ENDO TRIBUNE
The World's Endodontic Newspaper · U.S. Edition
OCTOBER 2012 — VOL. 7, NO. 9 www.dental-tribune.com

Clinical opinion

Designing endodontic instruments for success

By Barry Lee Musikant, DMD

Ideal mechanically successful endodontics is directly related to the removal of all pulpal tissue within the canals; the removal of a more or less uniform layer of dentin from all the canal walls, be they round or varying degrees of oval; the maintenance of the original canal anatomy in a larger form; and maintaining the integrity of the canal walls during the entire cleansing procedure.

The ideal is rarely met, but the correct design and utilization of the instruments will go a long way in approaching that ideal. The present state of design and utilization of the instruments that are now being marketed by the major manufacturers and advocated by their well-paid lecturers do not come close to the ideal, as will be clearly pointed out in this article.

Let's start with the primary goal, gaining initial patency of the canals from the orifice to the apex. The vast majority of dentists will use K-files to start shaping the canal. If they do not use NiTi either in rotation or asymmetric reciprocation, then they will use K-files for the entire procedure. If they do use NiTi in one form or another, they will most likely shape the canal to a minimum of 20 prior to incorporating NiTi. In either case, the K-files are poorly designed to initially traverse the small patent pathways that may be present and to then enlarge them in a sequential manner.

Why do we say poor design? K-files have 30 predominantly horizontal flutes along their 16 mm of working length. If used with a watch-winding motion, these horizontally oriented flutes will engage and disengage the dentinal walls without actually removing any dentin until the pull stroke is applied. It takes two strokes to shave dentin away when using K-files — the twist that supplies the engagement, and the pull that shaves away what has been engaged.

With the flutes engaging dentin along its length, the K-files produce a poor tactile perception of exactly what the tip of the instrument is encountering. If unaware that the tip of the instrument is encountering a solid wall, it is all to easy to ledge at this point, creating a man-made defect that may be a great obstacle to further accurate apical negotiation.

When the pull stroke is applied to shave dentin away in a curved canal, there is a

▸ See INSTRUMENTS, page C2

Efficient and ergonomic apical resection using the Kaiserswerth algorithm

By Prof. Marcel Wainwright, DMD

Thanks to minimally invasive techniques, such as ultrasonic surgery and the availability of reliable restorative materials, the surgical revision and rehabilitation of endodontically treated teeth have a significantly better prognosis than only 10 years ago. Apical resection is a challenging surgical procedure not least because of the limited accessibility of the surgical field. Instrumentation of an apical resection case therefore requires a surgical technique that is as simple as it is safe and ergonomic.

This report presents two clinical cases in illustrating a system for applying retrograde endodontic filling materials that has proven a consistently viable option in our clinical practice.

Case No. 1

A 34-year-old male patient presented at our clinic for the first time. The orthopantomogram (OPG) yielded an accidental finding of apical translucencies at teeth #14, 36 and 46, which had been insufficiently treated endodontically. Clinically, these translucencies were asymptomatic and diagnosed as instances of chronic apical periodontitis or apical osteitis (Fig. 1).

Together with the patient, we planned for an apical resection in conjunction with a retrograde root-canal filling with subsequent removal of the non-salvageable teeth #14 and 46. Following extensive consultation and patient education, surgery was performed under local infiltration anaesthesia. With our protocol, block anesthesia is unnecessary in 98 percent of all surgical interventions in the mandible, and dispensing with it minimizes the risk of iatrogenic nerve damage.

An incision was performed in the marginal gingiva, with a mesiodistal relief incision, followed by preparation of a full flap for adequate access to the surgical site. Using the Piezotome 2 (Acteon), a buccal bone window of adequate depth was prepared to gain access to the apical region at tooth #36 in order to perform the apical resection.

It is helpful for the preparation to provide for undercuts in order to facilitate subsequent removal of the bone block. As no rotary instruments were used, and because ultrasonic surgical instruments have a vaso-constrictor effect, the surgical field remained impressively free of bleeding and afforded a clear view of the site. The

▸ See RESECTION, page C8

Fig. 1: OPG showing active infection at sites #14, 36 and 46. Photos/Provided by Prof. Marcel Wainwright, DMD

Fig. 2: Bone block, stored in Ringer's solution.

Fig. 3: Surgical site after removing a bone block and performing apical resections on tooth #36.

Fig. 4: The MAP System.

Fig. 5: Autoclavable box with syringe, mixing cup and tips.

