The Power of Pow

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Power scalers have finally come of age. It wasn't too long ago that clinicians espousing the benefits of power scalers were ridiculed as "Cavitron Queens" who were obviously lazy and didn't really care about their patients. In fact, educators actually prevented students from using power scalers, instead focusing entirely on hand instruments. There was a fear, with no research support, that using power scalers would prevent the necessary muscle development and tactile sensitivity needed for hand instrumentation. Instead of instructions on the proper use of a power scaler, clinicians were warned about damaging root surfaces with the tip and excessive heat build up if not keep in constant motion. These warnings led to generations of hygienists using the side instead of the tip of a magnetostrictive power scaler in a rapid egg-beater motion to avoid heat buildup and root surface damage. The result? Lots of burnished calculus! No wonder so many clinicians thought they were more effective with sharp curettes than power scalers.

Today instrumentation begins with the power scaler, followed by hand instruments for exploring and evaluating the results. Effectiveness with power scalers requires superb detection skills, which then allows for proper placement of the power scaler tip on the top edge of the deposit. A light touch is necessary to allow the instrument to effectively vibrate off the deposit. A gentle touch and excellent detection skills are essential. Purposeful, controlled movements with very light pressure, using either a gentle tapping or sweeping stroke are most effective. Knowledge of root anatomy is essential for effective instrumentation.

According to the research, no power scaler is superior to another. It is clear that power scalers and hand instruments are equally effective for deposit removal. Several studies over the years (Dr. Badersten in 1981 and 1984, Dr. O'Leary in 1986, Dr. D'haese in 2003, Dr. Rühling in 2003 and Dr. Obeid, P. in 2004) have reported similar tissue healing when comparing hand and power scalers, regardless of the type of power scaler used. The sonic scaler, despite its lack of popularity, fares quite well in the research arena.

To determine the best power scaler, researchers will need to utilize endoscopy with the Perioscope to capture subgingival images of instruments at work. This information will provide answers to the question of which power scaler is superior, if one is. So far, this research has not been done. However, many Townies use Perioscopy in their practices and have evaluated a variety of power scalers with magnified vision in the subgingival area. I asked several of them to describe their findings.

Which power scaler do you prefer and why?

Judy Carroll, RDH: I use a Satelec Piezo P5 Newtron with blades (edged tips) and diamonds for these reasons: small and portable unit, light cord and fat handpiece, feather light grasp, easy to roll in your fingers, no achy hand, very little water flow and ergonomically superior to other power scalers.

Dr. John Kwan: I prefer the MicroUS, a magnetostrictive 25K manually tuned unit from The Tony Riso Company. With the 0.5mm straight insert, I am cleaning almost 100 percent of all tooth surfaces. Occasionally I use curved right and left versions and very occasionally I use diamond tips to cut overhangs, enamel projections, enamel pearls, globular cementum or plasty out grooves and furcations.

Lee Grayson, RDH, BA: I am more effective with the Satelec Piezo unit using bladed tips because my tactile sensitivity is better. Even though I am observing with the endoscope, I still have to feel the root surface to guide my adaptation of the tip. I also need to have good tactile sensitivity because I am not always using the endoscope.

Dr. Parker D. Workman: Like Dr. Kwan, I use the Tony Riso unit. I only use magnetostrictive, and find that this works very well. I do wonder about piezoelectric though, as it really seems to do a great job of removing granulation tissues during surgery.

Suzanne Newkirk, RDH: I use both a magnetostrictive and a piezo scaler. The Cavitron works well for maintenance visits. I use the piezo with bladed and diamond tips for my scope procedures. I like the fat handle and using three handles with the three bladed tips is a time saver. I just switch out the handle as needed for the area I'm working on.

Diane Brucato-Thomas, RDH: I truly believe that it is "different strokes for different folks" and what works well in one person's hands might or might not work well in anothers. I use both magnetostrictive and piezo regularly, and I like both for different applications. If I had to choose only one, I would have to say that my all around favorite is the USI manually tuned magnetostrictive with E+ tips on a low power setting. I have heard some argue that a low power setting results in burnished

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calculus. but I've never observed this endoscopically. What I find I miss most often, are miniscule specks the size of a 10 font period, all easily blasted off with the touch of a diamond tip.

