Vital-Dent, A Revitalizing Root Canal Implant

CLINICAL NEED

Over 15 million root canal therapy (RCT) procedures are performed each year to treat carious infected teeth. Conventional RCT removes infected pulp tissue and fills the void with inert materials. The long-term survival of treated teeth is limited because the tooth is dead; it cannot mount an immune response to fight reinfection. On average, periapical infection is evident by 10 years, and the tooth is lost by 20 years.

SOLUTION

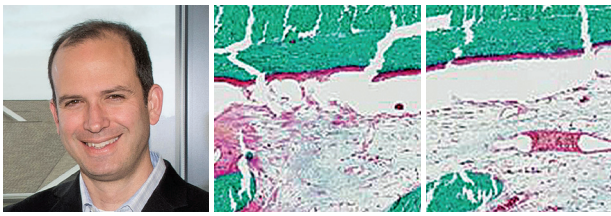
A team of researchers at the University of Pittsburgh, led by Drs. Juan Taboas and Herbert Ray, is developing a device to regenerate vital tissue within RCT-treated teeth. The two-part drug-free material system, termed Vital-Dent, is designed to be an off-the-shelf implantable device that replaces conventional sealers with a hydrogel and conventional obturating points with a sponge.

COMPETITIVE ADVANTAGE

Vital-Dent is anticipated to increase the long-term survival of the tooth by guiding ingrowth of cells and generating vascularized tissue capable of mounting an immune response. In a preliminary canine study, Vital-Dent showed regeneration of vital tissue within the RCT-treated roots, with mineralized tissue along the dentin walls, and vascularized fibrous tissue in the root canal proper, up to the crown sealer.

ITP SUPPORT

The ITP program will support the evaluation of Vital-Dent towards a design freeze of the device composition and delivery process, analyzing regenerated tissue composition and outcomes, as compared to revascularization procedure and conventional treatment with resin sealer and gutta-percha points.



JUAN TABOAS, PHD

University of Pittsburgh

"Vital-Dent is an off-the-shelf device that regenerates living tissue in root canal therapy treated teeth and prolongs tooth survival."

www.dental.pitt.edu/person/juan-m-taboas-1

CLINICAL TRANSLATION PATHWAY

Publications:
Acellular hydrogel regenerates a vascularized tissue producing organized mineral along the instrumented canal wall. Pulp Biology and Regeneration Group Satellite Meeting: Basic and Translational Research in Pulp Biology – Developing Technologies for Regenerating Vital Dental Tissues, 2019.

Intellectual Property:
PCT/US2019/023132
Regeneration of Vital Tooth Pulp

Regulatory Pathway:
Anticipated: Device, IDE

Commercialization Strategy:
In development with the MPWRM Commercialization/ Market Needs Core

Product Launch Strategy:
In development with the MPWRM Commercialization/ Market Needs Core

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