

# SYNAPSE DENTAL PAIN ERASER

Transforming the dental experience with drug-free pain management.



Synapse Dental partnered with Radius to develop and implement their advanced pulse wave technology into a drug-free pain management device that met durability, manufacturability, and usability standards. The Synapse Dental Pain Eraser achieved FDA clearance in 2020.

Synapse Dental is a dental solution provider, led by Dr. Cosmo Haralambidis, committed to making pain-free dentistry a reality for dental professionals and consumers. Dr. Haralambidis engaged Radius for help bringing their first product, the Dental Pain Eraser™, from concept to market and deliver safe, immediate-acting, and sustained drug-free pain relief to patients.



## Dental Avoidance & Opioid Use Present Challenges to Achieving Optimal Oral Health

Dental anxiety and the fear of anticipated pain associated with going to the dentist is real. An estimated 24 million-plus patients in the United States avoid dental care and live with impaired oral health. According to the Journal of Dental Hygiene, research indicates between 50 and 80% of adults in the United States have some degree of dental anxiety, ranging from mild to severe. More than 20% of dentally-anxious patients do not see a dentist regularly, and 9 to 15% of anxious patients avoid care altogether.



Additionally, patients who suffer from dental pain from surgical procedures are often prescribed opioids, which contribute to the epidemic use levels in the United States and the world. Nearly 15% of worldwide opioid use is attributed to prescriptions for oral pain.

Synapse Dental envisioned creating a medical device that would address these two key challenges by eliminating pain, improving patient oral healthcare, and mitigating opioid use.

## End to End Development

As part of the initial engagement with Synapse Dental, Radius led and managed a complete engineering process – from alpha and beta builds focused on engineering brainstorm sessions, CMF studies, human factors validation studies, and iterative design reviews – to ensure the product's durability, manufacturability, and usability. Prototyping and assembly analysis refined the product further.



Product packaging design ensured premium clinical and single-use experiences with a clean aesthetic that supported the Synapse brand in separate form factors. Clinical package inserts presented optimal organization of product components that avoided inadvertent powering up during shipping and handling while single-use packaging used a plastic clamshell design. Both included instructional inserts and labeling for traceability.



Radius also authored design history files and all related documentation to help Synapse Dental prepare for their 510(k) application submission for FDA clearance.

## An Innovative & Transformational Solution

Working to develop a patented, game-changing, drug-free alternative medical device, Radius helped Synapse set themselves apart as a pioneer in the field of dentistry and improve the quality of dental healthcare for patients everywhere. The Dental Pain Eraser™ allows patients to enjoy pain-free and drug-free dental care without the fear and anxiety traditionally associated with visiting a dentist.



Innovation Made Possible. Made Better.

[View Synapse.](#)

Right Rail Content,  
Auto-Populated