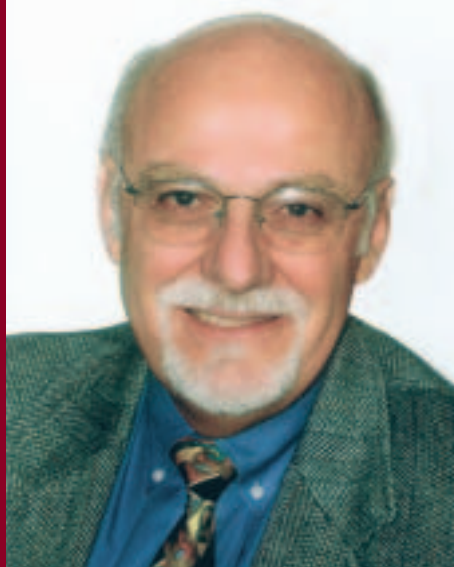
*“The field of dental education is facing  
some of the greatest challenges ever  
in our modern society.”*

versions will be published every one to two years. This allows following the newest advances in software technology to secure that the software will remain on the cutting edge of its field. The Visual Endodontics program is currently marketed by Quintessence Publishing.

Presently, over 90 dentists from several countries around the world working in the field of endodontics and related areas are contributing to the project with pictures, text, comments and advice. New universities and dentists are continuously joining the project.

---

*“It is crucial not to forget  
our roots in education  
and therefore to combine  
and connect what we have had  
to what we will have in the future.”*



*Dr. James L. Gutmann is a Diplomate of the American Board of Endodontics and retired Professor of Endodontics, Texas A&M University System Health Science Center, Baylor College of Dentistry. Dr. Gutmann has served as Chairman of the Department of Endodontics at both the Baltimore College of Dental Surgery, University of Maryland and Baylor College of Dentistry in Dallas Texas. In 1992, Dr. Gutmann was appointed Director of the Graduate Endodontic Program at Baylor. He served as President of the American Association of Endodontists (AAE) from 2000-2001. Dr. Gutmann has presented over 750 lectures, papers, and continuing education courses in the United States and 46 countries on six continents. In addition to authoring or co-authoring hundreds of clinical and educational articles, he is the senior author of the Endodontic text, "Problem Solving in Endodontics," published in its fourth edition in 2005. Dr. Gutmann maintains a private practice limited to Endodontics in Dallas, Texas and serves as a consultant to Dentsply (Tulsa Dental is a subsidiary of Dentsply) Tulsa Dental.*

## Educational Challenges, Constraints and Visions in the Endodontic Educational Process

James L. Gutmann, DDS • Dallas, Texas

With the charter of the Baltimore College of Dental Surgery in 1840, dental education began to take on a formalized posture in the university setting. What must be remembered, however, is since the establishment of dental education as a university-based entity, its core mission has been the education, not training as one would find in a trade school, of practitioners. While there is a technical training aspect of dental education, the practice of dentistry or dental medicine, in particular endodontics, is grounded in scientific, biologic and medical knowledge – all of which are taught in the university setting.

Unfortunately, the ultimate outcome for many graduating dentists, particularly in endodontics, is not competency, but rather a cursory familiarity with the essentials of performing a root canal procedure, enough to pass the National Dental Board Exam or exams given by a few states that thought they better include a few questions on endodontics. Enter – the gap in the educational process and the explosion in endodontic technology!

A number of entrepreneurs began to identify the need to enhance the endodontic education of the general practitioners beyond a cursory dental school introduction. Weekend, hands-on courses using new technology for root canal procedures became popular. Coupled with the partnering of dental industry in the educational process, a new layer of endodontic education appeared, one designed to “fill in the gaps” so to speak, created in a less-than-ideal dental school educational process and to serve the needs of those who put forth this new technology. In the multitude of advertising dental publications that plague our mailboxes on a regular basis, there is a focus on speed, production and marketing that encourages the neophyte to pick up the instruments and tackle the root canals of the world – claiming competence and perfection if you use our tools and philosophy – “become fully trained in one-half or one day and you too can have unprecedented income performing root canals;” or “performing the eight-minute molar root canal!”

Should then the entrepreneurial efforts in endodontic education be



*“Unfortunately, the ultimate outcome for many graduating dentists, particularly in endodontics, is not competency, but rather a cursory familiarity with the essentials of performing a root canal procedure.”*

abandoned? No, what is needed, however, is an integrated and common vision, an elimination of the “my way is the only way to achieve endodontic success,” and a reduction in the marketing messages that only confuse or hoodwink the professional – they want to “handle the truth”, and the development of a supportive global structure focused on a life-

time pursuit of learning, to ensure that the quality of the endodontic educational endeavor will be at the highest possible level and in the best interest of those who seek these lofty goals. Ideally this should emanate from the seat of education – the university setting. Only in this manner will the best interest of the patients that we serve be met.

---

*“While there is a technical training aspect of dental education, the practice of dentistry or dental medicine, in particular endodontics, is grounded in scientific, biologic and medical knowledge – all of which are taught in the university setting.”*



*Dr. Borczyk received his MD degree in 1988 as a graduate from Silesian Medical Academy, and his DDS in 1992 (specialization in oral surgery). Since 1992, he has owned and operated a private clinic in Katowice, Poland. Dr. Borczyk is the author of numerous articles on the use of minimally invasive techniques using the operating microscope. Since 1996, he has lectured and conducted hands-on instruction for his endodontic treatment methods. He is the co-founder of The Polish Endodontic Association, and the chief editor of the Polish edition of "Root" Magazine.*

## Problem Solving for the Endodontic Educator

Roman Borczyk, DDS, MD • Katowice, Poland

The endodontic educator has two main objectives. First, make a good impression on the audience so they will be receptive to the information being presented, and second, to provide new knowledge to help students solve their treatment problems.

Teaching should be a bi-directional information exchange. Ideally, both participants and course leaders will obtain new knowledge. In spite of the growing popularity of the internet and virtual education possibilities, it seems that traditional hands-on courses will still have an important role in future endodontic education. Two-way communication, which is possible during live, hands-on courses, allows for a better exchange of information and leads to easier learning of new skills and solving everyday problems.

The introduction of new products sometimes causes problems instead of solving them. Theoretical knowledge is not enough. Practical courses are much more important for dentists and are usually more interesting to the audience. Very often, there are some things impossible to learn through the Internet or even listening to the live lecture.

It is important for the educator to convince dentists to participate in hands-on seminars, and clarify which

problems attendees can solve by attending recommended courses. Dr. Borczyk's teaching program is divided into four levels, to coincide with the knowledge of the participants. Dentists are advised to take all levels in order. Attendees report much higher satisfaction levels when they learn step-by-step techniques as part of a group with roughly the same experience and knowledge. Dr. Borczyk's mission is to make the hands-on exercises as close to reality as possible.

Borczyk uses artificial bone models to simulate conditions in the mouth. Extracted teeth are mounted in the models, and participants rely on x-rays and apex locator measurements without the possibility of visually inspecting the apex. It is possible to take an x-ray in a sagittal direction, where participants are able to see complicated connection systems, such as the one seen between the lower molar's mesial canals. This unusual projection can convince the student of the necessity of proper rinsing and using three-dimensional obturation techniques.

New possibilities of solving problems arising with computer supported education, and how changing virtuality into reality with new models of artificial bone makes education more interesting and efficient.

*“Attendees report  
much higher satisfaction levels  
when they learn  
step-by-step techniques  
as part of a group.”*

---

*“In spite of the growing popularity  
of the internet and virtual  
education possibilities,  
it seems that traditional  
hands-on courses will still have  
an important role in future  
endodontic education.”*



*Dr. Ken Koch received both his D.M.D. and Certificate of Endodontics from the University of Pennsylvania School of Dental Medicine. He is the founder and past Director of the New Program in Postdoctoral Endodontics at the Harvard School of Dental Medicine. Prior to his Endodontic career, Dr. Koch spent ten years in the Air Force and held the position of Chief of Prosthodontics at Osan AFB and Chief of Prosthodontics at McGuire AFB. In addition to having maintained a private practice, limited to Endodontics, Dr. Koch has lectured extensively in both the United States and abroad. The author of numerous articles on Endodontics, Dr. Koch maintains a faculty position at Harvard. Dr. Koch is a co-founder of Real World Endo.*

## Who Should Do the Root Canal - the General Practitioner or the Specialist?

Kenneth Koch, DMD • *Wilmington, Delaware*

**D**r Koch is uniquely qualified to discuss the differences between dental school education and private continuing education because he is actively involved in both.

According to Koch there are several questions to be answered: Does the patient need a root canal or not? Should the specialist or the general practitioner perform the necessary treatment?

If the GP will treat the case, he/she must ask, Can I complete this root canal with an outcome very close to what an endodontist can do? If the answer is no, the GP should consider referring the case.

The standard of care is to the level of the specialist. Koch recommends going to the American Association of Endodontists web site ([www.aae.org](http://www.aae.org)) and downloading the Case Difficulty Assessment Form. These forms are designed to help you stay out of trouble, assess the difficulty of the case and have the added advantage of providing legal documentation that you carefully assessed the case prior to starting treatment. If called to testify, you can say, "After using the AAE case assessment form, I determined that this case was within my purview of treatment."

That's a strong argument and it shows that the decision to treat rather than refer was carefully thought out. Many dental schools in North America and Canada now include this form as a part of the patient's record.

