New Deep Troughing Bur is Developed

Figure 1. *Munce Discovery Burs.*

ABE-RJ: What are MUNCE DISCOVERY BURS?
C. John Munce: MUNCE DISCOVERY BURS (Fig. 1) are 34mm-long round carbide-tipped troughing burs with stiff shafts that are 1mm in diameter. They are currently available in 4 sizes: #1/2, #1, #2 and #4.
ABE-RJ: How do MD Burs differ from Mueller Burs and LN Burs?
C. John Munce: All 4 sizes of the MD Burs have the same shaft diameter—1mm. This contrasts with Mueller Burs which have variable shaft diameters, the smallest of which is a very flexible 0.5mm. Additionally, the smallest Mueller Bur tip size is ~0.85mm in diameter, compared to the #1 and #1/2 MD Bur tip sizes of ~0.77mm and ~0.58mm in diameter, respectively. It will be immediately obvious to today's highly magnified and highly illuminated clinicians that deep-reaching troughing burs with positive-control stiff shafts and tip diameters much smaller than 0.85mm are often required for safely locating calcified canals and exposing separated instruments deep within radicular structures. While the LN Burs do offer a #1/2 round tip size and a stiff narrow shaft, they are only 28mm in length and thus provide inadequate reach for deep troughing procedures.

Figure 2. *Stiff shaft of Munce Discovery Bur compared to flexible shaft of the smallest Mueller bur.*

ABE-RJ: Ultrasonic tips have been used for some time now as deep troughing instruments. While the fundamental difference between a bur and an ultrasonic tip is obvious, what do you see as the primary differences in their respective clinical applications?
C. John Munce: MD Burs are not suggested as a total replacement for ultrasonic tips, but they are much more efficient than ultrasonic tips for bulk troughing. The effectiveness of ultrasonic tips is directly related to the amount of energy delivered to the tip—energy which generates heat. This heat can be dangerous to the delicate periodontal ligament, often only a fraction of a millimeter away from the tip. To reduce the risk of damage to the PDL, the level of energy can be decreased, making the tip less efficient, or water can be introduced into the deep cavity to dissipate the heat. The use of water as a coolant requires the introduction of an evacuation device into an already-crowded field. Of course, it goes without saying that, at $60-120 each, seemingly spontaneous—and frequently reported—ultrasonic tip breakage is more than a nuisance. That said, ultrasonic tips remain a useful part of any serious clinician's instrumentarium and are often the ideal finishing devices for deep troughing procedures and separated instrument removal.
ABE-RJ: 30mm-long and 34mm-long standard shaft-diameter round burs already exist in small tip sizes. Why are these not adequate for deep troughing procedures?
C. John Munce: Figure 3 illustrates the fact that 30mm-long round burs with standard shaft diameters of 2.4mm are useful on the chamber floor, but once troughing progresses beyond the level of the floor, two primary impediments will

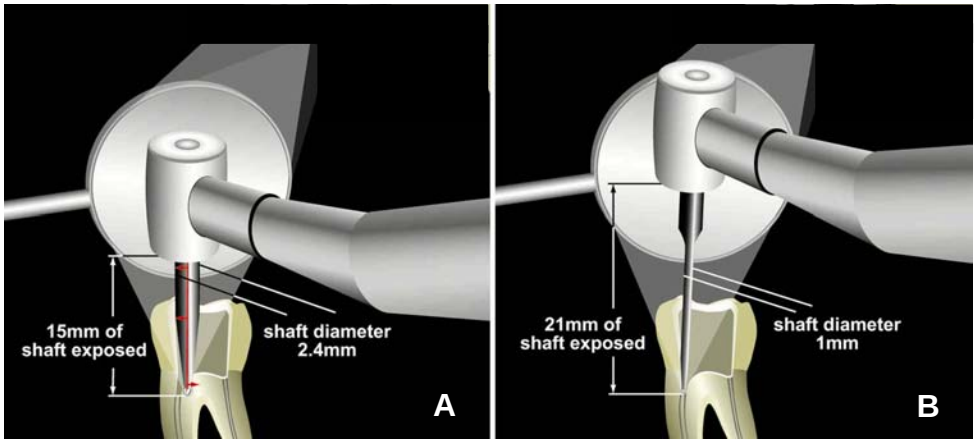

Figure 3. *30mm-long,surgical length, slow-speed round bur with standard 2.4mm shaft diameter(a) compared to 34mm-long Munce Discovery Bur with stiff 1mm shaft diameter (b).*