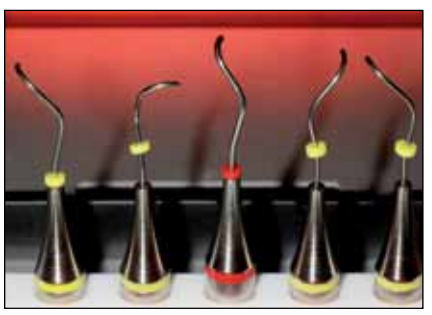


Fig. 6: Endo tips with different angulations.

Fig. 7: Applying MTA using the MAP System.

Fig. 8: The bone block is repositioned and secured with bone cement (VitalOs).

◂INSTRUMENTS, Page C1

marked tendency to selectively shape to the outer wall. When the instrument is repeatedly inserted into the canal, these same horizontally oriented flutes tend to impact debris apically, creating blockages and loss of length.

Recognizing the loss of length encourages the dentist to twist the K-file into the canal to gain greater depth and then pull up to shave what has been engaged. Done repeatedly in a canal that has been unknowingly blocked apically leads to canal transportation and, if carried further, to frank perforation. At a minimum, the original canal anatomy has been lost, something NiTi cannot compensate for even if used after the glide path has been established.

Many dentists have encountered the problems described above. Yet, they have been taught that such problems are a result of their inadequate use of the instruments, that expertise in their proper usage would avoid such problems. While this statement has some merit, it avoids the more important possibility that superior design and utilization might produce more predictable desirable results in a simpler manner.

Such would be the case if the K-file with its highly compacted horizontal flutes were replaced with reamers, instruments with half the number of flutes along the same 16 mm of working length and a flute orientation that is twice as vertical. If such an instrument is used with the same watch-winding stroke, the blades will immediately shave dentin away from the canal walls rather than first engaging them.

The pull stroke is not required to shave dentin away from the wall, and in fact the vertically oriented flutes would do a poor job of it if it were required. Unlike the K-files, pulling up on the K-reamers will not selectively remove dentin from the canal outer walls.

The reamers produce a superior tactile perception of what the tip of the instrument is encountering, because there is significantly less engagement along length and what engagement is present is being removed with the first clockwise motion of the instrument. Knowing when the instrument is encountering a solid wall directs the dentist to remove the instrument, bend it at the tip and manually negotiate around the impediment.

The reamers supply the vital information for the dentist to do what is necessary for non-distorted shaping in curved calcified canals. The K-files do not. While the advantages of reamers are based on a combination of the more effective shaving of dentin and less engagement along length, these advantages are further enhanced by placing a flat along its entire working length, further reducing engagement and creating two vertical columns of chisels that shave dentin away in both the clockwise and counterclockwise motion that enhance the removal of dentin via the vertically oriented flutes. Canals that prove difficult to negotiate with K-files are far less resistant when negotiated with relieved reamers.

'The ideal is rarely met, but the correct design and utilization of the instruments will go a long way in approaching that ideal.'

These reamers may also be employed in a 30-degree reciprocating handpiece that mimics a manual instrument in motion, but at a much higher frequency. The result is rapid and accurate instrumentation of the canals.

One might think that the above description of the relieved reamers compared to K-files would lead to their substitution as the choice of instrumentation for creation of the glide path, and indeed for some dentists this is exactly the case. Yet, so effective are the relieved reamers — whether used manually, in the 30-degree handpiece or some combination of both — that there is no reason to stop their usage at a 20 or 25. They may be used to create the entire canal space, eliminating any use of NiTi in either rotation or asymmetric reciprocation.

By eliminating the need for NiTi, several advantages are gained. An instrument limited to a tight watch-winding stroke or a 30-degree arc of motion generated by the handpiece completely eliminates the two factors most responsible for instrument separation, torsional stress and cyclic fatigue. As a result, separated instruments are no longer a concern, even when shaping the most tortuous of canals.

With separation anxiety removed, the dentist is far more confident in aggressively applying the instrument against all the walls of canals, be they round or oval. Buccal and lingual tissue extensions in oval canals have been shown to be often untouched when using rotary or asymmetric reciprocating NiTi, leaving tissue behind that can adversely affect the success of the procedure. This is less likely to be the case when using relieved reamers, because they will be used aggressively against all the walls of the canal and can safely be used to instrument the apical preparations of canals to a minimum of 35 in most situations.

A preparation of 35 is not arbitrary. Research has clearly shown that 35 is the minimum preparation required for effective irrigation, a step that removes any tissue remnants chemically that have not been removed mechanically while more effectively removing the smear layer and opening up the dentinal tubules, a step vital for the deeper penetration of bacteriocidal cements into the dentinal tubules where bacteria may still reside.