Endodontic education begins in dental school, but dental school continuing education departments are failing. There are several reasons why in-house C.E. isn't working. In many cases, management is mandating C.E. programs be created when faculty members don't really want to do them. Attendance at these programs is often low, either from lack of proper advertising or the perception that the programs are just a rehash of the same old dental school curriculum.

Many schools are now graduating students having done two root canals or less. In some cases zero cases were complete prior to graduation. Students often find the good cases are being taken by the graduate program, and in such cases, Koch recommends the following: If a student has a case that should be referred to a graduate student, the graduate student should have to find a replacement case for that

student before being allowed to start the case.

Manufacturers are becoming a key element in dental continuing education. According to Koch, 90 percent of continuing education speakers have some type of sponsorship, and 25 percent of the 90 percent are sponsored by dental labs.

Koch points out that dental schools should foster better and closer relationships with manufacturers. When manufacturers provide high tech equipment, it benefits the school, the students and the patients. In turn, the manufacturers need to try to deliver better products at lower cost, use improved material science and develop techniques that are sophisticated enough to be simple (learn from the Japanese).

One of the challenges is for organized endodontics to stop feeling threatened by courses that teach quality and efficiency to GPs. They should embrace the concept of endodontic continuing education for GPs, which translates to better treatment for the patients.

Implants are not a threat to endodontists, but there are several areas of concern. Fresh socket implants may create problems later on. Anterior implants may result in the dreaded dark triangle due to post-op shrinkage of the tissue. So, which is better, retreatment or implants? This should be decided on a case-by-case basis, without being influenced by the cost or profitability of endodontics vs. implants.

The real threat to endo is not implants, it's lack of endodontic education.

Koch says we should close the circle between implants, endodontics and restorative.

We should have synchronicity among the shape of endodontic preparation, the taper of the paper points and gutta percha and the shape of the post preparation. Koch says that his ideal post drill is a .06 tapered rotary file.

Koch says the future of endodontics will include:

- More Cases / Gerodontology
- Increase in retreatment
- Increased difficulty
- Increase in apical surgery

Dr. Koch offers several suggestions on how to get the most from C.E. courses. His first recommendation is to select a course that offers a hands-on component. You learn much more efficiently by doing than by simply watching. Second, you should ask about the ratio of students to instructors (1:7 or 1:10 is reasonable). Look for a hands-on course that utilizes digital radiology to provide instant feedback during the hands-on sessions. Be prepared: Access and x-ray the teeth you will be using before you show up for the course. When you attend a hands-on course, take along what you are now using, so you can compare it to the new system. Look for a course that includes a mechanism for that very important follow-up.

*“One of the challenges is for organized endodontics to stop feeling threatened by courses that teach quality and efficiency to GPs. They should embrace the concept of endodontic continuing education for GPs, which translates to better treatment for the patients.”*



*Dr. Johnson is an Endodontist, inventor, entrepreneur, educator, philanthropist and friend to dentists worldwide. After developing Thermafil, a novel root filling technique that is now widely accepted, he established Tulsa Dental Products in 1988 and embarked on a unique journey of modernizing Endodontic treatment. He used the same design elements of Thermafil to develop ProFile .04 and .06 nickel-titanium hand and engine-driven root canal instruments. More recently, he was instrumental in the design of the ProTaper series of rotary files. For nearly fifteen years, he has traveled more than 250 days per year bringing new endodontic concepts to all corners of the world.*

*Among several distinguished awards Dr. Johnson has received are the 2004 President's Award from the American Association of Endodontists and the 2000 Louis I Grossman Award from the French Endodontic Society. The American Association of Endodontists named him Philanthropist of the Year and he received the Distinguished Alumni Award from the University of Tulsa in 1996. The Oklahoma Bar Association honored Dr. Johnson as Inventor of the Year in 1994.*

*Dr. Johnson is a member of numerous dental organizations, including the Oklahoma Dental Association, American Association of Endodontics, Pierre Fauchard Academy, the American College of Dentists and the International College of Dentists. He is past president of the Oklahoma Association of Endodontists, the Southwest Society of Endodontists, and the Tulsa County Dental Society. He has been published in several dental journals and textbooks and is a world-renowned lecturer on endodontic innovations.*

## Future Materials in Endodontics

W. Ben Johnson, DDS • Tulsa, Oklahoma

**D**r. Ben Johnson has a passion for endodontics and a desire to improve the successful treatment of the root canal systems. Dissemination of information about materials and techniques from the endodontist to the GP is very important. Dr. Johnson says that some endodontists believe that only endodontists should be doing root canals. The reality is that with the number of root canals being done compared to the number of endodontists, it is impossible for endodontists to do all the root canals.

Sharing information and helping everyone be the best they can be, benefits the GP, the endodontist and the patient. Dr. Johnson is often asked why certain root canals fail. The intellectual answer is always the presence of bacteria in the canal. However, your personal thought process can take you down different venues. Johnson showed an x-ray that illustrated several different possibilities for failure.

Some might believe that this case failed due to coronal leakage.

- If you believe in establishing patency, instrumentation and obturation to the terminus of the root canal, then you could say this failure occurred because the tooth was not cleaned or obturated to the terminus.

- Perhaps, if you are conservative you might say it failed because the root canal was over-filled in the distal root.

The truth is, you can find whatever answer you want to find, but the problem is still the presence of bacteria. An even better question is, why are other root canals we would classify as sub-standard endodontic treatment, successful? The answer, the bacteria count is low.

Dr. Johnson discussed why what may appear to be a simple case, may in fact turn out to be a failure, and with the presence of tissue that was not removed after instrumentation was complete. The fact is there may be situations where you cannot get to all the tissue. X-rays may not show this. In fact what looks good on X-ray may in fact not show what is really going on. The conclusion: if you don't debride the canal and clean out the tissue, you do not have a chance to sterilize the root canal system. Without removing the bacteria, your success is going to be diminished.

We put so much emphasis on obturation and instrumentation in the 80s and 90s. Only in the last few years have we seen people concentrating on debriding the root canal system with irrigation.

Dr. Johnson classified root canal instruments as Active or Passive. Passive

instruments have radial lands, and they have a scrapping action versus an active cutting action. Actives are aggressive. As an endodontist, Johnson prefers an instrument that rotates, has radial lands that will cut, and glides around curvatures. With such an instrument, you can return to the apex as many times as you want without significant transportation occurring. With active blades, each insertion must be deeper than the previous. When you reach the apex, get out and do not go back. Otherwise, transportation of the apex occurs. In agreement of the use of the glide path, he discusses the proper use of these instruments.

With the call in literature to seek improvement, Dr Johnson discussed ways of improving NiTi instruments. He mentioned not all NiTi alloys are the same. We now know stress occurs with the use of torque-control handpieces, and if you keep pressing too hard, you will definitely produce stress in the instrument.

Cyclic Fatigue occurs and NiTi instruments vary as follows:

- Surface texture
- Cross-sectional areas
- Material-quality varies
- Taper
- Helical angles

Thus the quality of NiTi instruments can vary, depending on the quality of the NiTi.

According to Johnson, corrosion from sodium hypochlorite affects certain brands of NiTi instruments significantly more than others. Although NiTi resists corrosion better than many other metals (such as stainless steel), prolonged soaking in sodium hypochlorite can definitely weaken certain brands of NiTi instruments. As instrumentation improves, we must be ever mindful of the necessity of reducing the presence of bacteria to increase the success rate of endodontic therapy.

Does NiTi improve the endodontic success rate? No. It's a convenience that makes irrigation and obturation more efficient. Success in endodontics is dependent upon the skill of the operator, not the materials or the techniques used.

New design concepts are combining an active cutting blade on the upper portion of an instrument and passive cutting at the apex. I think you'll see those on the market in the next year or so.

The quality of work done overseas (not just the quality of the work but the quality of the materials that are available) is very high. In fact, if I were to name the top five endodontists in the world, three of them would not be Americans.



For more than thirty years, Dr. Arthur "Kit" Weathers has lectured worldwide on technologies, products and processes designed to simplify the practice of endodontics by the general dentist. The developer of a range of dental products, Dr. Weathers pioneered the EndoMagic! Nickel-titanium file system for general dentists seeking to improve both the quality of care and the economics of the endodontic services they offer. As the clinical technique developer of the X-tip Intraosseous Anesthesia System, he has assisted practitioners in need of patient-friendly anesthetic application methods.

Dr. Weathers is the author of numerous articles on innovations in endodontic treatment products and processes as well as intraosseous anesthesia delivery systems. His most recent four part series of articles entitled, "Endodontics, From Access to Success," appeared in *Dentistry Today*. Dr. Weathers has also introduced the well-reviewed C.E.Magic "edutainment" interactive learning system, entitled "Antibiotics in Dentistry" to the field of dental continuing education.

Dr. Weathers serves as the Director of Endodontics at the Las Vegas Institute for Advanced Dental Studies (L.V.I.). Lecturing extensively to dental organizations, Dr. Weathers integrates an academically grounded approach to his subject with humor, magic, and mnemonics to enable his audience to recall his well-accepted techniques. As the founder of the Practical Endodontics "Root Camp," Dr. Weathers offers numerous two-day, hands-on training sessions at the Las Vegas Institute and his facility in Griffin, GA.

## Endodontic Education A Paradigm Shift

Arthur "Kit" Weathers, DDS • Las Vegas, Nevada

The future and advancement of education will always include change. The problem is some people simply do not like change, and even worse, they don't recognize change until a Paradigm Shift resets everything back to zero.

