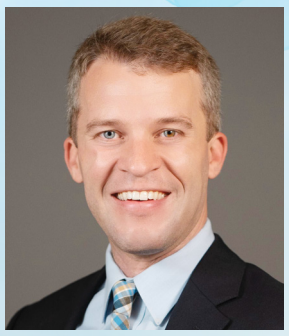
The EdgePiezo Ultrasonic Scaler:

Clinical Review of Endodontic Applications



Zak James, DMD
Private Practice in Endodontics
Concord, North Carolina
Diplomate, American Board of Endodontics

Every operatory has a workhorse, the piece of equipment that quietly makes advanced procedures more efficient and predictable. For me, and many other endodontists, that workhorse is the ultrasonic unit. It troughs calcified chambers for MB2, activates irrigant in the apical third, prepares root ends during microsurgery, and assists with retreatment, including post removal and retrieval of separated instruments. The EdgePiezo is a compact piezo ultrasonic built to earn that role. Having recently trialed the unit for the first time, I found it more powerful and capable than units costing far more and was impressed that such a small package could deliver such a wide range of capabilities.

Ultrasonics have a long track record in nonsurgical endodontics.[1,2] Piezoelectric ultrasonic units, the most advanced and contemporary technology, function by passing an electrical charge through ceramic or quartz crystals in a handpiece, which expand and contract to produce a precise linear, back-and-forth motion at 25 to 50 kHz. This is superior to older magnetostrictive units, which vibrate a metal stack with a magnetic field and produce a less controlled elliptical motion. Linear motion directs energy predictably with less handpiece heat, and the smaller magnetic field makes piezoelectric handpieces safer for daily use, including for patients with pacemakers.[3,4]

Studies consistently show that passive ultrasonic irrigation (PUI) removes pulp tissue and hard tissue debris more effectively than syringe irrigation alone, particularly in isthmuses and fins.[5,6] Ultrasonics can activate irrigant several millimeters beyond the oscillating tip,[7] and unlike sonic activation, PUI can generate transient cavitation that disrupts bacterial biofilm.[2,8,9] Improved debridement is a surrogate outcome, however, and clinical studies have not shown a statistically significant difference in healing.[10-12] The case for ultrasonics is settled in endodontic microsurgery, where ultrasonic retropreparation has long since replaced burs as the standard technique. Ultrasonic tips create a canal-centered preparation along the long axis of the root, allowing a flatter bevel, a smaller osteotomy, and better access to isthmus areas.[13] These conservative preps are easily sealed with contemporary bioceramic sealers and putties.

The EdgeTips and EdgeSurgical Tips I've used for years feel right at home on the EdgePiezo. With the addition of 23 new options, the EdgeTip portfolio now supports an even wider range of applications. The handpiece is light and ergonomic with an effective water spray, and it runs wet or dry at the touch of a button. It is equally at home in retreatment, where vibrating tips help loosen posts and separated instruments. It can also perform periodontal scaling, a minor point for the endodontist but one that may appeal to general dentists wanting a single, all-inclusive machine. Power is adjusted on a 1-10 scale within pre-programmed designated endodontic and periodontal modes.

A preferred feature is the digital power scale. Analog dials, such as those integrated into my office's dental chairs, can lose calibration or stick in one position, requiring maintenance and repair. A digital scale gives repeatable settings: lower power for PUI to mitigate separating irrigation tips, higher power for troughing, post removal or retropreparation. The footprint is small, a real advantage in crowded operatories, and the dual water supply option lets the unit adapt to the office's plumbing or included water reservoir.

In clinical use, the EdgePiezo feels more powerful than units that cost considerably more, or consume a far larger footprint. Some ultrasonics I've used have struggled with root end preparation, but this one has made my apical surgeries quick and predictable. Power also matters most when vibrating a stubborn post or working around a separated instrument, and the EdgePiezo delivers it at a fraction of the cost of many competitors. It should be emphasized that EdgePiezo is not a far more powerful (and expensive) piezo bone surgery unit, so apical or periodontal piezosurgery still requires a dedicated device for root resection and bone window preparation. Within its intended scope, EdgePiezo handles debridement, retropreparation, and retreatment very well.

Overall, the EdgePiezo is a well-conceived unit for practices that want dependable ultrasonic capability in operatories without an integrated piezoultrasonic unit. For the endodontist, it can be a valuable stand-alone unit or a safety net when integrated options fail. For the general dentist, it is highly valuable for its portability and multispecialty applications. Its digital interface, compact size, portability, and broad tip compatibility make it practical for daily use, and its performance relative to cost makes it easy to justify for endodontists and general dentists alike.

Visit EdgeEndo.com for more information.

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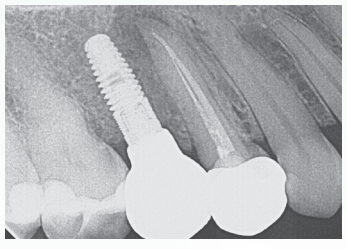


Image 1. Pre-op PA radiograph showing a PARL localized to tooth #5. A separated instrument is noted.

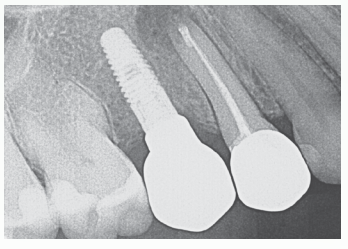


Image 2. Post-op PA radiograph following apico/EMS. Apical 3mm have been resected and the root-end adequately prepared and additional 3mm with EdgePiezo ultrasonic tips. Apical seal completed with BC sealer and putty lid technique.

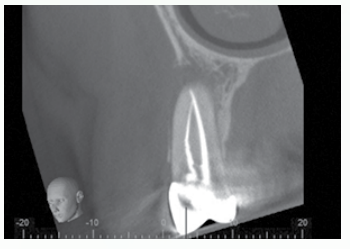
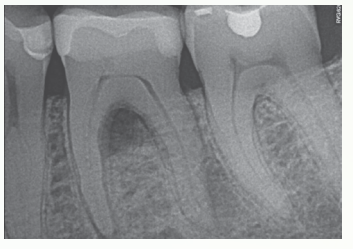
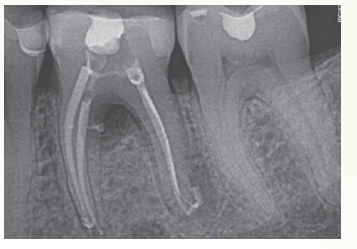


Image 3. The pre-op CBCT shows the separated instrument in the buccal canal. Apical microsurgery was elected.





Images 4 and 5. Furcal radiolucency suggests the possibility of accessory anatomy, or periodontal defect. The EdgePiezo was used for passive ultrasonic irrigation of both EDTA and NaOCl irrigants. Final obturation demonstrates to the presence of mesial root furcal anatomy, and distal apical delta.