



## The Top 5 Reasons Why I Use Ultrasonics in My Dental Hygiene Practice Every Day

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A tooth surface free from biofilm, calculus deposit, and periodontal pathogens has always been the goal of non-surgical periodontal therapy (NSPT).<sup>1</sup> This type of surface helps to prevent the recolonization of bacteria and is more conducive to oral health.<sup>2</sup>

I was taught to reserve ultrasonic instrument use for “difficult” cases and spent most of my clinical time perfecting the use of hand instruments. In my 13 years of practice, I have realized that there are numerous benefits to the client and clinician when using ultrasonics exclusively. Here are the main reasons why I incorporate their use every day with almost every client.



### #5 REMOVAL OF BIOFILM

Biofilm control is fundamental to the maintenance of oral health and to the prevention of dental caries, gingivitis, and periodontitis. The high frequency vibrations of the ultrasonic tip in a fluid environment create the turbulence and acoustic microstreaming needed to disrupt biofilm.<sup>3</sup> Furthermore, according to Thomas F. Flemmig, “In order to most effectively remove biofilm in a clinical setting, the tip of the instrument must touch every part of the root surface being debrided.”<sup>4</sup>

Neither the disruption nor the removal of biofilm can be adequately accomplished with hand instruments, manual irrigation or the air/water tip independently or combined.

### #4 LESS TOOTH STRUCTURE REMOVED

It is important to try to preserve root surface integrity during scaling yet still ensure it is biocompatibly smooth upon completion. In comparing instrumentation, studies show up to 9 times less root structure is removed when comparing ultrasonic (11.9 microns) vs. curette (108.9 microns)—measured in 12 strokes—all other factors controlled.<sup>5</sup> In general while using the ultrasonic, strokes are of a lighter pressure and performed more quickly.<sup>3</sup>

Considering ongoing advancements in health, clients are living longer and retaining their teeth longer. Therefore, the number of scaling hours to which teeth are exposed is increasing. It is important to preserve as much tooth structure as possible, for as long as possible.

### #3 ALLOWS FOR WHOLE MOUTH DISINFECTION

It is known that bacteria may be present not only in the sulcus, but also in the saliva as well, suggesting that the bacteria have access to all sites in the mouth. Incorporating total mouth disinfection by beginning each quadrant appointment with a gross ultrasonic debridement may have a huge impact on final treatment outcome.<sup>6</sup> This cannot always be accomplished with hand instruments alone due to appointment time restrictions.

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## Focus: Ultrasonics - Revolutionizing Periodontal Therapy

Ultrasonics Top 5...cont'd

### #2 INCREASED TACTILE SENSITIVITY

Since the removal of calculus is dependent on being able to detect it, any technique that preserves or enhances tactile sensitivity should be utilized. A 2005 study showed that tactile sensitivity increased after 45 minutes of ultrasonic scaling and decreased over the same time in subjects who scaled with hand instruments. Short-term vibration exposure from the ultrasonic instrument was found insufficient to have any negative effect on the clinician.<sup>7</sup> Increased tactile sensitivity allows the clinician to be more effective and efficient during NSPT.

### #1 BENEFITS TO BOTH THE CLINICIAN AND CLIENT

Hand instrumentation requires highly repetitive, intricate, and complex hand movements, which are wearing and ergonomically unsatisfactory. Most issues of angulation of the blade, application of lateral pressure, and the need to sharpen the instrument are eliminated with ultrasonic instrumentation.<sup>3</sup> Additional benefits to the operator include reduced risk of developing carpal tunnel syndrome, neck and back injuries, and muscle fatigue.<sup>1</sup> Benefits to clients include increased thoroughness of treatment, greater treatment comfort due to less tissue distention, improved treatment outcome, and less chair time.<sup>8</sup>

There is a perception that treatment with an ultrasonic instrument is easier and less dependent on technique than comparable treatment with hand instruments.<sup>3</sup> However, it is known that the superior effectiveness of powered instrumentation is dependent on the skill, technique, and knowledge of the clinician using it. Operators with less training have been shown to attain lower levels of efficacy in debriding root surfaces regardless of instrument selection.<sup>8</sup>

Frequent operator errors seem to be the main reasons why clients resist ultrasonic instrumentation during NSPT. First, I make it a point to educate clients on the exclusive benefits of ultrasonics. Second, I pay particular attention to ensure that I:

- do not use worn inserts
- use only the terminal portion of the instrument on the root surface

- ensure proper adaptation on the root surface
- use enough strokes to cover the root surface and always keep the tip moving
- do not mistake frequency for power during use
- manage excess water with high volume suction
- offer frequent breaks for the client and ensure their comfort

Afterwards, clients generally report that the treatment was easier, faster, and felt more thorough. At routine maintenance and reassess appointments, I notice decreased bleeding on probing, decreased pocket depths, and faster tissue healing.

Clearly, there are advantages to ultrasonic use for every client. Clinicians should consider ultrasonic instrumentation as the main approach to NSPT and supplement with hand instrumentation only where needed.

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