

PlanB and MIE

The New Look of Exceptional Endodontics

by L. Stephen Buchanan, DDS, FACD, FICD, Dipl. ABE

It has been interesting times lately in the field of Endodontics. In many ways our new materials, tools, and techniques have radically improved clinician's efficiency and efficacy—the best examples being the introduction of rotary negotiation, single-file shaping, and 3D obturation of bioceramic sealers.

For me, the really interesting parts of the field, however, revolve around minimally-invasive endodontics (MIE) and enhancing our irrigation outcomes. MIE because we can do better than simply succeed in our RCT, only to lose the tooth 5-15 years later due to structural failure. However, it's one thing to cut a smaller shape in a root canal, but it's an entirely different thing to kill all the bacteria and digest all pulp remnants while working through smaller passageways, so these virtuous trends represent complementary challenges. What we need to cut less tooth structure while irrigating more effectively are new concepts, tools, and techniques. The potential payoff is improving our long-term success while re-establishing RCT as a single-visit procedure.

What is MIE? Minimally-Invasive Endodontics means different things to different clinicians. Our most talented endodontists have been competing for some time to see who can do a perfect RCT through the smallest access opening(s), however, all of us involved in this MIE quest have experienced failures due to the much, much greater difficulties attendant to this approach. For me, MIE isn't about doing root canals through impossible "Ninja" access cavities, although I love a challenge as much as the next endodontist. My definition of MIE is saving as much tooth structure as is practical without reducing the probabilities of success. MIE is not saving so much tooth structure that the tooth is lost due to inadequate treatment.

How do we do this? MIE preparations begin with the use of small, guided access burs, and are completed with rotary instruments having maximum flute diameters (see Figs. 1 and 2) to completely control cervical enlargement. Holistically-considered MIE treatment requires this preparation be completely disinfected and all pulp tissue remnants be digested—preferably in a single visit (Fig. 3).

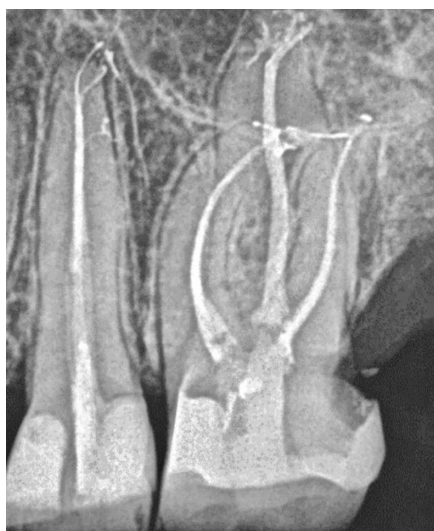
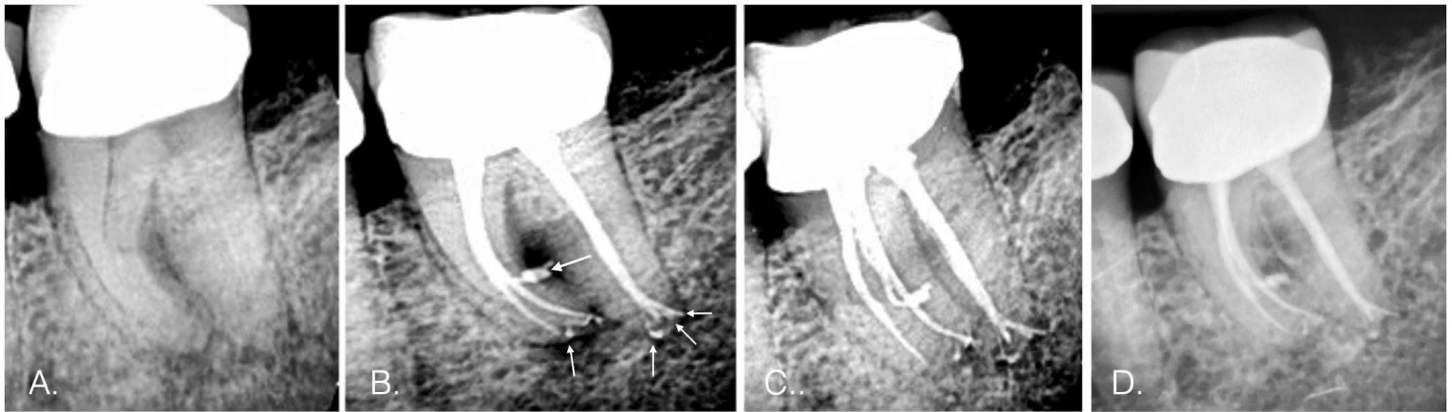


Figure 1. (left) These two posterior teeth with severe canal curvatures were treated with miniKUT Rotary Files (PlanB Dental). Note the multiple lateral portals of exit cleaned and filled despite the minimalistic shaping. (case courtesy of Dr. Charles Maupin)



Figure 2. (right) This lower molar was completely negotiated and shaped with a single 15-.03 and 15-.05 miniKUT Rotary Files, preserving dentin coronally as well as all the abrupt canal curves. (case courtesy of Dr. J.T. Crepps)



Immediate Post-op Radiographs

11-Month Recall

Figures 3A-D. This #18 had a severe pulpitis that was treated in a single visit, using a miniKUT 15-.03 to negotiate and shape the mesial canals and a 20-.05 miniKUT File to accomplish the same in the distal canal. Note the 7mm long mid-medial canal with its own lateral portal of exit and the delta of lateral canals in the apical part of the distal root. (case by Dr. Buchanan)

Timing is the most critical variable influencing technological advancement, and this truism is evident in the rapid strides being made in both MIE and irrigation procedures. These advances are synergistic because MIE begs for better irrigation methods while better irrigation methods make cutting tooth structure less and less important. To accomplish this in a cost-effective manner we have created a multi-cannular, negative pressure irrigation system we named PulpSucker (by PlanB Dental). Early clinical trials of PulpSucker used in single-visit treatment of severely-inflamed pulpitis cases are returning very promising results as reported by patients on the night of the procedure. PulpSucker irrigation's elegant design optimizes the factors influencing irrigation outcomes through established scientific protocols, rather than requiring an \$80K capital investment for a limited use piece of equipment. PulpSucker through the use of effective concentrations of NaOCl, using it in the right order with EDTA, and delivering it vacuum-drawn to canals allows us to clean the smallest passages in 15 minutes without a power cord.

PlanB Dental is a startup dedicated to empowering clinicians to achieve exceptional MIE RCT results.