With the data clearly demonstrating the shortcomings of NiTi in the shaping of oval canals, that in itself might be enough to seek out the better ways our alternative techniques suggest. However, recent research over the past three years has now implicated NiTi used in great arcs of motion in the production of micro-fractures along the length of the canal. Separate studies have shown that micro-fractures can coalesce and propagate to the point of inducing vertical root fractures.

These micro-fractures are not infrequent occurrences. Depending upon the rotary system used, they will induce micro-fractures anywhere from 25 to 60 percent of the time they are employed. This same research has shown that short arcs of motion and hand instrumentation do not induce micro-fractures. Along with the fact that short arcs of motion — be they manual or engine-generated — do not produce instrument separation, we can make the overall observation that the safety of both the instruments and the canals that they are shaping will increase wherever a manual watch-winding motion and/or 30-degree reciprocation is substituted for full rotation or asymmetric reciprocation.

What we have attempted to broach is the misplaced sanctity of K-files as the given initial instrument in canal shaping. It is illogical and not supported by common sense and simple mechanical principles. Rotary NiTi, initially thought of as the answer to the deficiencies of K-files, has been proven to produce more problems than they solve. Under any circumstances there are alternatives to rotary NiTi that allow for safer but more aggressive instrumentation while eliminating instrument separation, which in turn removes the need for rapid replacement.

Multiple use of relieved reamers is the norm and saves dramatic amounts of money compared to the single usage of NiTi instruments that are an absolute requirement so strongly advocated by the major manufacturers of these products.

When instruments are designed and utilized correctly, you will find that the more you learn how to use them, the more they will be used. This is just the opposite of NITi, where the more you learn how to use them, the more selectively they are used. Just to make things absolutely crystal clear, more selective use means less. And reduced usage as a result of greater experience in their use is proof positive they were not designed correctly from the onset.

Some things to think about.

BARRY LEE MUSIKANT, DMD, is a member of the American Dental Association, American Association of Endodontists, Academy of General Dentistry, the Dental Society of New York, First District Dental Society, Academy of Oral Medicine, Alpha Omega Dental Fraternity and the American Society of Dental Aesthetics. He is also a fellow of the American College of Dentistry (FACD). As a partner in the largest endodontic practice in Manhattan, Musikant's 35-plus years of practice experience have established him as one of the top authorities in endodontics. To find more information from Musikant, visit *www.essentialseminars.org*, email *info@essentialseminars.org* or call (888) 542-6376.

Corrections

Endo Tribune strives to maintain the utmost accuracy in its news and clinical reports. If you find a factual error or content that requires clarification, please report the details to Managing Editor Fred Michmershuizen at *f.michmershuizen@dental-tribune.com*.

ENDO TRIBUNE

PUBLISHER & CHAIRMAN
Torsten Oemus *t.oemus@dental-tribune.com*

CHIEF OPERATING OFFICER
Eric Seid *e.seid@dental-tribune.com*

GROUP EDITOR
Robin Goodman *r.goodman@dental-tribune.com*

EDITOR IN CHIEF ENDO TRIBUNE
Frederic Barnett, DMD *barnettF@einstein.edu*

MANAGING EDITOR ENDO TRIBUNE
Fred Michmershuizen
f.michmershuizen@dental-tribune.com

MANAGING EDITOR SHOW DAILIES
Kristine Colker *k.colker@dental-tribune.com*

MANAGING EDITOR
Sierra Rendon *s.rendon@dental-tribune.com*

MANAGING EDITOR
Robert Selleck, *r.selleck@dental-tribune.com*

ACCOUNT MANAGER
Humberto Estrada *h.estrada@dental-tribune.com*

MARKETING DIRECTOR
Anna Kataoka-Wlodarczyk
a.wlodarczyk@dental-tribune.com

PROJECT AND EVENTS COORDINATOR
Sergio Cardoso *s.cardoso@dental-tribune.com*

C.E. DIRECTOR
Christiane Ferret *c.ferret@dtstudyclub.com*

Dental Tribune America, LLC
116 West 23rd Street, Suite 500
New York, NY 10011
Phone (212) 244-7181
Fax (212) 244-7185

Published by Dental Tribune America

Dental Tribune American strives to maintain the utmost accuracy in its news and clinical reports. If you find a factual error or content that requires clarification, please contact Managing Editor Fred Michmershuizen at *f.michmershuizen@dental-tribune.com*.

Tell us what you think!

Do you have general comments or criticism you would like to share? Is there a particular topic you would like to see articles about in Endo Tribune? Let us know by e-mailing *feedback@dental-tribune.com*. We look forward to hearing from you! If you would like to make changes to your subscription (name, address or to opt out) please send us an e-mail at *database@dental-tribune.com* and be sure to include which publication you are referring to. Also, please note that subscription changes can take up to 6 weeks to process.

