

The ultrasonic debate

Dentsply UK explains the differences between scalers and what you should look out for

As technology has developed over the decades, ultrasonic scalers for the effective removal of biofilm and calculus, both supra and subgingivally, have become a surgery must-have for the modern dental hygienist.

Having an electronic device that vibrates 18,000 times or more each second can be indispensable and effective in providing safe treatment via a multitude of procedures.

However, with almost half (47%) of hygienists using their particular ultrasonic scaler because it's the one the practice provided (Dentsply survey, 2014), having little or no say in the choice of manufacturer or brand, it is not unusual for a hygienist to have limited knowledge of the different types of scalers, their many uses and benefits to both the user and patient.

With such a vital role to play in helping prevent oral problems from arising, today's hygienist should be pivotal to the choices they make in the equipment they use, thus their understanding of scalers is essential to their clinical success.

Magnetostrictive vs piezoelectric

Currently the two popular ultrasonic power-scaling options are the magnetostrictive and piezoelectric, each offering their own range of benefits. The biggest difference between the two technologies is how the power is generated to facilitate movement.

Magnetostrictive scalers:

- Function at 18,000 to 45,000 cycles per second (Hz)
- Movement generated by an electrical current passing over metal
- Elliptical movement of the tip
- Heat is generated and requires a cooling system
- All surfaces of tip are active.

Piezoelectric scalers:

- Function at 25,000 to 50,000 cycles per second (Hz)
- Movement generated by electricity passing over crystals in the handpiece
- Linear movement of the tip
- No magnetic field is present and little heat is generated to the tip
- Lateral surface of tip most active.

When comparing the magnetostrictive and piezoelectric systems, they are very similar on the surface, but on closer inspection there are subtle differences in terms of operation.

The first difference between magnetostrictive and piezo is the use of water during treatment. Because the metal



strips/rod in a magnetostrictive unit generate heat, users will need to use plenty of water to prevent overheating.

The heat from the metal will also warm the water, making the experience more comfortable for patients.

In comparison, the Piezo creates a linear tip motion without producing heat and requires less water irrigation; consequently patients can suffer from cold sensitivity, as the water is not automatically heated.

Tip oscillation and selection

When comparing the two systems it is important to consider their internal mechanisms and the pattern of tip (insert) oscillation. Magnetostrictive products, such as Dentsply's Cavitron, have a linear or elliptical movement where all surfaces and sides are active. Whereas, with the Piezo scalers the tip movement is linear with just two sides being active.

In an elliptical motion a greater surface area per cycle is covered, yet it produces the least amount of vibration to ensure the highest level of patient comfort. Of course, elliptical movements are far larger the more power you use, but by maintaining a lower power users can be more precise in their movements. With increased access and precision, hygienists are better able to navigate periodontal pockets, leading to improved gingival and periodontal health, whilst ensuring effective scaling of biofilm and calculus, including heavy deposits.

The criterion for tip selection can be a daunting subject, but clinical research has shown that it is vital to use only ultrasonic systems and inserts from the same manufacturer. According to Walmsley (2012), using scalers with inserts from different manufacturers vary in input and can lead to highly unpredictable movements of the tips, which can result in ineffective treatment outcomes or failure to work. Ultimately, using ultrasonic inserts and units from the same manufacturer ensures enhanced scaling and plaque removal with optimised



Cavitron with a linear or elliptical movement so that all surfaces are active

system performance and treatment results.

Similarly, knowing your equipment and how to correctly use the variety of tips, rather than taking the 'one tip for all treatments' approach, will ensure hygienists spend time performing procedures more effectively and provide a far more comfortable experience for patients.

Ultra benefits

Ultrasonic units now play an important role in helping deliver the high standard of care that patients expect, speeding up procedures so treatment time is reduced and thereby allowing you to see more patients. Additionally, from a user's perspective such advancements in this technology have come a long way to help eliminate conditions such as hand fatigue and repetitive strain injury (RSI), often associated with hand scaling.

For any hygienist, the equipment you use is like an extension of yourself, so it is essential to become fully trained on using your ultrasonic unit and to understand the variety of tips available and their uses to ensure optimum performance. Look for a manufacturer who offers training, or enrol on reputable continuing education courses. Becoming familiar with all the nuances of the specific equipment you use will make a huge difference to how you work and ensure great results for you and your patients. **DH&T**

For references please contact julian@dentistry.co.uk

For more information about ultrasonic scalers and inserts contact Dentsply UK on 0800 072 3313 or visit dentsply.co.uk. Benefit from Dentsply reward £s by visiting dentsplyrewards.co.uk and access continuous professional development webinars and product demonstrations at dentsplyacademy.co.uk.

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