



A retrospective report on WaveOne

Observations of 1,200 Prepared Canals

Recently, my travels have taken me to the Middle East. In January, I participated in the Pan Arab Endodontic Conference in Dubai, United Arab Emirates. From Dubai, my wife, Phyllis, and I traveled to Amman, Jordan, where the Jordanian Endodontic Society held their annual meeting. Then, in March, Phyllis and I again returned to the Middle East. On this endodontic tour, we visited Dammam and Jeddah, Saudi Arabia, and Kuwait City, Kuwait.

In these cities, we gave 13 workshops to more than 400 enthusiastic and eager-to-learn dentists. These dentists shaped a minimum of 1,200 simulated S-curved canals in plastic blocks. Plastic blocks are readily available, allow full visualization of each procedural step, and provide instant feedback as to the effectiveness of me, as a teacher. All the shaping results were evaluated and judged in accordance with Schilder's five mechanical objectives for shaping canals.

1. Create a funnel-shaped form.
2. The corollary to this funnel-shaped form is that each cross-sectional diameter, moving apically, is progressively smaller, with the smallest diameter of the preparation at the terminus of the canal.
3. Maintain the original pathway of the canal.
4. Preserve the anatomical position of the foramen.
5. Keep the prepared foramen as small as practical.

These mechanical objectives provide a method to evaluate, grade, and compare each shaping result. In this manner, colleagues can more objectively assess their work, and if necessary, make the mechanical adjustments required for improvement. Importantly, sometimes it is the teacher who needs to make the educational adjustments required for students to move ever closer to their full potential. As a teacher, it is dangerous to make assumptions. For example, it is easy to assume that small details within any given procedural step are already understood, when in fact, this may not be the case. Yet, a successful result is a summation of properly executing all these details.

More than a decade ago, I learned something that helped me become a better teacher. In 2001, the ProTaper NiTi rotary file system came to market, and during the subsequent years, became the No. 1 file system in the world. However, this file system did not launch with enormous success. Even though the ProTaper system has remarkable design features, many early adopters did not use these *active* instruments correctly. Regrettably, the advantages of well-designed files and their potential performance can be sabotaged when dentists do not follow the recommended directions for use.

To maximize performance during any given ProTaper workshop, I have been known to have audiences yell in unison, "Float, follow, brush." My theatrical antics are to emphasize that ProTaper performance improves measurably when the files are used correctly within a canal that has a confirmed, smooth, and reproducible glide path. As an example, the ProTaper Shapers are employed using a brushing motion. Brushing maximizes contact between the file and dentin and allows more complete instrumentation, especially in canals that have an irregular cross-section or exhibit fins off their rounder portions. Importantly,

brushing creates lateral space and encourages a ProTaper Shaper to more readily advance toward the working length.


These earlier teaching experiences helped me better appreciate that it takes more than a well-designed file to produce predictably successful shaping results. Let's go back to my Middle East tour where I conducted 13 WaveOne workshops to 400 doctors who shaped 1,200 S-shaped canals. After the first and second workshops, it became apparent that I needed to produce teaching language that more effectively emphasized how to use a single WaveOne file. Borrowing from my ProTaper teaching experience, I identified three clinical guidelines that I noticed measurably helped dentists better perform the WaveOne single-file technique.

Brush: Emphasis is on brushing before the file first engages dentin and experiences torque. Brushing creates lateral space, enhances contact between the file and dentin, promotes disinfection in canals that exhibit an irregular cross-section, and enables the file to more readily advance along the glide path.

Run: Brushing enables the file to run, advance, or progress apically along the glide path. Many new WaveOne users can be seen in workshops erroneously pecking, pumping, and pushing to encourage the Primary 25/08 WaveOne file to move toward length. Brushing on the outstroke creates lateral space, allowing the file to more passively advance along the glide path.

Bites: The Primary 25/08 WaveOne file should work no more than in 3-4 mm bites along the overall length of a canal per pass. After 3-4 mm, or if the file ceases to readily move inward, remove the file, clean and inspect its cutting blades, then irrigate, recapitulate with a 10 file, and re-irrigate.

In a single-file technique, recognize that considerable debris is generated when transitioning the canal from a confirmed glide path to a finished preparation resembling the dimensions of the 25/08 file. All instruments tend to bog down when debris builds up internally. Therefore, it is normal to require three to five passes over about 60-90 seconds to fully prepare virtually any canal that, first, has a confirmed glide path. Trying to push, or forcibly advance, the file through the glide path invites blocks, ledges, transportations, or broken instruments.

Following a workshop, most colleagues recognize that much of the time expended performing endodontic treatment is not spent shaping canals, but rather identifying orifices and creating a smooth, reproducible glide path to the terminus of the canal. Certainly, mastering anything new requires practice. Keep it on your radar that perfect practice makes for perfect play! 



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