The CALASEPT Endo Line

CALASEPT® Plus

Calcium Hydroxide

CALASEPT PLUS

* *More than 41% calcium hydroxide*
* *Optimal calcium release*
* *Strong bactericidal effect pH 12,4*
* *Flexi-tip for precise and deep application*

NEW

CALASEPT® EDTA

EDTA Solution 17%

CALASEPT EDTA

* *Lubricating capacity, to minimize file fractures*
* *Removes smear layer and inorganic substances*
* *Increase the adhesion to filling materials*
* *Bottle neck with luer adaptor for easy filling of syringe*

Adaptor for easy filling of syringe

NEW

CALASEPT® CHX

Chlorhexidine Solution 2%

CALASEPT CHX

* *Final Irrigation after EDTA and Sodium Hypochlorite*
* *Discontinues erosion of canal walls*
* *Bactericidal*
* *Bottle neck with luer adaptor for easy filling of syringe*

Call Wykle Research for a Free sample of our Calasept products 800-859-6641

Made by;

Nordiska Dental

Distributed by;

WYKLE RESEARCH, INC.

2222 E. College Parkway,
Carson City, NV 89706
Tel. 800-859-6641
Fax. 888-329-9955
www.wykledirect.com

Specialists to discuss traumatic injuries

Clinicians and scientists recognized throughout the international endodontic and pediatric dental communities will speak at a multidisciplinary joint symposium on traumatic dental injuries. The American Association of Endodontists (AAE) and the American Academy of Pediatric Dentistry (AAPD) will hold their second joint symposium on traumatic injuries Nov. 9 and 10 at the Westin Kierland Resort & Spa in Scottsdale, Ariz.

The meeting, Contemporary Management of Traumatic Injuries to the Permanent Dentition, is composed of two full days of programming where attendees can earn 13 continuing education credits. Topics include treatment options and diagnosis of several traumatic injuries, as well as a panel discussion on treatment planning and collaboration between specialists. After attending the meeting, participants will have gained the knowledge to identify different types of traumatic injuries, understand the methods to prevent damage to permanent teeth, discuss diagnostic methods and outcomes of previously traumatized permanent teeth and much more.

"The AAE and AAPD have chosen to join forces in an effort to identify the best course to take while handling traumatic dental injuries," said AAE President Dr. James C. Kulild. "Both associations encourage partnership in the dental community to offer patients the best care possible."

"We are pleased to align with the AAE in presenting a program that showcases the best dental practices and emerging treatment concepts by deploying an evidence-based approach," said AAPD President Dr. Joel H. Berg. "Collaboration is key when providing a unique educational opportunity such as this one to our respective members, and we're very excited about the invaluable knowledge that will be attained at the conclusion of this symposium."

Well-established endodontic and pediatric dentistry speakers include Dr. Leif K. Bakland, Dr. Kenneth M. Hargreaves, Dr. Dennis J. McTigue, Dr. Ove A. Peters and Dr. William F. Vann Jr. Following the meeting, both associations will release special edition journals that will include speaker manuscripts and meeting proceedings, including relevant findings.

The AAPD is the recognized authority on children's oral health. As advocates for children's oral health, the AAPD promotes evidence-based policies and clinical guidelines; educates and informs policymakers, parents and guardians and other health care professionals; fosters research; and provides continuing professional education for pediatric dentists and general dentists who treat children.

Founded in 1947, the AAPD is a not-for-profit professional membership association representing the specialty of pediatric dentistry. Its 8,400 members provide care for infants, children, adolescents and individuals with special health care needs.

'The AAE and AAPD have chosen to join forces in an effort to identify the best course to take while handling traumatic dental injuries,' says AAE President James C. Kulild. The associations will hold a joint session Nov. 9 and 10 in Scottsdale, Ariz. Photo/Provided by *www.sxc.hu*

More information about the joint AAE-AAPD meeting is available at *www.aae.org/traumameeting*.

(Source: AAE)

DELendo.com

Revolutionizing Online Education

DELendo by DENTAL EDUCATION LABORATORIES

Your Premier Resource for Procedural Training

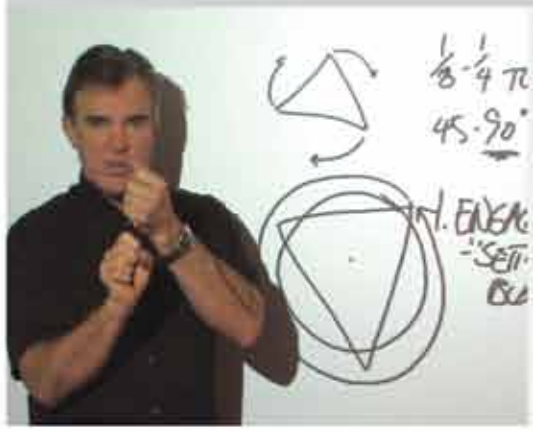
Register | Sign-in | Help

ADA C·E·R·P® | Continuing Education Recognition Program

Hands On | Media | Tips | Search

/// FEATURED CONTENT ◂ 1 of 2 ▸

The Balanced Force Technique



The most effective way to cut dentin with a hand file

/// CLINICAL

Profound Anesthesia for Mandibular Molars

Preview Watch

/// LECTURE

The Continuous Wave of Condensation

Preview Watch

/// TIPS

Should You Remove Separated Instruments? If so, How?