The dictionary definition of Paradigm is pattern or model. Let me offer an extended definition: A Paradigm is a system of rules and regulations that does two things. First, some of the rules set limits or establish boundaries. Second, the rest of the rules tell us how to be successful by solving problems that exist inside those boundaries. In a sense, they offer a model for problem solving.

A Paradigm is a problem solving system, and a Paradigm Shift is when you change from one set of rules to another.

Dr. Weathers indicated that we must embrace change and deal with shifting Paradigms. The Paradigm Effect is an interesting process that causes people to not believe changes, until they are obvious to everyone. All human beings have Paradigm Shifts that influence the way they see the world. We all constantly select that data that best fits our rules and ignore the rest.

What may be perfectly obvious to a person under one paradigm may be totally imperceptible to someone with a different paradigm. This is because each paradigm filters the world in a different way. This filtering phenomenon is called Paradigm Effect, which is

what makes changes and predicting the future so difficult.

No one is immune from the paradigm effect, which can effectively blind us from being able to see break-through solutions to life's difficult problems. When scientists study data, they have no problem understanding that which falls within their own Paradigm. The more exceptional the data, however, the more problems scientists have dealing with it. We all have difficulty understanding concepts outside of our present Paradigms.

Because people in different industries are so close to the problems, most break-through changes come from outside the industry. Major changes in endodontic education will quite likely come from sources outside of organized dentistry. "E-Learning" on the Internet, all forms of distance learning, "Podcasts," blogs, video conferencing, and even cell phones are possibilities.

The only thing that is certain is if we are going to evolve we must welcome change.

Dr. Weathers embraced all aspects of distance learning, but drawing upon data collected during the past ten years of analyzing data obtained from attendees at his endodontic "Root Camps," he says that hands-on, live seminars are still the best way to communicate the message to the dentist.

Examples of data gathered from Root Camp attendees include the following observations:

Attendees at hands-on seminars such



as the Root Camp decrease their treatment time by an average of 22 percent. Specifically, Dr. Weathers found that his attendees:

- Reduced preparation time on anteriors from 55 minutes to 40.7 minutes.
- Reduced preparation time on bicuspids from 75 minutes to 54 minutes.
- Reduced preparation time on molars from 106 minutes to 77.6 minutes.

Attendees increased their hourly production by more than 40 percent:

- Anteriors increased \$237.00 or 43 percent
- Bicuspids increased \$226.00 or 44 percent
- Molars increased \$171.00 or 41 percent

Attendees Average Hourly Endodontic Production following Root Camp:

- Anteriors \$787.00 hourly production
- Bicuspids \$736.00 hourly production
- Molars \$592.00 hourly production

This and other data substantiate the value of hands-on, participation seminars as highly effective environments for learning.

Approximately forty million root canals are done each year, and at least 80% are done by general practitioners (GPs). Because GPs are held to the same standard of care as endodontists, the best way for a general practitioner to stay out of trouble is to only start root canals that can be finished to the same standard as the endodontist. Toward that end, Weathers teaches his Root Camp attendees a system to triage potential endodontic cases. Here's how the system works.

Schedule an "infection control" appointment rather than a root canal. Reserve 30 minutes or less for the treatment, and use a timer to limit the time you spend searching for the canals. Set the timer for 15 minutes, and if you have not located all the canals in that

time, temporize the case and bill the patient for a D3221, Pulpal debridement for the relief of acute pain prior to conventional root canal therapy (not to be used when endodontic treatment is completed on the same day).

If you do not locate the canals in 15 minutes, and wind up referring the case to the endodontist, you did not promise the patient a root canal, so they will not be disappointed and question your judgment for starting something you could not finish. But, if you do locate the canals and obtain a working length, you can then reappoint the patient knowing exactly how much time to schedule for the root canal and for the restoration at that same appointment if you so desire.

If you determine you will be able to complete the root canal, don't dismiss that patient until you are certain the next patient will show up. You would likely feel bad if you sent the root canal patient home and then discovered the next patient was a no-show. Another possibility for completing the case would be to ask patients if they would like to complete the root canal that day. If they say yes, ask if they mind hanging around for a few hours to avoid having to return for a second appointment. Most of the time, patients would rather get it over with. They are already numb and do not want to miss another day of work.

Dr. Weathers' research demonstrated that of the different educational modes available (Internet, home study courses, distance learning, conference learning, etc.), GPs will increase their productivity and the quality of their endodontic treatment more from a hands-on seminar, than any other currently available modality.

If you watch something you will remember part of it, but if you participate, your rate of learning improves exponentially.

# A Magnetic Smile... A Passion for Beauty!



Create "magnetic smiles"  
for your patients.

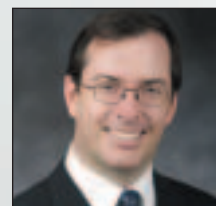
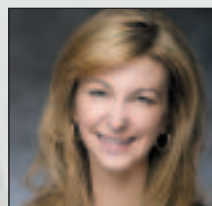
*Call our Advanced Esthetic Hotline*

**1-800-661-1169**



[www.aurumgroup.com](http://www.aurumgroup.com)

LVI Designated Laboratory since its  
inception.



Dr. Danielle D'Aoust and Dr. Daniel Gallagher,  
Montreal, Quebec.

"Beautiful smiles come naturally with Aurum  
Ceramic. Unparalleled artistry, the finest mate-  
rials and superior technical skills . . . it all adds  
up to superb results on every case."

Dentistry courtesy of Drs. Danielle D'Aoust and Daniel Gallagher.  
Restorations fabricated by Aurum Ceramic.

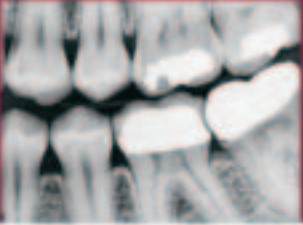
*Photography courtesy of Paul Ducharme.*

*Miltex*  
Redefining Excellence



*Endodontics & Dentistry*  
Instruments for the Dental Expert

[www.miltex.com](http://www.miltex.com)  
866.854.8300



# SCHICK DEFINES DIGITAL RADIOGRAPHY

**ALARA** acronym "As Low As Reasonably Achievable" To make every reasonable effort to minimize ionizing radiation exposure, consistent with the task and taking into account the state of technology. The ALARA principle must be practiced as a matter of mandate of federal code.

## "Buying Schick is healthier for my patients, my staff - and me."



Dr. V. Kim Kutsch talks about his Schick system:

"Schick uses far **less radiation** than film, a fact patients appreciate. Our team loves it too; it's **safer**, it's environmentally friendly, and it's easier to use than film. It's a **better way** to take x-rays."

**Get the facts!** Call your local Patterson Representative at 1-800-873-7683 for a live demo or for a copy of the **"Live Demo Checklist"**. Critical for evaluating any digital system.



All Schick CDR systems are sold, installed, and serviced by the most trusted name in dental equipment today, Patterson Dental. For a free in-office demonstration, call your local Patterson representative, your local Patterson branch or call 1-800-873-7683 today.



**The future is here.**

[www.schicktech.com](http://www.schicktech.com)

## **Michael Miyasaki DDS, LVIM**

*Dr. Michael Miyasaki is LVI's Vice President of International Operations. A 1987 graduate of USC School of Dentistry, he developed a highly successful reconstruction practice in Sacramento, CA. Following his passion to teach and mentor other dentists, he became associated with LVI in 1996 where he now works full time. Michael practices in the LVI faculty practice, lectures and publishes articles on the latest aesthetic, occlusion and materials available.*



### **LVI Courses featuring Michael Miyasaki include:**

- **Advanced Functional Aesthetics**
  - **Occlusion I, II, III**
- **Comprehensive Aesthetic Reconstruction**
  - **Full Mouth Reconstruction**

# PRODUCT REVIEWS

## ACCESSIBILITY IN OUR OFFICE

*Being able to gain access in the relatively small confines of our offices and the oral environment in which we work can often bring up interesting challenges. Through our typical day in the office we provide check-ups and x-rays, and after cementation of a restoration clean up cement. Neither of these two things would be on our top ten favorite things to do, but maybe we can make it easier.*



Figure 1-The Nomad Unit



Figure 2-Replacable NiCd batteries insert into the handle

#### Aribex's Nomad Dental

Many of you have one x-ray station that services the office meaning the patients are escorted to a distant location where the imaging occurs taking up valuable office time. My office had either an x-ray head in a single operator or one that could be shared between two, but in either case there was great expense in their purchase, but the convenience of not having to move the patient, I felt, was worth the price. Walk the patient or pay the price of multiple x-ray units? Cement removal can be a challenge. Working in the dark recesses of the oral cavity in-between the teeth where no man can go and expecting to take our relatively large instruments interproximally is like trying to scratch your back where you can't reach. You know it's there, but you can't get it. What fits between those tight spaces and doesn't lacerate the tissue beyond recognition? Here come two items that will take care of many situations.

With 'Nomad' in the name you should conjure up images of movement and portability and that's exactly what Aribex's Nomad Dental x-ray generator provides (figure 1). Just as cordless LED curing lights have freed us up from the cord clutter in our operatories and the limited distance of use (the length of the cord) so does the Nomad Dental x-ray generator. Team it up with a digital capture system, such as, the DEXIS system we use at LVI and you have a winning duo of convenience and speed. Gone are the x-rays heads mounted to the walls which sag and drift after being positioned. Gone are the days of having your patients' contort their neck to get the proper position. Gone is the need to run in-and-out of the operator. And gone is the need for multiple x-ray heads or moving the patient to a designated radiology station.

