

Three-Dimensional Imaging and Analysis of a Root Canal

(Tech ID 9941)

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<http://arti.indiana.edu/ott/technol/techs/9941.html>

Description

Dental clinicians who perform root canal procedures must ensure they reach and remove all infected nerve and vascular tissue from the affected area, or risk re-infection. However, if the endodontic file used in the procedure is advanced too far into the root canal, it can penetrate tooth walls, leading to an infection of the surrounding bone, and even more problems for the patient.

X-ray images of the infected tooth are usually obtained prior to the procedure, and the length of the root canal is estimated by measuring the length of the root canal image formed on the X-ray film. However, this approach portrays only a two-dimensional image; a three-dimensional image is required in order to accurately determine the shape and length of the root canal. This system generates a three-dimensional mathematical model of the root canal and calculates the length of the root canal based on the model.

Potential Areas of Application

- ◆ Dental root canal procedures
- ◆ Detection of tooth root fractures

Main Advantages of this Invention

- ◆ More accurate than two-dimensional X-ray imaging techniques;
- ◆ Requires no additional equipment in dental offices

State of Development

Computer simulations complete; in vitro tests on test objects underway.

Intellectual Property Status

US Patent allowed [6,405,071](#)

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