



The daily dilemma – innovative techniques are lacking evidence

I hope you had a nice and relaxing summer holiday! Personally, I enjoyed it very much spending my days without root canals and all this endodontic stuff.

From time to time such breaks are necessary to refresh our minds but also to restart our daily business more critically. When performing my first root canal preparation after the holidays using my usual rotary nickel-titanium (NiTi) instruments, I was more than happy that the times of the stainless steel hand instruments are slowly passing by. However, I wondered if the new single file systems might be even easier to use and may facilitate and speed up my work. So I tried them for the first time clinically. The results were nice and I was satisfied with my work.

However, later on I remembered a recent editorial by Antonio Bonaccorso, only two issues ago¹. In this lucid editorial he already critically pointed out that when introducing these single file systems, several issues are currently open to question. In the time of evidence-based medicine it should no longer be only a question whether or not a new technique is more comfortable or simple. On the contrary, the technique's impact on the treatment outcome should have the first priority. How about the level of evidence when using rotary NiTi or, in other words, is in fact rotary instrumentation using modern NiTi instruments clinically superior to hand instrumentation?

A closer look at the currently available literature shows that this assumption is supported by very little evidence. At best, a handful of studies – all of them containing a low level of evidence – can be identified dealing with the question whether or not modern NiTi rotary instruments ensure better treatment outcomes than traditional hand instruments and whether better maintenance of the original canal curvature and shape results in increased

success rates²⁻⁵. According to these publications, evidence from two clinical studies indicates that canal transportation or canal aberrations like ledging result in reduced success rates^{4,5}. However, only one clinical investigation was able to observe significantly increased success rates of orthograde root canal treatment when using rotary NiTi instruments compared to the use of stainless steel hand instruments⁵.

By the way, the same dilemma also applies to the assessment of contemporary root canal filling techniques. Remember how easy canals can be obturated using greater taper gutta-percha cones matching the size and taper of the used instruments compared with some techniques based on thermoplasticised gutta-percha. The influence of the different obturation techniques on the treatment outcome is also unresolved and the subject of controversy. But that is another topic!

So, what should be the consequence of this lack of evidence? Not to use these new instruments? In my opinion, certainly not, as they are efficient, safe and at least as good as traditional instruments with regard to the treatment outcome. However, I personally will urge myself to be cautious with statements claiming that using the newest root canal instruments is an indicator of excellent endodontic treatment and is *a priori* associated with better quality treatment for the patient. Luc van der Sluis's editorial published in the last issue⁶ – which by the way also deals with the discrepancy between improvements in technology and treatment outcome and the lack of convincing evidence – has already given the perfect answers: 'Enjoy your life and work' and 'enjoying your work at least leads to higher quality'.

Against this background, I kindly invite and encourage you as readers of *ENDO-Endodontic*

Practice Today to submit interesting clinical cases treated with these new single file systems or original investigations. In order to increase our knowledge regarding this innovation, every contribution will be very much appreciated.



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1. Bonaccorso A. The single file technique. *ENDO (Lond Engl)* 2011;5:3.
2. Fleming CH, Litaker MS, Alley LW, Eleazer PD. Comparison of classic endodontic techniques versus contemporary techniques on endodontic treatment success. *J Endod* 2010; 36:414-418.
3. Marending M, Peters OA, Zehnder M. Factors affecting the outcome of orthograde root canal therapy in a general dentistry hospital practice. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2005;99:119-124.
4. Pettiette MT, Delano O, Trope M. Evaluation of success rate of endodontic treatment performed by students with stainless-steel K-files and nickel-titanium hand files. *J Endod* 2001;27:124-127.
5. Cheung GSP, Liu CSY. A retrospective study of endodontic treatment outcome between nickel-titanium rotary and stainless steel hand filing techniques. *J Endod* 2009;35:938-943.
6. van der Sluis L. Enjoy your life and work. *ENDO (Lond Engl)* 2001;5:83.