occur: 1) the view corridor beyond the handpiece head will become ineffective as the gap between coronal structure and the handpiece diminishes, and 2) the large shaft diameter will impinge on the ever-deepening cavity wall, forcing the tip of the bur toward ledging and perforation. While the 34mm-long round bur with a standard 2.4mm-diameter shaft will not have the same view corridor problem as the 30mm-long bur, it will lead to the very same problem of shaft impingement on the deep cavity wall.

ABE-RJ: Why did you decide to develop this troughing bur?

C. John Munce: I had been modifying my own deep troughing burs at chairside, in the laboratory and in the machine shop for many years and showing colleagues how to do the same. Approximately a year ago, it became clear that dentists wanted these burs to be readily available on a commercial basis. After considerable effort to have it made by several sizeable dental bur manufacturers, I finally elected to use my small endodontic products company, CJM Engineering, Inc., to manufacture and distribute these unique deep troughing burs worldwide.

ABE-RJ: Can you provide a brief synopsis of the clinical application for MD Burs?

C. John Munce: Absolutely….

Technique

- High magnification and high-intensity illumination is absolutely essential for all deep exploratory procedures
- Create adequate coronal access (Fig. 4a, b)
  - Exaggerate access beyond the convenience form generally applied to endodontic access cavities
  - Remove adequate structure to completely unencumber the view
  - Invasion of the MB cusp is generally required (Fig. 4b)
- Beyond the chamber floor, trough with Munce Discovery Burs, using decreasing bur sizes to progress apically

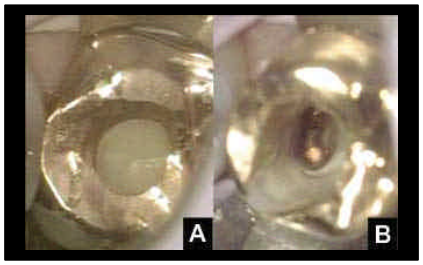

Figure 4. *Inadequate extent of previous access (a) compared to extended outline form (b) required to visualize and gain access to the untreated MB2 canal.*

- Use burs generally in a sweeping motion—as opposed to plunging—while progressing apically
- Always work into the bulk of tooth structure—generally this will mean working away from the furcal aspect of canal walls
- Deep exploration must be accompanied by frequent multi-angled radiographs (Fig. 5a-i)
  - The three-dimensional structure of the root cannot actually be seen but can be conceptualize based on multi-angled radiographs
  - Paired radiographic angles—one straight-on and one sharply-angled from the M or D—with a radio-opaque marker (i.e., cavit placed with an endodontic condenser or a radio-opaque liquid deposited by micro-tip injection) at the deepest exploratory point will provide spatial information regarding deep exploration

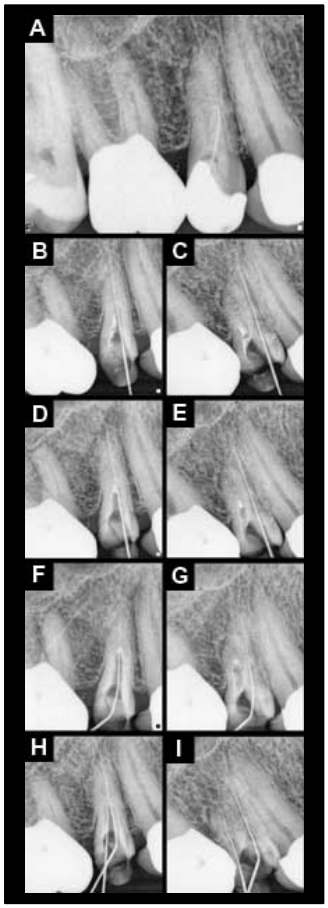

Figure 5. *Apply the buccal object rule to paired, multi-angled radiographs—one straight-on and one angled sharply from the M or the D. Use a radio-opaque marker at incremental increases in exploratory depth (b to g). This technique provides discrete information about the spatial position of deep exploration within the root and reduces the risk of perforation while enhancing the chance of locating a hidden or calcified canal (h and i).*