The Nomad Dental unit is a portable x-ray generator powered by interchangeable, rechargeable NiCd batteries (figure 2). If you can change the battery in your cordless drill at home you'll be able to handle this. This then gives the unit the ability to move from operator to operator and then positioning to the patient is a breeze. Simple arm and wrist movements give you the perfect x-ray head orientation. The trigger that activates the unit is pulled and within seconds you're looking at the radiograph on your digital x-ray system. If you are still using film you'll get a great image, but you'll be wasting time in the developing stages. Each unit comes with two batteries. One battery will last for 200-300 radiographs. Being battery powered you are taking the images with true DC current which means you are able to minimize your patient's skin exposure to radiation in comparison to many AC units.

How about operator safety? The handheld unit has internal shielding which protects the operator from radiation leakage from the unit itself. There is also an external back scatter shield which creates a 6-foot diameter of protection for the operator's safety.

The unit is set at 60 kV and only the exposure time needs to be set on the back of the unit (figure 3) to give the highest quality image to your capture medium.

During its typical use the operator turns on the power, sets the appropriate exposure time at the unit's touch pad control, positions the capture medium in the patient's mouth, hits "enable" on the touch pad and pulls the trigger (figure 4). Our DEXIS system shows the image in seconds. The operator does not have to run out of the room hoping the patient did not move. The portable x-ray generator is positioned and the x-ray is taken for almost immediate review.

Retailing for \$6,995 it could mean a large cost savings for those designing an office with multiple x-ray heads.

A potential drawback is that the unit weighs around eight pounds, but an assistant or doctor with average strength should find it is easy to maneuver.

Other possible uses are in hospital or nursing home settings, disaster sites or Third World countries.

The unit was given FDA 510(k) approval, but each state has its own regulations regarding registration of the unit. You should contact Aribex or a representative to check on your state's specific requirements.



Figure 3-Back digital panel



Figure 4-Easy handling

The company touts, "Anytime... Anyplace" and the Nomad surely delivers on its promise. I use the unit and

have been impressed by its convenience.

For more information visit [www.aribex.com](http://www.aribex.com).

# STRIPPING IN VEGAS

Just the thought of cleaning up interproximal cement can bring a frown to our faces. It's always been a challenge for me. In the past I've used instruments that although small were relatively gigantic compared to the access I had. I've used interproximal ribbon saws with mixed success. Long and sharp I would often remove the stubborn cement along with some not so stubborn lip or cheek tissue.

AXIS has introduced a new system called Qwik Strip (figures 5 and 6). The nice thing about this system is its versatility and ergonomic design. Essentially there are metal blades within plastic handles providing the ability to have outstanding control. There are five color-coded abrasive strips (serrated, superfine, fine, medium and course). For typical clean-up I use the serrated design (figure 7) and if they did away with

the serrations I'd be pleased with that as the wedging action of the metal between the teeth is normally sufficient to remove the cement

The plastic handles have teethering holes (figure 8) through which floss can be inserted to prevent accidentally ingestion or inhalation of the Qwik Strip should it slip into the patient's mouth. Another function of the plastic handles is that they act as a stop to prevent laceration of the soft tissues (figure 9). One possible drawback with a long contact is whether the Qwik Strip can reach the gingival contact area, but so far it's worked well for me in every situation.

I've used the Qwik Strips in the anterior areas of the mouth all the way back to the distal of the second molars with great success.

Another use for the Qwik Strips is for interproximal reduction for Invisalign

or OrthoClear cases. In this situation it is recommended by AXIS that you begin with the QS-SF (super fine) then the QS-F (fine) grit, then the QS-M (medium grit) and finally the QS-C (course grit) strippers (figure 10).

The Qwik Strips are autoclavable, and, therefore, reusable.

During post-cementation clean-up, I inform the patient that they will be feeling a little pressure as we smooth off the space between the teeth. If informed beforehand, I find that most patients tolerate the use of the Qwik Strips quite well.

So here are two more great products that I would encourage you to try. Both provide solutions to everyday challenges and once incorporated into your practice may have you putting these two tasks on your top ten favorite things to do. Okay, maybe.

Take a look at these products. After you do I'd love to hear your comments. Your suggestions always are welcome – please send them to me at: [mmiyasaki@lvglobal.com](mailto:mmiyasaki@lvglobal.com)



Figure 5 and 6-Qwik Strips Assortment



Figure 7-Serrated edge

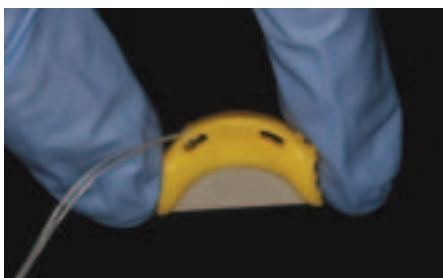


Figure 8-Teethering holes



Figure 9-Interproximal positioning



Figure 10-Course sided Qwik Strip





If you like Genie,<sup>™</sup> you'll love these Sultan products...



**Silgimix<sup>™</sup> Alginate Replacement Impression Material**  
Quicker, better impressions—without the mess. It's the dust-free alternative to alginate materials.



**Genie<sup>™</sup> Bite**  
A bite registration that sets, rock hard, in 60 or 90 seconds. Comes in easy-to-use automix cartridges.



**3-Way<sup>™</sup> Disposable Impression Trays**  
Single use—ideal for accurate impressions, counter impressions and bite registrations.



**Genie<sup>™</sup> Magic Mix**  
Genie is available in 100 ml cartridges. Works with any automix machine. Get 5% more material than foil bag systems.

## Award-winning performance doesn't have to be expensive.



Blockbuster benefits at an affordable price! With Genie,<sup>™</sup> you'll get remarkable impressions for a third of the cost of leading brands. No big budget necessary.

And, you can always count on Genie to give an incredible, consistent performance. It's easy to extrude and ultra hydrophilic, so moisture will never shut down production. Genie comes in your choice of two set times (rapid 2:10 and standard 4:30) and five viscosities, with a berry flavor that will make your patients cheer.

It all explains why Genie is the brand more and more dentists are switching to. Find out for yourself what all the buzz is about.

To order Genie,<sup>™</sup> contact your dental supply dealer or visit [www.sultanhealthcare.com](http://www.sultanhealthcare.com) for a FREE, online training module.



# IACA 2006 CONFERENCE M O N T R E A L





Register for the 2007 Conference Now!

Chicago July 19-21

[www.theIACA.com](http://www.theIACA.com)

1.866.NOW.IACA



LVI GLOBAL

# Performing Life-Changing Dentistry

*Most dentists I have had the pleasure and opportunity to speak with—when they can talk candidly—do not truly enjoy their jobs. And, honestly—at first, neither did I. In fact, before I discovered the satisfaction and joy of performing life-changing dentistry, if I could have done anything else with my dental degree, I wouldn't be here today. Luckily, in the late 80's, I had an epiphany after hearing Omer Reed speak, and realized it was okay to make a living in healthcare. You can't achieve or deliver excellence unless you charge for it, confident that you're providing patients with a great service. And, to truly do life-changing, exciting, and rewarding dentistry, I realized that having a dental degree was merely a license to continue to study and learn more about dentistry and patient care. That realization changed the way I practice dentistry, and consequently has had a profound effect on my patients, my career, and my life.*



Bill Dickerson



LVI GLOBAL

**A**s I began learning more about dental techniques, technology, and materials, I also sought to gain a deep understanding of the dental patient. And it quickly became obvious that people don't just want a nice smile. They want to feel better as well. They want to feel younger. They want to feel confident. It's about feelings—emotions. Techniques, technology, and materials are merely tools we use to make our patients feel, and look, better. And believe me, there is nothing wrong with helping patients feel better by giving them a healthy and beautiful smile. When you do this, and you see the tears in their eyes and the brilliance of their smile, you know you have changed a life. And, that's significant. But, the question is, are you willing to change your life, the way you deliver

dentistry, and the way you practice to move from success to significance? If so, here are the five critical components of moving from drill- and-fill dentistry to dentistry that is thrilling and fulfilling.

**Understand dentistry is not a game of volume.**

It is a game of margin. Dentists often feel their schedule dictates every working minute of the day, trained to think that volume means success.

Yet, I know some of the most successful dentists work fewer hours than average, and make more money because they provide a better quality service—life-changing dentistry. Many dentists believe they are in a product-oriented business. They're not. They're in a service-oriented business.

**Deliver clinical excellence (stay on top of your game).**

When you graduate from dental school you may believe that you have the latest and greatest education. But the reality is, many of the techniques considered “cutting edge” are not taught in dental school. And, for the most part, neither are sound business strategies. Plus, because technology continues to evolve at such a staggering rate, once you begin practicing you're probably already out of date. To stay on top of your game, you must make a commitment to continuing education.

**Know who your real patient is.**

If a dentist is using insurance plans or discounting fees to attract and retain the majority of his or her

# Life-Changing Dentistry Starts with the Patient

patients, he or she will never do life-changing dentistry because their tactics are only effective when providing cost-based dentistry. Most dentists don't realize that insurance is a form of marketing, an expensive form, sometimes costing the doctor 30% of his or her gross. If they spent that 30% marketing directly to the type of patient they really wanted, they would be much better off.

