

**CLINICAL CASE**  
**KODAK 9000 3D Extraoral Imaging System**

# Vertical Root Fracture and Periradicular Periodontitis

## Case Overview

Difficulty in visualizing vertical root fractures with periapical radiography is well established. This 46-year-old male patient presented for diagnosis and possible retreatment of the lower left second molar, which was endodontically treated three years ago by others.

The tooth was sensitive to percussion, bite stick and probed 6mm at the disto-lingual line angle. The medical history was not contributory to his current dental condition. While the initial periapical radiograph [Figure A] demonstrated a slightly thickened periodontal membrane space in the coronal third of the distal root, the full extent of the periradicular periodontitis associated with this root was not evident until a contemporaneous focused-field, high-resolution CBCT was exposed. The CBCT images [Figure B (axial) and Figure C (sagittal)] clearly show the vertical root fracture [green ellipse], and the full extent of the associated periradicular periodontitis [yellow arrow], respectively. Extraction was recommended, avoiding an exploratory procedure to attempt to visualize the vertical fracture.



**Figure A:** 2D image demonstrates a slightly thickened periodontal membrane space at the coronal third of the distal root.



**Dr. Martin D. Levin**

**Diplomate, American Board of Endodontics**

Dr. Levin is in private practice limited to endodontics in Chevy Chase, Maryland, and is Adjunct Associate Professor of Endodontics at the University of Pennsylvania. Dr. Levin is currently Co-Chair of the Joint Special Committee of the American Association of Endodontists and the American Academy of Oral and Maxillofacial Radiology on Cone Beam Computed Tomography (CBCT). He is a recognized expert, speaking internationally on 3D CBCT, advanced endodontic technologies and operations management. At the University of Pennsylvania, School of Dental Medicine, he served as Chair of the Board of Overseers from 2004-2008, and remains a member of the board.

He is a contributor to the 8th, 9th and 10th Editions of "Pathways of the Pulp" and the 6th Edition of "Ingle's Endodontics," as well as the author of numerous peer-reviewed articles. Dr. Levin graduated from the University of Pennsylvania in 1972, where he was a member of Omicron Kappa Upsilon. After completing his post-doctoral residency in endodontics at the University of Pennsylvania, he became a Diplomate of the American Board of Endodontics.

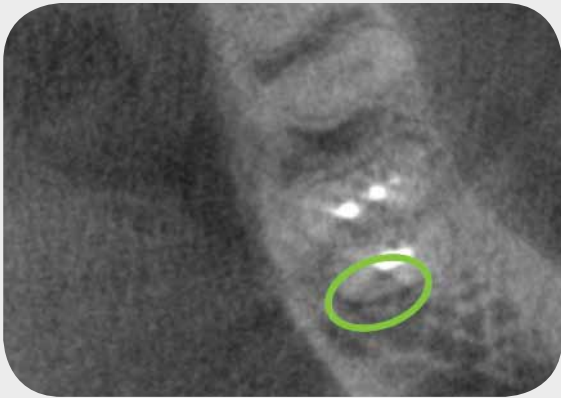
## **KODAK Product**

- KODAK 9000 3D System

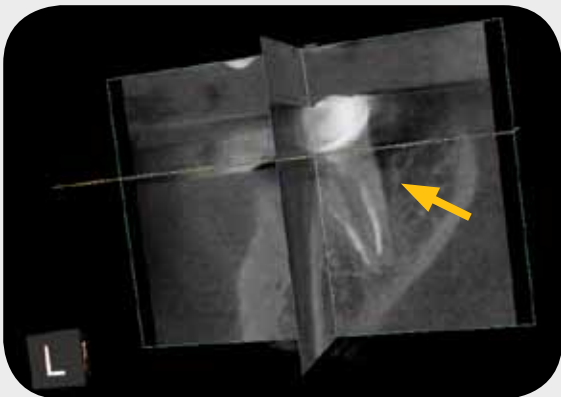
## Testimonial

The Kodak 9000 3D system creates small field of view images at low dose with sufficient spatial resolution for applications in endodontic diagnosis, treatment guidance and post treatment evaluation. In this case, we were able to accurately assess the condition of this previously treated molar and the associated bony defect, not visible using planar radiography. These findings were reassuring for our patient and the referring general dentist, and facilitated our treatment decision without an exploratory procedure.

## CLINICAL CASE



**Figure B:** 3D axial slice shows the vertical root fracture.



**Figure C:** 3D sagittal slice shows the full extent of the associated periradicular periodontitis.