



TREASURE VALLEY
ENDODONTICS

April 12, 2010

G. Brent Adams D.M.D.
6144 Birch Lane
Nampa, ID 83687

Dear Dr. Adams:

One of the greatest challenges and opportunities we face in dentistry is **ensuring that the treatment we render is based on principles derived from the best available evidence to promote optimal outcomes** for our patients. Sorting through mounds of new information to find clinically relevant principles can be truly daunting. As an endodontist in your area, **I write you to highlight some of the most clinically-relevant findings from articles recently published** in the Journal of Endodontics. You can view the full-length articles online at www.aae.org by selecting the link to the Journal of Endodontics if you desire more specific information. I encourage you to use the information from this and future newsletters **to continually refine your treatment methods** to provide your patients with outstanding endodontic treatment. Please call me if you have any questions regarding this material or any other endodontic topic.

How to Improve the Accuracy of Electronic Apex Locator (EAL) Readings for Length Determination...

The precision of all apex locators tested increased when **canals were pre-flared prior to measuring the working length** (*JOE* 2009; 35(9):1300-1302). This particular study used the ProTaper S1 and SX files to accomplish the pre-flaring. Any method that flares the coronal half of the canal would likely provide similar results. For best results, scout the canal initially with a few small hand files of increasing size to create a glide path to the apical third of the root. Next, flare the coronal half to two-thirds of each canal using rotary instruments (e.g., Gates Gliddens, Orifice Shapers, ProTapers, or other acceptable system). Next, use small hand files and an EAL to measure working length. Multiple studies have confirmed that EALs are more accurate than radiographs at detecting correct working length.

Which is Better- Endodontic Treatment in 1 or 2 visits...?

This debate still rages, and while evidence can be shown to support either viewpoint, a recent meta analysis suggests that **healing rates are similar** whether treated in 1 or 2 visits (*JOE* 2008;34(9):1041-7). **While treatment can be completed in a single visit, a two-step approach may indicated for several reasons** (e.g., inadequate cleaning/shaping; possible untreated canals; purulent drainage continues during the procedure; inadequate time for irrigants to adequately disinfect after mechanical instrumentation, etc.). A recent article found **no difference in pain levels** experienced when treatment was completed in 1 versus 2 visits (*JOE* 2010; 36(1):36-9). One important aspect these authors didn't address is that **pain often occurs twice with 2 visit treatment** but only once with 1 visit treatment.



TREASURE VALLEY
ENDODONTICS

How to Clean Areas That Your Endodontic Files Can't Reach...

Evidence continues to show that simply instrumenting canals is not enough— pulp tissue and microorganisms fill canal irregularities that can never be reached by instruments. Inadequate removal of tissue remnants and microorganisms contributes to treatment failure, sometimes even years later. Of the several techniques investigated to clean these mechanically-inaccessible areas, **passive ultrasonic irrigation (PUI)** appears to offer the best results (*JOE* 2007; 33:782-87).

- PUI is best achieved by *ultrasonically activating a thin, non-cutting instrument* in canals *after shaping is complete* (*JOE* 2006; 32:389-98). **No less than 20 seconds per canal is advocated.**
- Ultrasonically activating EDTA then 6% NaOCl *enhances smear layer removal* (*JOE* 2006; 32(6):549-52 and *JOE* 1987; 13(4):147-57) *thereby making dentinotubules accessible to disinfection* by irrigants. Sonic activation (EndoActivator) was no better than simple needle irrigation at removing the smear layer (*JOE* 2010; 36(2):308-11).
- PUI outperformed sonic (EndoActivator and Plastic Endo) and manual agitation at *driving irrigant into dentinotubules* (*JOE* 2010; 36(2):282-5).
- *Dentin debris is removed much more efficiently* using ultrasonic compared to sonic (EndoActivator) agitation of irrigant (*JOE* 2010; 36(1):143-6).
- Although less irrigant is extruded into periapical tissues when using the EndoVac (*JOE* 2010; 36(2):338-41), no improvement in antimicrobial activity was seen over needle irrigation when using EndoVac or EndoActivator (*JOE* 2009; 35(10):1422-7). Ultrasonic activation, however, has been shown to *significantly decrease microbial survival* (*JOE* 2007; 33:782-7).
- Full-strength bleach (6% NaOCl) *consistently outperforms other irrigants* (CHX, MTAD, iodine, and dilutions of bleach) at dissolving tissue remnants, disrupting bacterial biofilms, and killing microorganisms (*JOE* 2009; 35(9):1243-8 and *JOE* 2006; 32:434-7)
- **Suggested Irrigation Technique:** *after thorough mechanical shaping of all accessible areas* in each root canal system (including finds, isthmuses, etc.), irrigate in the sequence shown below:
 - 1) PUI of 17% EDTA: removes the *inorganic* portion of the smear layer
 - 2) PUI of 6% NaOCl: removes the *organic* portion of the smear layer
 - 3) 95% ethanol: reduces surface tension to improve spread of NaOCl
 - 4) PUI of 6% NaOCl: to disinfect; let solution soak in canals for at least 10 minutes, changing to new solution every 5 minutes
 - 5) 95% ethanol: to desiccate canals and improve sealer penetration

For your review, we have enclosed radiographs of a few cases treated in our office following the principles outlined above. We hope you find this information helpful and we welcome your questions or feedback.

Sincerely,

Stanton D. Widmer, D.D.S.