**Believe every patient is entitled to— and is willing to pay for— life-changing dentistry.**

Years ago, it was the dentist's responsibility to educate patients on the possibility of cosmetic dentistry. Now, I would say, for the most part, the public is aware of veneers, whitening, and other want-based

dental procedures. Unfortunately, the average dentist sells on "need". I believe it is the dentist's professional and moral obligation to provide a comprehensive diagnosis, and let patients know what they can do to reach optimal form and function, whether that includes cosmetic, restorative, preventive, or neuromuscular dentistry. And it's the patient's right to refuse treatment. Giving patients the opportunity to achieve their dreams often requires giving options--not on

*To stay on top of your game, you must make a commitment to continuing education.*

ideal treatment recommendations--on ways to pay. A dentist may have the most advanced clinical skills, but if he or she doesn't have the ability to get patients to say "yes", they're not going to be able to utilize any of their talents. So, give them the ability to pay over time and comfortably fit life-changing dentistry into their lifestyle by providing monthly payment plans. Almost all dentistry today is "elective," meaning the patient has a portion they must pay out of their household budget. Just as no one today buys a television, car or other significant purchase with cash, patients don't want to, or may not be able to, pay for life-changing dentistry with a check or credit card. But that doesn't mean you should extend terms through your practice. In fact, carrying account receivables only adds to overhead, frustration and

patient dissatisfaction. When patients owe you money, it only creates animosity and gives them a reason to find fault with your work. Let a third party financing program like CareCredit, the one endorsed by LVI, provide a monthly payment option. They can do the job more effectively and efficiently than the dentist can.

## Embrace change.

Research is providing proof that the disease state of the mouth, the way the teeth fit together, and the position of the mandible all affect the patient's overall health and wellbeing. This gives dentists an amazing opportunity to change the way they approach treatment recommendations. But, if you look at the evolution that's occurred in dentistry, there's always been resis-

tance to any change. In five years, I hope, as an industry, we have achieved our goal of changing the public's perception of the dentists from being "molar mechanics" to physicians of the mouth, and placing the appropriate value on that role.

Today, dentists have a choice. They can perform the dentistry they were taught in dental school, or they can choose to perform life-changing dentistry. If you embrace the concept of life-changing dentistry, not only will your patients benefit, but you'll find you and your practice benefit also.

One of the greatest things we've ever accomplished at LVI is significantly increasing the percentage of doctors who now enjoy being a dentist. In a recent survey, 99.7% of our alumni stated they love their job. Now, that's life-changing!

*Like many doctors, Dr. William Dickerson was unhappy with the progress of his chosen profession. Fifteen years ago he made the decision to change that. His practice success and personal metamorphosis led to his passion to help others in dentistry so that they too could enjoy the profession they have chosen. Since that time he has educated thousands of dentists all around the world inspiring them to make the necessary changes for their own practices and lives. Because of his dedication and passion to help other dentists, he is considered by many to be one of the most influential dentists in North America, affecting the practices and lives of thousands of dentists. He is the CEO and Founder of The Las Vegas Institute for Advanced Dental Studies.*

## Interested in learning more about LVI and our amazing courses?



Call us at (888) 584-3237,  
visit us on the web at [www.lviglobal.com](http://www.lviglobal.com)  
or e-mail us at [info@lviglobal.com](mailto:info@lviglobal.com).



We will send you a complete  
course catalog, schedule of upcoming  
events and much more.



# LVI UNVEILS TWO NEW AND INNOVATIVE

## Dental Hygiene Courses

Call 1.888.584.3237 to register today!



CHANGING DENTISTRY. CHANGING LIVES.

### LVI Advanced Hygiene Program

*This course is designed to supercharge the skills and abilities of every hygienist!*

- ▶ Learn how to make the "Connection" between Periodontal and Restorative Health.
- ▶ Live, Hands on Clinical Sessions.
- ▶ Learn the latest technologies and scientific findings.
- ▶ Comprehensive case presentation.
- ▶ Verbal skills to unlock the patient's wants and needs.
- ▶ Learn the "Mouth/Body" connection.
- ▶ Treatment planning
- ▶ Learn how to effectively manage treatment priorities.
- ▶ Become reenergized and recommitted to the dental hygiene career path.

### LVI Laser Hygiene - a 2 day certification program

*Keeping up with technology, keeping the passion for your profession, and offering the "best" for your clients!*

- ▶ Experience how quickly and positively you can affect the health of your patients.
- ▶ Learn to maximize bacteria control.
- ▶ Learn proper laser operation and safety.
- ▶ Maintain perfect tissues for restorative procedures.
- ▶ Proficiency simulations.
- ▶ Integrate Laser Technology into your dental practice and marketing efforts.
- ▶ Over the shoulder live patient training.
- ▶ Learn about the background and physics of lasers.
- ▶ Acquire the skills to elicit the patient's wants and desires.

Instructor:

**Wendy Hughes**

#### ALSO AVAILABLE

##### *3 Day In - Office Consultation*

*True clinical hands-on coaching with your specific practice in mind.*

Instructor:

**Jeanne Godett**

#### ALSO AVAILABLE

##### *2 Day In - Office Consultation*

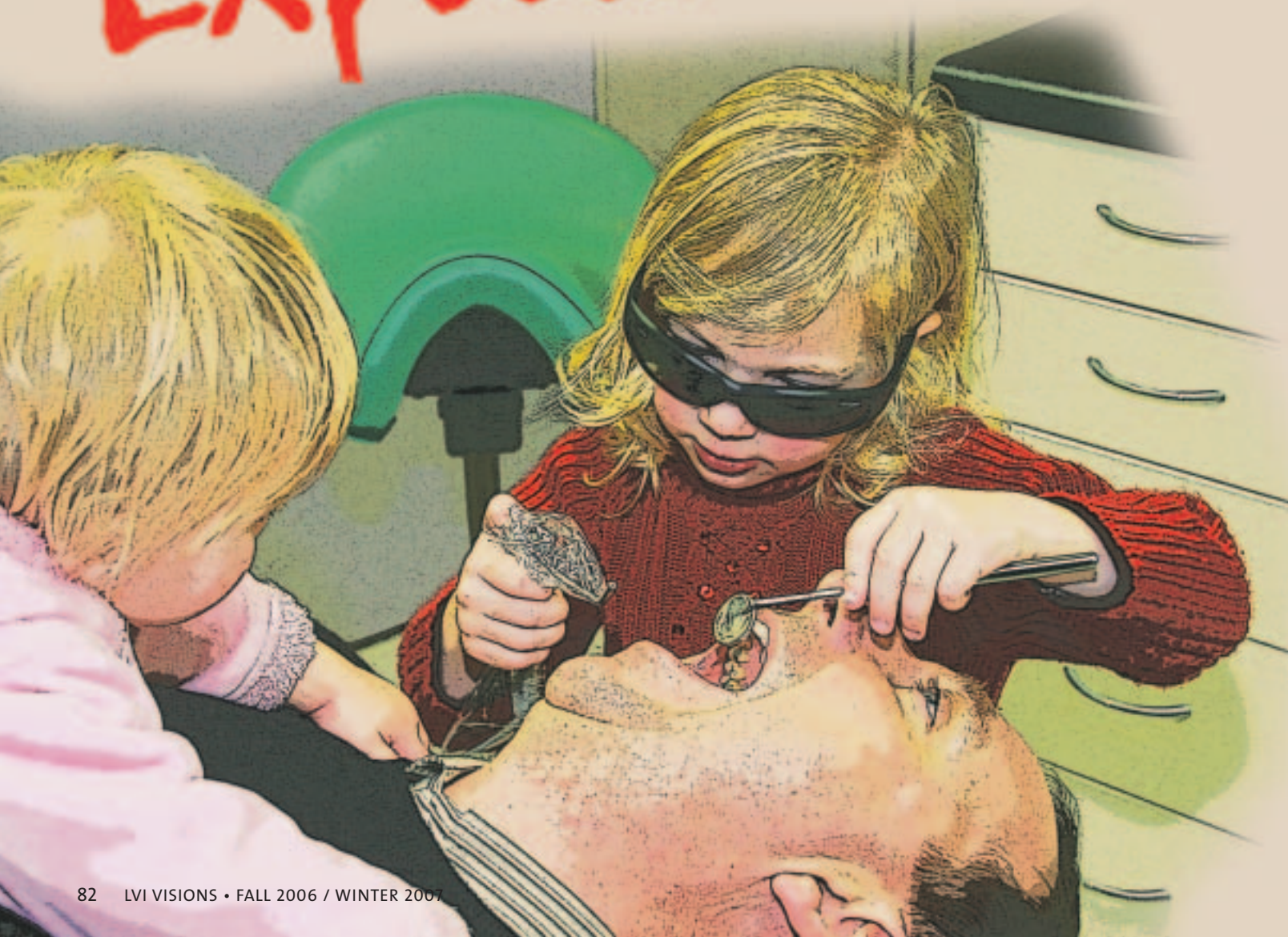
*All about introducing the laser in your practice. This course incorporates a lot of hands-on, including live patient.*

Contact a LVI Concierge today at 1.888.584.3237

Dr. Brett Taylor BDS FICD FPFA



# Managing Expectations





I saw a new patient last week referred by my ceramist, Bill Cearns. "Doris needs a few things done", Bill said, displaying once again his incredible ability at understating a situation. Nothing ever seems that difficult to a lab tech, an attitude that has evolved largely because plaster models don't squirm, flinch or bleed excessively. The day they make an articulator that slams shut for no apparent reason and cries, will be the day Bill gets a better insight into what it's like being a dentist.