Preview Watch

/// CLINICAL

CBCT: The Definitive Diagnostic Tool

Preview Watch

/// LECTURE

Shaping Objectives

Preview Watch

/// TIPS

How to Bend Instruments to Get Around Impediments

Preview Watch

/// Train With Us in Santa Barbara

The Art of Endodontics 2-Day Laboratory Course

Nov. 8-9: Santa Barbara, CA

SOLD OUT

Dec. 13-14: Santa Barbara, CA

12 Seats Remaining Register

Molars Only Alumni 2-Day Laboratory Course

Nov. 1-2: Santa Barbara, CA

10 Seats Remaining Register

Check back soon for 2013 dates on all Lab Courses.

/// TrueTooth™ Training Replicas

Not models... they are ***replicas*** of real dental anatomy!

NEW

/// Train With Us at Home

Coming Soon: DIY/CE™

Learn new procedures in your office with your staff using TrueTooth™ Replicas

NEW

/// Contribute Your Own Cases!

Inspire and be inspired by clinicians worldwide

NEW

Download our new procedural flowcharts *FREE*

This 17 page set is the most comprehensive flowchart series available, showing every aspect of conventional RCT, from access through obturation, and featuring strategies like the Balanced Force technique to address clinical challenges.

Dental Education Laboratories . 1515 State Street, Suite 16 . Santa Barbara, California 93101

toll-free: **800 528 1590** . worldwide: **805 899 4529** . **www.delendo.com** . **www.endobuchanan.com**

Starting fresh in the Black Hills

Rich Mounce steps up his game with a new practice and new tools in his armamentarium

By Fred Michmershuizen, Managing Editor

Rich Mounce, DDS, recently relocated his endodontic practice from Vancouver, Wash., to Rapid City, S.D. In an interview, he discusses the move, a new business venture he has launched, plus some of the differences in practicing in the Black Hills of South Dakota vs. the Pacific Northwest.

Rich Mounce, DDS, is now practicing endodontics in Rapid City, S.D. Photos/Provided by Rich Mounce, DDS

You moved your practice to Rapid City, S.D., from Vsncouver, Wash., in 2011. How did that come about?

I was born and raised in Portland, Ore., and practiced in the area as an endodontist from 1991 to the end of 2010. I was ready for a new challenge and a lifestyle change.

From 2002 to 2010, I presented several hundred C.E. programs nationally and internationally, and I wrote a similar number of trade magazine features. Having achieved almost everything I set out to do having a presence outside my practice, it was a natural place to make a break when I did. In April 2011, I opened my new endodontic practice in Rapid City.

Laura, my wife, has family in the area. We now live in the Black Hills, about 12 miles from Mount Rushmore. We simplified our lives considerably by the move. The Black Hills are sacred to the Lakota Sioux, and I can see why. It's a spectacular place to live.

Was it tough moving your practice and beginning again?

I would not say tough, but moving presented many choices — what aspects of my previous practice I wanted to keep and what needed changing. Endodontic practice is not a one-size-fits-all experience. From office design and esthetics to management software, there were many decisions to make. The design features and other aspects of the build-out were all custom, and I am very pleased with the results.

Does practicing in South Dakota differ much from the Pacific Northwest?

In some ways, yes. South Dakota does not have large group practices owned by non-dentists, and the economy in the Dakotas is robust. These two factors account for much of the difference I experience in the delivery of dentistry. For a host of reasons that are beyond the scope of your question, I am not a fan of large groups owned by non-dentists. Despite what advocates would say, this model of delivery care does not ultimately favor optimal patient care.

We have a very high standard of practice in my area, provided by a dedicated group of private-practice clinicians. The turnstile-type "dental mill" present in some locations in other states is simply not present.

In setting up your new practice in South Dakota, what did you do differently than with your practice in Washington state?

Lots of things. I trained and got an IV sedation permit. I bought a cone-beam machine, and I started using new, self-generated internal systems for practice management.