Jodi Van Egeren, RDH, BASDH: The USI 25k magnetostrictive unit has been my choice for the past 14 years. I have had very little experience with the piezo ultrasonic scaler during a Perioscopy procedure. I do however feel that a piezo makes a positive contribution with a wide variety of tip choices, much more so than the magnetostrictive. The only downfall is the lateral sides might not always be the best choice for positioning in a pocket. The magnetostrictive has a huge advantage over the piezo because all sides of the tip are active in calculus removal.

What do you see with power scalers at work?

Carroll: I see linear tip motion (no heat generated), the long strokes of the bladed tips create efficient calculus removal (not hundreds of tiny strokes). It's a systematic approach anyone can do, even without endoscopy. The edges remove heavy tenacious and heavy burnished calculus with ease. The deposits peel off the root quickly with no jackhammer effect and this results in improved patient comfort overall.

Grayson: I have found the endoscope a powerful teaching tool. Adjusting the power on the ultrasonic is no longer guesswork with the use of the endoscope. There isn't a single setting effective for the removal of all calculus. It is easy to burnish calculus with too little power and it is easy to damage the root surface with too much. Sometimes the margin between those extremes is very narrow if the calculus is extremely hard and tenacious. Using the endoscope for my initial therapy allows me to have the best possible feedback on the effectiveness of my ultrasonic. I can see when the calculus comes off the tooth. This is a much more difficult thing to assess without the scope. Because I work in a referral perio practice I see the work of many hygienists. What I see most is calculus burnished by inadequate power or incomplete coverage of the root surface when scaling.

Which brands have you used with an endoscope?

Carroll: I've used both tunable and traditional magnetostrictive units, as well as a piezo with the endoscope. I have not used the sonic with an endoscope, or the EMS.

Kwan: I've used several piezo scalers; Satelec, Hu-Friedy Symetry and EMS. I've also used several magnetostrictive units, Dentsply Cavitron SPS 30K, Tony Riso Company 25K auto/manually tuned, Tony Riso Company 25/30K manually tuned, Shoreline 25K manually tuned.

Grayson: I have observed a variety of power scalers with the endoscope. I have used the USI MPLC, the Satelec Piezo scaler and the Tony Rizzo magnetostrictive ultrasonic. I also have used another piezo unit that I believe was from AMD.

Newkirk: I've used two magnetostrictives, the Cavitron, and Tony Riso, and one piezo.

Workman: I have used other 25K magnetostrictive units during my residency. They all seem to work well. The instrument of choice is likely magnetostrictive or piezo. I think that the technology is most efficient for removal and has the benefit of lavage of the pocket during cleaning.

Brucato-Thomas: I've used the Cavitron, Satellec, and USI.

Van Egeren: I've only used the USI 25K magnetostrictive with P100, P1000, and L and R inserts.

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Interviewee Respondants


Judy Carroll, RDH
PerioPeak Innovations
Bremerton, WA


Suzanne Newkirk, RDH
Clinical Practice
Mill Creek, WA


John Y. Kwan, DDS
Perioscopy Inc.
Oakland, CA


Diane Brucato-Thomas, RDH
Clinical Practice
Pahoa, HI


Lee Grayson, RDH, BA
Clinical Practice
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Jodi Van Egeren RDH, BSDH
Clinical Practice
Appleton WI


Parker D. Workman, DMD, MS
Private Periodontal Practice
San Diego, CA

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Why did you change from one power scaler to another?

Carroll: I abandoned the magnetostrictive approach because it needed too much water, produced too much heat, the handpiece and cord were heavy and the thin handpiece made my hand ache. It was difficult ergonomically. The action similar to a jackhammer burnished calculus onto root and it was not efficient at removing heavy tenacious calculus, or burnished calculus, in a timely manner. Also, there was no fiber optic handpiece available, which I think is a valuable feature. The Hu-Friedy Symmetry has this option. I wonder when Satalec will add it to their power scaler?