**D**oris was 82, and indeed would need a “few things done”, once I’d navigated the treatment planning tsunami she’d unleashed on me. As she planted herself in my dental chair I thought; “you don’t look 82”. Now that’s a pretty big plus in my book, because youth-challenged people generally leave me in a state somewhere between morbid fear and apoplexy. If I’d wanted to chance my hand with old people shuffling off to the next dimension I would have pursued a career in ER medicine, not embraced the fancy pants cosmetic dentist route that was now my day job.

But I digress. My peers on both sides of the Pacific, who are periodically and gratuitously blessed with the benefits of my sage wisdom, will of course be

expecting me to engage Doris with my well-honed PrimeSpeak protocol the moment her aged derriere kisses the equally aged vinyl of my dental chair. And so it was. It didn’t take long for Doris and I to establish a connection. I practice in a very pleasant middle class suburb of Sydney, not too far from where I’d spent my very pleasant middle class childhood. Doris’s son Brian and I had gone to grade school together, and the dentist who lived over the road, Graham, had tutored me at the University. You’ve got to love suburbia.

Now, I’m no Sherlock Holmes, but when I can only see 5 teeth grinning back at me during the initial patient consultation, I’m suspecting that I am about to have a head on collision with some treatment needs. Doris, it

seemed, had been visiting one of my less gifted colleagues in recent years following Graham’s retirement. When I say “less gifted” what I really mean is “criminally incompetent”. Most of Doris’s 2 year old crowns and veneers had broken or fallen off. She thought she needed a full clearance, and I was tending to agree with her. What struck me though (and this is the point of the article so pay attention), was her attitude towards the work Graham (her original dentist) had done. As we both gazed at my impressive 24-inch Dell monitor and the image of her mutilated upper arch, having just agreed they all needed to go, Doris pointed to her only intact crown (full gold) and wistfully said “Graham did that one for me. He told me it would last forever”. She

seemed very disappointed he was wrong. I asked her when it was done, "Just after Brian was born". Given that Brian and I went to school together, and seeing as my 44th birthday was a distant memory, I was able to ascertain the age of the crown without the need for carbon dating. I said "40 odd years is pretty good for a crown Doris. We could keep it if the other teeth weren't so bad". Doris still seemed disappointed. Not so much in the buffoon (sorry, skill-challenged colleague) who had put her in this position, but in the very nice and very competent dentist who had promised her tooth immortality, but only delivered 44 years.

Doris's expectations had not been managed very well.

I consider myself a bit of a Jedi Master at managing patient expectations. Done properly, it always makes you look good. The first thing to remember is patients don't mind bad news that occurs any time in the future. You've all experienced this situation. You're about to extract a tooth. The patient asks "is this going to hurt", you say "the extraction won't hurt but it will be a little sore afterwards". The patient says "I don't care about later; I just don't want it to hurt now". For some unknown reason, pain at home is tolerable, but pain in the dental chair isn't. People don't really care about later, they care about now. They worry about the future in the future. They don't need to be consoled about the future in the present, so there is never a need to make promises about the future. I always under-promise the future because it doesn't matter. Let's pretend Doris asked Graham "how long will this crown last?". He probably said "it will last you the rest of your life". Did she

need that answer? What if he'd said 40 years or 30 years or 20 years or 10 years? Would she have been happy with the answer 30 years but disappointed with 20 years? Of course not. It was (probably) an idle question that needed no specific answer, but providing an answer created the opportunity for disappointment. Sure it took her 44 years to be disappointed, but it still happened. I don't want anyone to be disappointed.

So how do you answer the "how long will it last question"? I say "the research shows an average crown lasts 8-10 years. I like to think my crowns aren't average, so I'd be disappointed if they only lasted 10 years". 19 out of 20 people accept that answer without question. What have I promised? That I'll be disappointed if it doesn't last 10 years. And you know what, I will be. For most people 10 years is a long time. 1 out

**If I'd wanted to chance my hand with old people shuffling off to the next dimension I would have pursued a career in ER medicine, not embraced the fancy pants cosmetic dentist route that was now my day job.**

of 20 will say something like "only 10 years, I don't want to have to go through all this again in 10 years" to which I reply "I've been a dentist for 21 years. I see a lot of crowns I did 20 years ago that look like they'll last another 20 years, but I can't promise they will". That answer always satisfies them. People know you can't predict the future and are happy when you tell them you can't. If you try, you create potential problems.

My favorite way of managing expectations is post-operative pain. Post-operative pain is my greatest practice builder. People often compliment me as the chair goes up on how painless the treatment was. That's when I attack. "We've done a lot of work today and it's probably going to be pretty sore when the numbness wears off". I say that no matter what I've done. I say that when I'm almost certain they won't feel a thing later. Why? Because, I want to manage their expectations in my favor. The next time I see that patient my first words will be "did you have much pain last time". 18 out of 20 people say "I was expecting it to hurt but it didn't". That's 18 out of 20 people who think I'm a wizard because they had no pain. One out of 20 will say, "It was a little sore but not as bad as you said". Those people only think I'm pretty good. One out of 20 might

have the level of pain I implied and they think I'm a visionary for accurately predicting how bad it would be. What if I'd told all 20 at the end of the appointment "you will have no pain afterwards" which is what I was really thinking? The 18 that experience no pain will think that no pain is normal and I'm nothing special. The one who experienced a little bit of pain is a little annoyed at me. The one with a lot of pain thinks I'm an idiot.

Root canals are where I have my most fun managing expectations. People expect root canals to hurt, and I've had my fair share of flare-ups over the years, so you have to choose your words carefully. I choose to let the patient believe the gates of hell are about to open. "I've cleaned the infection out of the tooth but it's going to be sore when the numbness wears off. These things can get a lot worse before they get better so don't expect any overnight miracles. If the pain isn't subsiding after a few days make sure you call." Of course I generally expect an overnight miracle, but I'm not going to tell them that. The worse I make it seem the better I look when it's fine. And if I'm right? Who's ever looked bad being right?

An important point about managing expectations is to always do it after the procedure, not before. Yes I understand about informed consent, but if you break a file during an Endo you're screwed if you have warned them beforehand or not, so why scare them beforehand? I DON'T say to a patient before I do a crown "You know there is a chance the tooth will die after we do the crown and you'll need a root canal". I could, but I don't. Why scare them off? After I seat every crown I always say "This tooth has had a lot of work done. It wasn't a great tooth to start with, and we've done our best, but when we treat any tooth there's always a chance the nerve will die. If that happens, the tooth will need a root canal". They generally say "How will I know" and I say "It will hurt like hell". Everyone accepts that information. No one, ever, ever, has said, "Why didn't you tell me that beforehand". If it does die

one day, I have told them so. If it doesn't, I'm a genius.

With larger cases I take managing expectations a step further. I actually promise problems. If I've done full mouth rejuvenation, 28 porcelain restorations, I say to the patient "We've done a lot of work here and I'm pretty sure something is going to go wrong. In the old days I'd tell people one in 50 crowns will break for some unknown reason. If I did 50 crowns on 50 people then I'd be right for one of them. Now when I do 28 crowns on one person either you, or the last lady is going to have something break, and the last 2 haven't had anything break, so it's YOUR turn". Say it with a smile of course. I also say "Something's probably going to die too. One in 10 crowns are supposed to end up needing a root canal. My stats are better than that but a lot of your teeth had really ugly old

amalgams in them so I'm expecting something to die". And you know what? No one cares. It's the future. People are never unhappy TODAY about warnings of the future. If nothing goes wrong then great. If something goes wrong then they knew it could happen so it isn't a surprise. Always under-promise and over-deliver.

So what about Doris? She'll get over her disappointment with Graham's crown. What do you think I'll tell her about her full upper denture when I make it? Do you think I'll promise her it will be just as comfortable as her natural teeth? Do you think I'll tell her she'll be able to eat steaks and apples again? Or do you think maybe she'll leave with a clear expectation that drinking water will be painful for a month and that if she can eat soup that will be a bonus. And of course if it's slightly better than that, who will get the credit?

And you know what?  
No one cares.  
It's the future.  
People are never  
unhappy TODAY  
about warnings  
of the future.

Dr. Brett Taylor BDS FICD FPFA is an LVI DownUnder Instructor with a practice in the far flung reaches of Sydney, Australia. Yes, he used to have a kangaroo as a pet. No, he's never met Paul Hogan, and yes his daughters did replace those amalgams for him. His musings on life and other issues regularly clog the inboxes of cyberspace, and form the basis of a book he promises will be finished later this year. He can be contacted on [brett@edgedent.com.au](mailto:brett@edgedent.com.au)



# Image

*especially in the  
dental practice!*



**Brad Durham DMD**



# Everything is Everything

*I am incredibly fortunate, enough to be able to teach a series of LVI courses with my good friend Ashley Johnson. In these courses, we show dentists how to create a dental practice that will thrive in today's environment. These courses, named the "Niche Dental Practice", detail a systematic approach to creating the practice of your dreams. The following is but one piece of the puzzle that we discuss. It involves creating a "positive practice image" in the patient's perception. Some of you will recognize this as pure "internal marketing".*

*Patients  
categorize  
dental practices  
based on their  
perceptions and  
experiences.*

**E**very dental practice broadcasts a certain set of unique and definable messages. These are readily received by the patient, decoded, organized, and understood to establish an image or perception of that practice. Simply stated, the message describes who and what the practice is all about, as well as providing serious clues about the dentist and his values. “Like attracts like” and patients are attracted to the practice that they are most comfortable with, as defined by this exotic language. This is the language of branding and it is defined by internal marketing. Everything that you do affects the patient's perception of you and is easily defined as internal marketing.