The IV permit has given me an option with phobic patients that I obviously would not otherwise have. I favor IV sedation relative to oral sedation because with titration of IV drugs, our level of control is more predictable and, I believe, safer.

Cone-beam technology has helped add the third dimension to understanding what two-dimensional images are missing. It's provided diagnostic information missing from conventional films. While not a panacea, guesswork on early vertical fracture presentations, atypical root forms, resorption and missed canals, for example, are all things of the past.

My new internal systems mean checklists for every vital function in the practice. For example, among many things, there is a checklist for every item needed to treat a patient, track inventory and determine whether patients have been called the day before. This level of monitoring every practice function helps prevent things from falling through the cracks. It also allows new employees to slot into their roles faster.

How is it going so far?

We've been blessed; the new practice has gotten off to a solid start.

Do you have any other projects in the works?

I am glad you asked. Laura and I are very excited about the launch of our new company, MounceEndo. Starting Nov. 1, we will be selling American-made rotary nickel titanium files in a controlled memory (CM©) form and a standard nickel titanium (SNT) form, the MounceFile. We will also sell stainless-steel hand files and burs made by Mani of Japan — one of the premium global sources of hand files and burs — and reciprocating handpiece attachments from W&H of Austria.

We will stock staple items, including assorted packs of NiTi files, K-files, H-files and reamers in common sizes along with reciprocating handpiece attachments. Other items are ordered in bulk. With a little bit of advanced planning, this represents a huge win for the doctor. Our prices and selection will be very tough to beat.

Mounce's operatory is designed as a mini surgery suite to provide IV sedation.

Aside from the basic items we stock, our sales are primarily bulk purchases requiring a minimum order and are fulfilled in four to eight weeks. We will not be all things to all people. If you want great prices and can wait for the products, we are a fantastic option. If you can't wait, we are not the best option.

For example, take a pack of K-files that may be available elsewhere for $7.50 at a bulk sale price. At this time, initially, we will sell the same pack of K-files for between $3.25 and $4.50 per pack, depending on the quantity purchased and whether we stock the item. Our CM NiTi will sell for as little as $35 a pack for a 50-pack sale. Standard NiTi will sell for as little as $25 a pack, again for a 50-pack sale.

The competition we bring to the big players in the market is a good thing for clinicians. With all due respect, the big players in the market are not clinicians; they are marketers and business people. I am more tuned to the needs and frustrations of doctors in the chair because I am one. This translates to our customers as more responsive service, volume discounts, selling materials that I use every single working day, and specializing in one basic line of products — shaping root canal systems.

And there is one other added advantage to dealing with our company: We don't have a sales force that needs to hit quarterly targets. We want to create customers for life, not for the most recent sales cycle.

What makes the MounceFile different than what is already out there?

I'll tell you. As you and your readers know, I did advocate the Twisted File before, which is an excellent product. But there are many valid ways to shape root canal systems. Just as there are many popular car models for different tastes, there are many different tastes for endodontic file systems, and all of them work to one degree or another. It would be cheeky of me to tell you that my new file is "better" than someone else's. That said, I put my name on the MounceFile because so far I have not fractured one clinically. These files are smooth and fluid in their tactile

feel and come in a vast array of tapers, tip sizes and lengths. I'll use Mani hand files and MounceFiles in my private practice going forward. Also, the research that has been published on the CM NiTi has been favorable.

And while cost is not the only issue in selecting a file system, cost is a concern. With six files in a pack, at $25 a pack for standard NiTi and $35 a pack for CM with minimum 50-pack orders, it's tough to argue for paying significantly more for other files that come three in a pack, or even other brands with six files in a pack for significantly more money.

Can you offer some additional details about the MounceFile?

The MounceFile is square in cross section, has four cutting edges and cuts efficiently. Any electric torque-controlled endodontic motor can be used. Rotational speed is a matter of personal preference, anywhere from 350 to 900 rpm. I run them on the higher end, but many clinicians will use 500 rpm. Torque control and auto reverse are a matter of personal preference. They can be used step-back or crown-down. While the MounceFile assorted pack has six instruments, it is possible to use less than six files in anatomy that will allow it.

How are you going to run a practice plus your own endodontic supply company at the same time?

I will practice full-time moving forward. Hard work does not frighten me, and being in practice and overseeing MounceEndo is certainly doable. Laura is my secret weapon. She is an immensely capable partner in this endeavor.

We'll also have more than adequate support staff to take care of our customers. It's critical to me that we serve our customers at a higher level than the competition.

Changing subjects, what advice do you have for young endodontists to enhance their practices?

In short, take the "long view." What ultimately matters to a practice is patients coming out of the operatory feeling well cared for. It's a bit like the tortoise and the hare. While some might want to always focus on profitability, giving people a reason to want to come back over and over is a much more powerful long-term strategy for practice growth and satisfaction.

