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UTHealth Houston professor provides GentleWave research overview at AAE '23

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On May 4 at the American Association of Endodontists (AAE) Annual Meeting, Dr. David Jaramillo, a professor at UTHealth Houston School of Dentistry, provided an overview of the latest research using the GentleWave System. According to conference organizers, this was the largest AAE meeting on record with over 4,600 attendees.

Jaramillo said he's been conducting research using the GentleWave system for at least the last seven years. He also disclosed that he receives funding for research from the company.

"I am a true believer in scientific evidence," he told the small crowd at the GentleWave System booth. "I like to base what I learn and teach based on evidence," he added.

Jaramillo highlighted the following studies and conclusions:

- "Histological Evaluation of Multisonic Technology for Debridement of Vital and Necrotic Pulp Tissues from Human Molar Teeth. An Observational Study," authored by Jaramillo and Alberto Arriola and published in *Applied Sciences* in November 2021.

Jaramillo said that the team selected teeth that were going to be extracted and conducted a histology cross section of the tooth. The aim was to evaluate the efficacy of multisonic technology for the debridement of vital and necrotic pulp tissues in freshly extracted human mandibular molar teeth. The researchers used H&E/gram staining, and the tooth was treated in one visit with single flow. It was subsequently extracted due to pain and swelling. Jaramillo said that they found some dentin debris, more so from the sectioning technique. But they did not find any pulp tissue. The authors concluded that the multisonic technology was effective at removing vital and necrotic pulp tissue as well as bacteria from the root canal system, including inaccessible areas.

- "Comparison of GentleWave system and passive ultrasonic irrigation with minimally invasive and conventional instrumentation against LPS in infected root canals," was published in March 2022 in *Scientific Reports*. Johnathan Velardi from the University of Maryland School of Dentistry was the first author and Frederico Martinho, also from the University of Maryland, was the corresponding author. Jaramillo said in this study, authors found that GentleWave was the most effective approach with minimal instrumentation technique. "GentleWave did better than ultrasonic," he said.
- "Multispecies biofilm removal by a multisonic irrigation system in mandibular molars" was published in the *International Journal of Endodontics* in August 2022. Researchers concluded that bacterial reduction in mesial roots of mandibular molars prepared to 35.04 with passive ultrasonic irrigation was similar to those prepared to 20.06 with a multisonic irrigant activation system.
- "Comparison of conventional and contemporary root canal disinfection protocols against bacteria, lipoteichoic acid (LTA), and lipopolysaccharide (LPS)" was published in January 2023 in *Scientific Reports*. The research team concluded that in conclusion, passive ultrasonic irrigation, XP-endo Finisher, and GentleWave system were highly effective against bacteria, lipoteichoic acid and lipopolysaccharide with GentleWave being the most effective.

Jaramillo said that one of the important findings he's seen is that researchers have found almost no remnants of pulp tissue when using the GentleWave System.

"We will keep working on this research," he said. "There's more to come."