Patients categorize dental practices based on their perceptions and experiences. To simplify, these perceptions can easily fit into three categories: poor, average, or exceptional. The purpose of this article is to provide ideas for creating the exceptional dental practice, but first let's look at the first two categories.

*The poor image practice* is full of dentists, staff, and patients who really don't want to be there. It's a “job” for the staff and the dentist and it's a necessity for the patients. Poor service and experiences rule the practice and typically there is a low fee or insurance program tying everyone together.

*The average dental practice* is just that: average. Just as you can walk into any McDonalds anywhere and order a cheeseburger, your appoint-

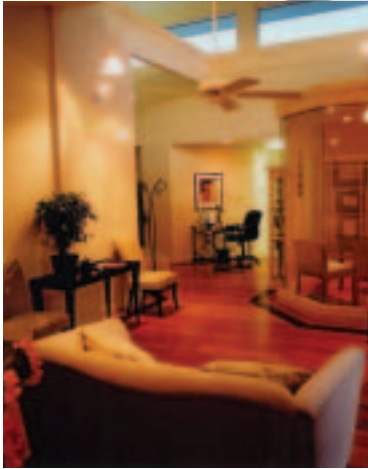
ment to get your “teeth cleaned and checked” will come in a brown paper bag. Every patient who thinks that a “dentist is a dentist is a dentist” is a good fit for this type of practice.

Here is the really tragic part of the story: there are a lot of really exceptional dentists who would love to have an exceptionally perceived practice, but are recognized only as average because they do not know how to speak the language of the patients' perception. Here are some simple ideas to boost your perceptual image and upgrade your practice. Image is everything, especially in dentistry.

There are several highly emotional encounters between the patient and the practice that you can easily leverage to improve your position and image with the patient. I will focus on six of these. Mastering each of these concepts will sky-rocket your perceived image into the exceptional category. Here is how we have applied these concepts into my practice.

**The New Patient Packet:**

Instead of sending a letter, we send a package. It has the nice look and feel of rice paper, real postage stamps (not metered), and our logo on the label. It includes the welcome letter, practice brochures, information about the treatment the patient is interested in, as well as a New Patient Experience DVD. The DVD introduces the patient to the practice, the team, and to my practice philosophy. It clearly states that this is who we are and if you feel likewise....please join us.

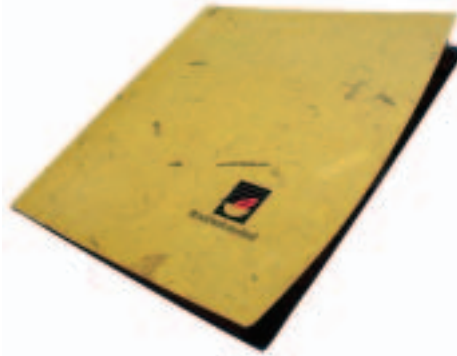


*New Patient Packet*

### The New Patient's First Visit:

First impressions are lasting ones, so the office is designed to make a strong statement. Your Office Appearance: Simply stated, the most powerful statement you can make about your practice will be the appearance of your office. Your office should make a statement both from an architectural design and interior design and should feel that it represents you and your dentistry. An average office means average dentistry to the patients. While I'm not saying that you should mortgage your entire networth to build a Taj Mahal, understanding the importance of the appearance of your office and how it plays in terms of perception to the patient is incredibly powerful

### The New Patient Booklet:



New patients are brought in to the practice through an interview process to see if we are the best dentist for them. If we are, they are given the New Patient Booklet, which tells them of our credentials and services and also informs them of their responsibility to the practice. This book has an upscale feel and again makes a positive statement.

### Review of Findings Folder:



Building value for proposed treatment helps the patient make better decisions. After their exam, they are given a folder. This folder includes a Power Point (printed as well as burned onto a CD) of all of their needs, wants, desires, treatment plans, and Before as well as After imaged photography. The message is clear. The new patient process includes a well documented and thorough exam and builds both trust and an image of excellence.

## Before and After Picture Frame:



Seating a cosmetic case can be an emotional event and sometimes even a negative one, especially for the dentist who makes exceptional provisionals. By the time the cementation visit occurs, most patients have forgotten how ugly their teeth once were and actually love their temporaries (especially if you use the LVI technique!). If they truly have had really nice temps, it is sometimes difficult to improve substantially over that initial emotional high with the final porcelain restorations. The visit then can be an emotional let-down for the patient. The Before and After pictures remind them of how they previously looked before they began treatment, in comparison to how they look now with the finished porcelain artwork. The message is clear: We deliver on our promises and you can trust us.

## Gift of studio portrait:

It's easy to take an After portrait in your own in-office studio, place it in a nice picture frame, and deliver it to the patient's place of work. That unexpected extra gift sends a special message and is a lasting reminder that you have truly changed their life. It also creates some positive buzz in the office!



Studio Portrait

## Business Card Holders:

Instead of just handing the patients your business cards and asking for a referral, go the extra distance and purchase a special business card holder. Your cards will be more accessible and the request for referrals more powerful.



*Statistics show that eighty-five percent of the success of a dental practice is related to the dentist's business skills, yet only five percent of the dentist's CE budget is spent on business-related courses. Enhanced business and marketing skills strengthen the technical skills of the dentistry. Both business and technical skills work hand-in-hand. If you are interested in developing an exceptional practice and you wish to enjoy the success, freedom, and happiness that is provided, please consider the "Niche" family of courses at LVI. More information can be obtained through LVI or through our website at [www.brad-durhamseminars.com](http://www.brad-durhamseminars.com). You can choose from a two-day course entitled "Understanding the Niche Practice"; a one-year program entitled "Enter the Niche", which includes quarterly meetings, monthly phone conferences and weekly monitoring; and Ashley Johnson provides in-office consulting.*



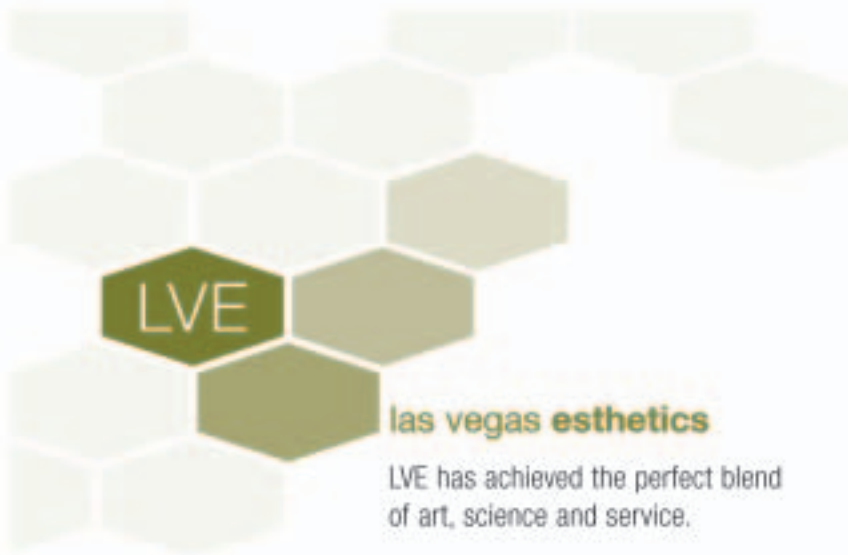
*Brad Durham DMD, practices in Savannah, Georgia, providing restorative, TMJ, and cosmetic services. He was the first dentist in the world to receive the Las Vegas Institute Mastership (LVIM) award, and lectures internationally on technical and practice development for the dental practice. He can be reached by e-mail at [brad@braddurhamdmd.com](mailto:brad@braddurhamdmd.com).*

### **2007 LVI Course Dates**

Understanding the Niche Practice March 30-31

Understanding the Niche Practice (Savannah, GA) August 3-4

Understanding the Niche Practice November 2-3



**las vegas esthetics**

LVE has achieved the perfect blend of art, science and service.