While there are a multitude of strategies for optimizing production and running the non-clinical aspects of the business, if the clinician does not connect with his or her patient, have the right human touch, compassion and a "patient first" mantra, financial success as one measure of practice success is going to suffer. The converse is true.

Having the right staff and the management systems is also critical to create an environment where great treatment can be provided. MounceFiles or not, if the clinician is running late, the staff is apathetic, informed consent is not provided, among a myriad of possible challenges, it's very tough, if not impossible, to end up with a happy patient leaving your office.

One final question: There are now multiple file systems, a wide variety of sources, claims and counter claims in the marketplace. How do general practitioners optimally learn and progress in their technique in the midst of so many alternatives?

This is difficult for the endodontist, and it's even tougher for the GP. The GP has to be passionate to sort the wheat from the chaff on endodontic instrumentation and obturation methods. As a start, GPs need to decide which cases they want to treat, how much risk they will take — in essence, what their "comfort level" is for cases potentially going pear shaped. In essence, all clinicians need to decide what is in the patient's best interest as they "do unto others."

My suggestions would be to talk with and learn from their endodontists, subscribe to the Journal of Endodontics, attend every class possible from every manufacturer offered at regional and national meetings, and practice extensively on extracted teeth until they are very confident.

And one final note, for both endodontists and general dentists: It is important to be patient with mistakes. We learn a lot more from things that go wrong than those that go right.

A case treated with the MounceFile CM instruments.

The new MounceFile CM will be available from MounceEndo beginning Nov. 1.

RICH MOUNCE, DDS, is in full-time private endodontic practice in Rapid City, S.D., and is the owner of MounceEndo, a supplier of American-made rotary nickel titanium files marketed as the MounceFile in Controlled Memory (CM) and standard NiTi forms, Mani stainless-steel hand files and burs, and W&H reciprocating handpieces. He can be contacted at *RichardMounce@MounceEndo.com* or *MounceEndo.com*.

◂RESECTION, Page C1

bone block was stored in Ringer's solution to facilitate subsequent repositioning (Fig. 2). The root apices were then exposed and ultrasonically removed (Fig. 3).

After apical resection, our protocol called for thorough removal of all soft tissue using instruments, followed by complete decontamination of the cyst lumen using a diode laser.

Care had to be taken to ensure that the laser tip did not make direct contact with the bone. Retrograde preparation of the root canals was also performed ultrasonically, which only takes a few seconds when using the Piezotome 2.

Following chlorhexidine-digluconate and sodium-hypochlorite rinses, the retro-prepared root canals were dried with paper points. In our clinic, we have had excellent success with the MAP (Micro-Apical Placement) retro system (PDSA), which has been on the market for many years (Fig. 4). The system comes in a sterilizable metal container (Fig. 5).

The triple-angled endo tips (Fig. 6) greatly simplify the uptake and application of the material, with the syringe facilitating "injection" (retrograde obturation) of the root canal to a depth of several millimeters. This well-targeted application of the restorative material keeps the surgical field open (Fig. 7).

On application of ProRoot MTA (DENTSPLY Maillefer), the material was allowed to set, the cross-section surface of the resected area was smoothed and polished, the resection lumen was filled with a quick-hardening bone cement (VitalOs, PDSA), and the bone block was returned to its place (Fig. 8).

The post-operative radiograph shows the site following apical resection and retrograde root filling (Fig. 9).

The patient was prescribed Amoxicillin 750 mg and Ibuprofen 600 mg post-operatively, as well as Arnica C30 to prevent swelling. Post-operative healing was uncomplicated and the sutures could be removed after eight days. Swelling was minimal, and the patient reported virtually no post-operative pain.

Case No. 2

A 65-year-old female patient presented with an apical resection on tooth #14 that had been performed alio loco five years before. The patient was looking for help because the site had become infected again. She reported pain at tooth #14 on occlusal contact and percussion. A local digital radiograph clearly showed the area of apical resection, the two root-canal fillings, and a cystic periapical radiolucency (Fig. 10).

Because this was a surgical re-entry case, the same incision technique was used as chosen by the primary treatment provider, i.e. a crescent-shaped incision as described by Pichler (Fig. 11). The procedure was otherwise the same as in Case No. 1. Following retrograde ultrasonic preparation (Fig. 12), ProRoot MTA was mixed to a working consistency and applied using the MAP System (Figs. 13, 14). This clean and efficient application mode and controlled handling shortened the surgical procedure and reduced post-operative complaints (Fig. 15). The post-operative radiograph (Fig. 16) shows an efficient retrograde filling of both root canals following revision of tooth #14. Owing to a projection artifact, the restorative appeared beside the canals, when it was in fact clinically located exactly within.

