Alternative filling material

Scientists test new nanodiamond biomaterials for root canal therapy

Gutta-percha is malleable, inert and biocompatible, and is the standard of care for endodontic treatment today. However, it has been associated with a number of shortcomings, including leakage, root canal reinfecion and poor mechanical properties. In order to address these issues, researchers have developed and tested nanodiamond-reinforced gutta-percha as an alternative root filling material.

Nanodiamonds are particles formed as byproducts of diamond refining and mining, and have been widely explored for use in dentistry, cancer therapy, imaging, regenerative medicine, and other applications.

In the current study, which used extracted human teeth, the enhanced material performed as effectively as conventional gutta-percha obturation material. In addition, the researchers observed that gutta-percha loaded with amoxicillin, a broad-spectrum antibiotic used to combat infection, effectively prevented bacterial growth.

During the next two years, the UCLA team plans to optimize the formulaion of the new nanodiamond material and begin clinical trials at the university.

Editorial note: The study, titled “Nanodiamond–Gutta Percha Composite Biomaterials for Root Canal Therapy,” was published online on Oct. 9 in the ACS Nano journal ahead of print.