**Experience perfection.**

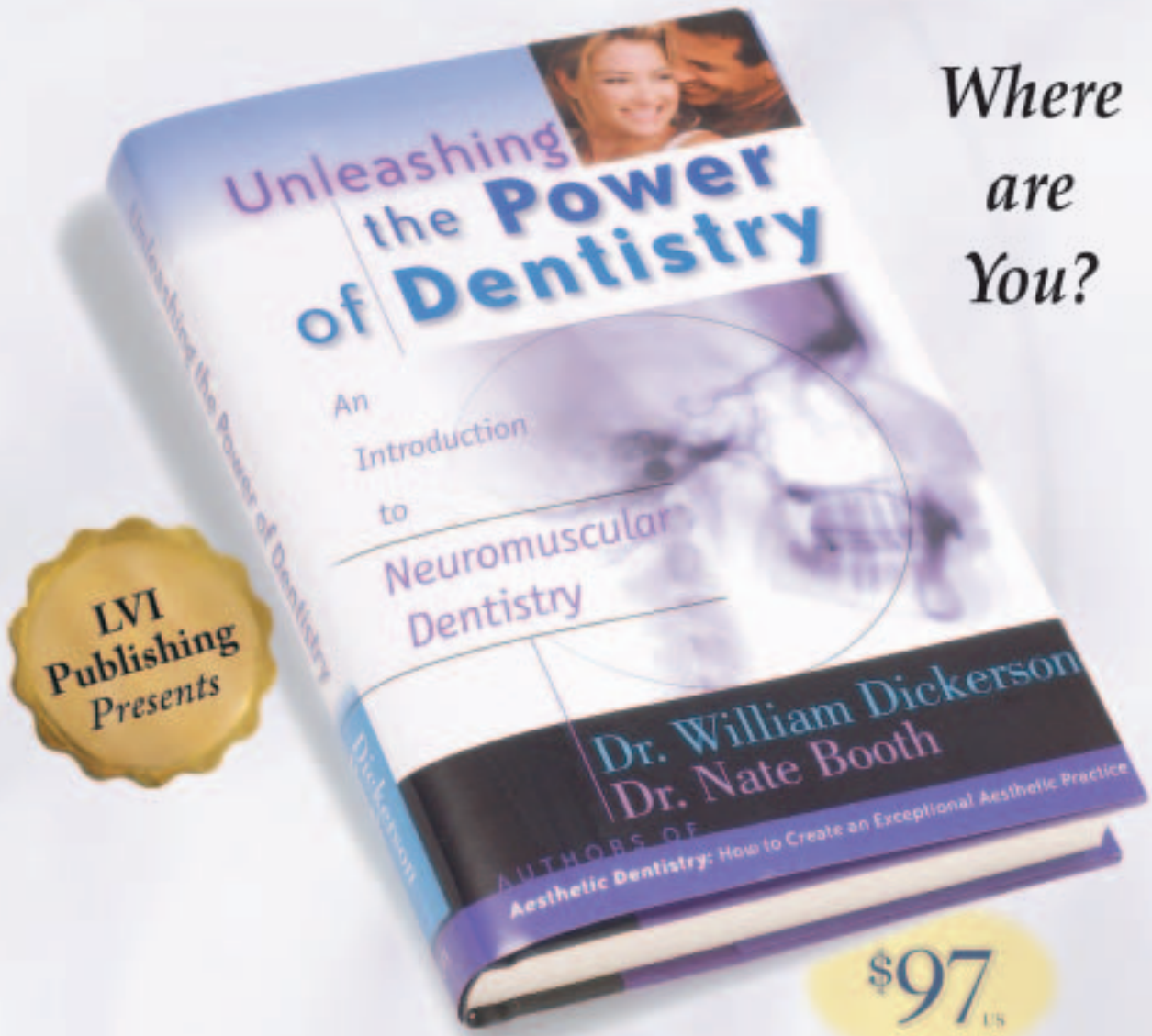


Providing LVI extensive lab support for over 8 years.  
Request us when registering for your next lab-supported course.

**LVE's Services:**  
Composites: Belleglass/Cristobal/Concept/Sinfony/Sculpture/Gradia/Tescera  
Cercon • Diagnostic Wax-ups • Empress/Eris/Empress Esthetics  
Full-Mouth Reconstruction • Gold Inlays/Onlays/Crowns • Implants  
Orthotics: LVI Fixed and Removable • Porcelain Fused to Metal • Press 2 Zirconia

**Contact us:**  
Ray A. Foster | President/CEO  
2545 West Cheyenne Avenue  
Las Vegas, NV 89032 | 800.711.6011  
[www.lvesthetics.com](http://www.lvesthetics.com)

THE FUTURE OF DENTISTRY IS HERE.



Where  
are  
You?

LVI  
Publishing  
Presents

\$97  
US


- Why are so many dentists adopting the neuromuscular approach to dentistry?
- Why are those that are skeptical being convinced of its value?
- Why are many so successful in implementing these concepts into their practice?
- Why is case acceptance higher with neuromuscular dentists?

It's all here in this comprehensive book on this fascinating subject. *Unleashing the Power of Dentistry: An Introduction to Neuromuscular Dentistry* by Drs. Bill Dickerson and Nate Booth can show you how to enhance patient care as well as increase your practice success and professional fulfillment through the practice of neuromuscular dentistry.

This amazing book:

- introduces the basics of neuromuscular dentistry
- uncovers the myths surrounding the science
- features 16 success stories of neuromuscular practices told by the dentists themselves
- shares marketing and case acceptance secrets
- shows you how to implement change in your practice

Order your copy today - call 888-584-3237 or visit our web site [www.lvilive.com](http://www.lvilive.com)



## Remarkable things are created with all the right pieces.

*When a system is in sync, there are no limitations.*

*Built to celebrate the engineering and science of its age, the Eiffel Tower, constructed in 1889, is the world's most widely recognized and visited landmark — attracting over 6 million visitors a year. It's considered to be one of the most remarkable pieces of architectural art today. Zimmer Dental gives you the power to create something remarkable with its Tapered Screw-Vent® Implant System. Delivering fully integrated single-stage and two-stage solutions, the system gives you the flexibility to make a choice at the time of surgery. Whether you choose the new Zimmer® One-Piece Implant, or the renowned Tapered Screw-Vent or AdVent® Implants with off-the-shelf or custom abutments, you can have total confidence that all the pieces are in sync for the best possible patient outcome.*

*Zimmer Dental. Confidence in your hands.™*



Create something remarkable today. Visit us online at [www.zimmerdental.com/MC0381.asp](http://www.zimmerdental.com/MC0381.asp) or call us toll-free at 800 854 7019 for more information. Please reference code MC0381.

To receive our eNews visit us at [www.zimmerdental.com/news\\_eNewsLetterSignUp.aspx](http://www.zimmerdental.com/news_eNewsLetterSignUp.aspx)



[www.zimmerdental.com](http://www.zimmerdental.com)



*Very few times can any one action change the direction and flow of your life. You went to school, earned your degrees, worked hard, and now you're a dentist—a medical professional.*

*But clearly, some of the joy is gone. You thought you could run your practice but it turns out your practice runs you.*

*So where's the solid ground that could change everything? The foundation that transforms you from a standard dentist into a happy, satisfied, clinically superior, financially-secure dentist.*

*It's called  
ADVANCED FUNCTIONAL RESTORATIVE DENTISTRY.  
We take you from one world of Dentistry into an entirely new world of Dentistry.  
Make the call or visit our website.  
Change your life. It can really happen.*

# *Just Holding On?*

*LVI can help get you back on solid ground.*

At LVI, you will learn exceptional clinical skills, which will enable you to provide complete comprehensive dental care to your patients.

## *Take Control.*

**Come to LVI. Sign up today by calling 1.888.584.3237  
or visit [www.lviglobal.com](http://www.lviglobal.com).**

Excellence in dentistry has never made more sense or been more affordable.

***Some Objectives of this Course are for the Participant to:***

- Recognize what cases may safely be restored cosmetically.
- Discuss which cases may require additional treatment to ensure success.
- Understand comprehensive case diagnosis and treatment plans.
- Identify dental related musculoskeletal signs and symptoms.
- Discover the science, logic, and physiology behind determining and positioning the bite correctly.
- Learn the principles of the ideal smile design to create the perfect case.
- Incorporate technologies and philosophies necessary for the successful restorative practice.
- How to accurately transfer the occlusal plane to an articulator.
- Understand how to develop the ideal restorative practice.
- Eliminate the influence of insurance.



CHANGING DENTISTRY. CHANGING LIVES.

**INSTRUCTORS**  
*Bill Dickerson, DDS*  
*Mike Miyasaki, DDS*  
*Norm Thomas, DDS*  
*Heidi Dickerson, DDS*  
*Tony Tomaro, DDS*  
*and featured instructors*



\*The Global 10000™ course is designated as an Approved AGD Core Course Program Provider by the Academy of General Dentistry. The formal continuing education programs of this program provider are accepted by AGD for Fellowship, Membership and membership maintenance credit. Approval does not imply acceptance by a state or provincial board of dentistry. The current term of approval extends from June 6, 2004 to May 31, 2007.



THE 2007 IACA CONFERENCE

# *Pitching At This Year's Event*

July 19-21 • Chicago, IL • Sheraton Chicago Hotel & Towers

A hand is shown holding a white baseball with red stitching. The background is a view of the Chicago skyline across a body of water under a blue sky with light clouds.

*Ron Jackson*  
*Roger Levin*  
*Bill Dickerson*  
*Bob Weiss*  
*Joe Blaes*  
*Joe Carrick*  
*Greg Lutke*  
*Dean Lodding*  
*Michael Silverman*  
*Anita Jupp*  
*Pat Allen*  
*Lou Graham*

*Bill Dorfman*  
*Omer Reed*  
*Charles Blair*  
*Gary Wolford*  
*Matt Bynum*  
*Norm Thomas*  
*Arthur "Kit" Weathers*  
*Mitch Conditt*  
*Mike Miyasaki*  
*Nate Booth*  
*Jack King*  
*David Newkirk*  
*Leo Malin*  
*and many more!*



*Space is limited so be sure to book early.*

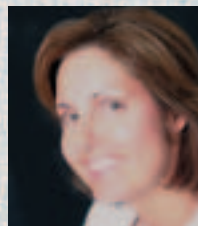
Register online at [www.theIACA.com](http://www.theIACA.com) or call 1.866.NOW.IACA

*Sparkling Personality...  
Dazzling Smile!*



Dentistry courtesy of Drs. Randy Bryson and Toni Margio.  
Restorations fabricated by Aurum Ceramic.

Create "dazzling smiles" on every case with Aurum Ceramic.



Dr. Randy Bryson and Dr. Toni Margio, Yardley, PA.

"For beautiful smiles that really capture our patients' personalities, we always rely on the artists at Aurum Ceramic. They set the platinum standard for consistently exceptional results."

Call our Advanced Esthetic Hotline

**1-800-661-1169**



[www.aurumgroup.com](http://www.aurumgroup.com)

LVI Designated Laboratory since its inception.