Fig. 9: Post-op OPG detail following apical resection of tooth #36.

Fig. 10: Base-line status of tooth #14 following apical resection alio loco and reinfection.

Fig. 11: Surgical site #14 following the semilunar incision.

Fig. 12: Retrograde ultrasonic preparation (Piezotome 2).

Fig. 13: Mixed ProRoot MTA prior to application.

Fig. 14: Applying the MTA using the MAP System.

Fig. 15: Resected and retro-filled tooth #14.

Fig. 16: Outcome for tooth #14.

Conclusion

Apical resection is a routine procedure in our clinic. Thanks to the use of ultrasonic surgery, the surgical laser and the MAP System, this procedure is reliable, predictable and simple, and we have preserved the natural teeth of many patients. Being an oral implantologist myself, I do not perceive anything contradictory in looking at these treatment methods; rather, apical resection is a complimentary treatment mode and an attempt to preserve teeth over the longer term that would otherwise be considered lost.

Editorial note: This article first appeared in roots, the international magazine of endodontology, Vol. 7, No. 3, 2011.

A complete list of references is available from the publisher.

PROF. MARCEL WAINWRIGHT, DMD
Dental Specialists and White Lounge Kaiserswerth
Kaiserswerther Markt 25–27
40489 Düsseldorf, Germany
www.dentalspecialists.de

The Jordco System

Founded by two practicing dentists in 1979, Jordco has developed products that help dentists deliver optimum care, simplify the delivery of care, improve staff safety and reduce cross contamination. Today, Jordco continues to set the standard for utility, infection control, innovation and innovative dental product design.

Jordco continues to refine its product line and has recently introduced the Jordco System. The system works on the premise that Jordco products complement each other and work in concert from diagnosis through all phases of treatment.

Treatment products include:

• Endoring II — Hand-held Endodontic Assistant

• EndoGel — Endodontic Lubricating Gel

• e-Ruler — Endodontic File Measuring Instrument

• Jordco Mixing Sticks — Cement and Composite Mixing Tools

• Pure Bond Dispensers — Bonding Agent and Composite Dispenser

Diagnosis products include:

• e-Dx—Dual Diagnotic Instrument

Organizing and storage products include:

• Endoring II Color Editions–Hand-held

• Endodontic Assistants

• Jordco e-Foam — Endodontic Foam

• FileCaddy — Bulk File Storage System

• Endoring Marking Tabs — Endodontic Organizing Tool

Safety and convenience products include:

• Pure Floss Dispenser — Sanitary Dual Floss Dispensing System

• Pure Buff — Polishing Wheel System

During its 32-year history, Jordco has evolved into a world-class dental products innovator and manufacturer by embracing the latest science, production technology and commitment to quality. Twenty years ago, the founders assumed all domestic and international marketing responsibility for their entire product line while further expanding their research and development program.

This consolidation allowed Jordco to open an FDA-registered assembly and distribution center located in Beaverton, Ore. All of Jordco's products are developed and manufactured in the United States. All of Jordco's manufacturing partners are located in the United States and all share a common dedication to quality in every Jordco part produced.

Photo/Provided by Jordco

Consolidation also allowed Jordco to establish a quality system compliant with the international standard ISO 13485 for medical devices. The Jordco Quality System is used to comply with biannual FDA inspections, FDA Premarket Notification 510 (k) approvals and CE mark acceptance. The Jordco Quality System is the driving force behind the company's determination to develop, manufacture, package and distribute world-class products to the dental profession. The Jordco team of employees work passionately to fulfill the goal spelled out in the Jordco quality system: Jordco's vision is to provide the dental community with quality products that will simplify the delivery of care.

New Jordco endodontic and dental products are under development.

To learn more about Jordco and its other products that are soon to be introduced, visit the company's website at *www.jordco.com* or call (800)752-2812.

(Source: Jordco)

ProUltra Piezo Ultrasonic

Driven by SmartPower™ Technology, the ProUltra Piezo Ultrasonic is designed to generate dependable and constant power for all ultrasonic procedures. SmartPower automatically locks on to the optimum working frequency for the ultrasonic tip being used, eliminating the need to constantly adjust the power setting.

According to DENTSPLY Tulsa Dental Specialties, it's ideal for endodontic applications such as locating hidden canals, removing obstructions, performing periapical surgery and canal irrigation.

More information is available from DENTSPLY Tulsa Dental Specialties, *www.tulsadentalspecialties.com*, (800) 662-1202.

(Source: DENTSPLY Tulsa)

Photo/Provided by DENTSPLY Tulsa Dental Specialties