How has your perioscopy vision changed your treatment?

Carroll: I do all initial therapy to "perioscopy-clean" in one simple appointment with an endoscope. These are all very heavy calculus cases with advanced perio, No blind debridement first, so I am working with very heavy calculus from start to finish, and working quickly. Based on my Perioscopy experience, this is only possible with a piezo.

Grayson: I don't limit myself to the use of ultrasonic instrumentation. I find that I get the best results for my patients by using what works best for me in any given situation. Some people mistakenly believe that because I have a scope, I use it on every patient that I see. Not so. I could not possibly use it on every maintenance appointment. There are also areas of the mouth that I cannot access with the scope and must rely on tactile calculus detection and removal.

Workman: In my estimation, power scalers are the only way to go. I avoid use of hand scalers at all costs. I do not find that they remove calculus well, nor efficiently.

What advice do you have for clinicians who do not have an endoscope?

Carroll: If you use a piezo, be sure it has interchangeable handles. You need to be able to change the handles with various tips and not spend time screwing tips on and off. I use four handles for my procedures, easy and fast to change. I prefer the bladed tips for efficiency, thin design and very deep access. The blades and diamonds require proper training on technique and power settings. The company had to stop making blades and make only edged tips instead due to root damage by inexperienced clinicians. Diamonds and blades in any inexperienced hands can create a problem, even with hand instruments. Always follow a systematic approach when using a powered unit for greatest efficiency. Think about where you are on the root and be thorough, but don't linger and over scale with any power scaler.

Kwan: Instrument adaptation is critical to using any instrument subgingivally. The power applied to sharp bladed ultrasonics or diamond coated instruments is an opportunity to be incredibly aggressive, removing more than just calculus. Unfortunately blind debridement based only on tactile sensitivity is within the standard of care. How many other procedures are "OK" performed blindly?

Grayson: My advice, take care of your power scaler. I rarely make recommendations to other hygienist on what equipment they should use. I do encourage them to try many different instruments and find what is most effective in their hands. I remind them that even the best equipment requires maintenance and replacement of worn components. I wouldn't drive my car year in and year out without service, so I don't expect to use an ultrasonic unit without having it periodically serviced by the manufacturer.

Workman: Be very careful with diamond tipped instruments, as they cut the dentin, cementum, enamel and restorations.

Brucato-Thomas: I encourage clinicians to use power scalers subgingivally as much as possible. Use a light touch, beginning at the coronal portion of the deposit and working apically with an overlapping horizontal "coloring" stroke. Personally, I then repeat the action twice using opposite diagonal strokes. Pay particular attention to line angles and the very base of the pocket, for those are common areas that are missed. The CEJ, believe it or not, is also a very common place to miss. I also advise against using bladed or diamond tips in the absence of endoscopy, because they are extremely aggressive and, unless you can see when you are done, it is much too easy to over-instrument. With the assistance of endoscopy, I have found that a quick light touch directly to the visible calculus is all it takes to blast it off. Any more than that can easily create undesirable grooves in the blink of an eye.

Van Egeren: Because I have actually seen calculus removal deep within a periodontal pocket, I recommend clinicians really understand root morphology and comprehend the magnitude of power delivered by ultrasonics. Precise, minute movements are necessary for complete calculus removal and I have learned to slow down-on a large scale. Every square millimeter needs to be covered because it is truly amazing the amount of debris that is present, even when an experienced clinician 'feels' that the area is free of debris.

Furcations are another story. They are even more difficult to access with the added use of the perioscope. The roof or floor of a furcation is more structurally compromising than I ever envisioned prior to the use of Perioscopy.

Power scalers have made a significant contribution to the oral health of patients and to the physical comfort and ergonomics of the clinician. Hard and soft deposits above and below the gingival margin are removed with less pressure and in less time. The fluid lavage flushes toxins and deposits from the subgingival areas, enhancing tissue healing. We don't have one winner in this power scaler contest as it all depends on the individual clinician and their skills using it. Try all three technologies and various brands to determine which one or two or three work best in your hands. In the end, it's all about the results you get for your patients. ■