Limited To Endodontics Newsletter

LTE

Limited To
Endodontics

A Practice Of Endodontic Specialists

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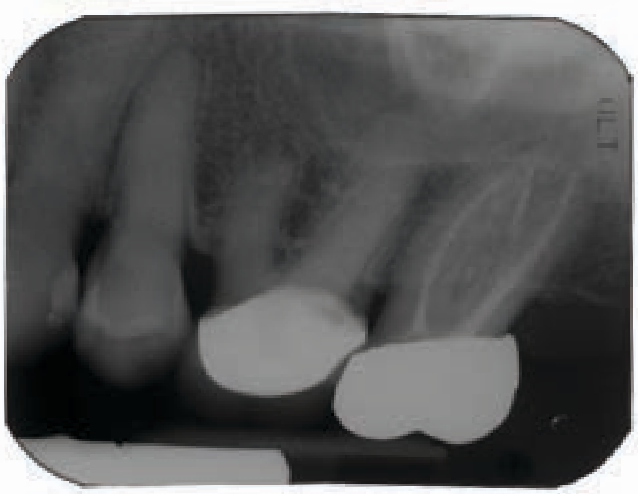
Endodontic Treatment Utilizing 3D Imaging

Recent advances in technology, such as rotary instrumentation, ultrasonics, digital radiology, and the surgical operating microscope (SOM), have transformed the practice of endodontics. The use of three dimensional imaging utilizing cone beam computed tomography (CBCT) is the newest innovation which has revolutionized various aspects of planar imaging. CBCT is especially useful in the analysis of root canal anatomy, especially as related to the numbers and positions of canals. Other uses involve the identification and evaluation of lesions of endodontic and non-endodontic origin, assessment of resorptions and their treatment prognosis, presurgical case planning and the diagnosis and management of dentoalveolar trauma.

Radiation can be restricted to areas involving as few as 4-6 teeth, limiting the patient to 5-19 mSieverts, which is equivalent to 1-3 days of natural daily exposure. The standard dental X-ray is equal to 4-6 mSieverts.

We would like to share our experience with this technology on a case involving tooth #14 in an 83 year old patient. Preoperative evaluation indicated the presence of a calcified canal system and, as such, the patient was informed that treatment may be more difficult and time consuming. While the buccal canals were located and negotiated easily, conventional radiography and observation of color changes on the chamber floor with the SOM were not helpful in locating the palatal canal. Fearing that further exploration could result in a perforation, a CBCT was ordered. Armed with the diagnostic information from the scan, the canal was located within minutes at the subsequent visit. The radiographs below show the before and after images. The information from the scans will show how this technology has elevated the treatment of endodontics to a higher level of expertise.



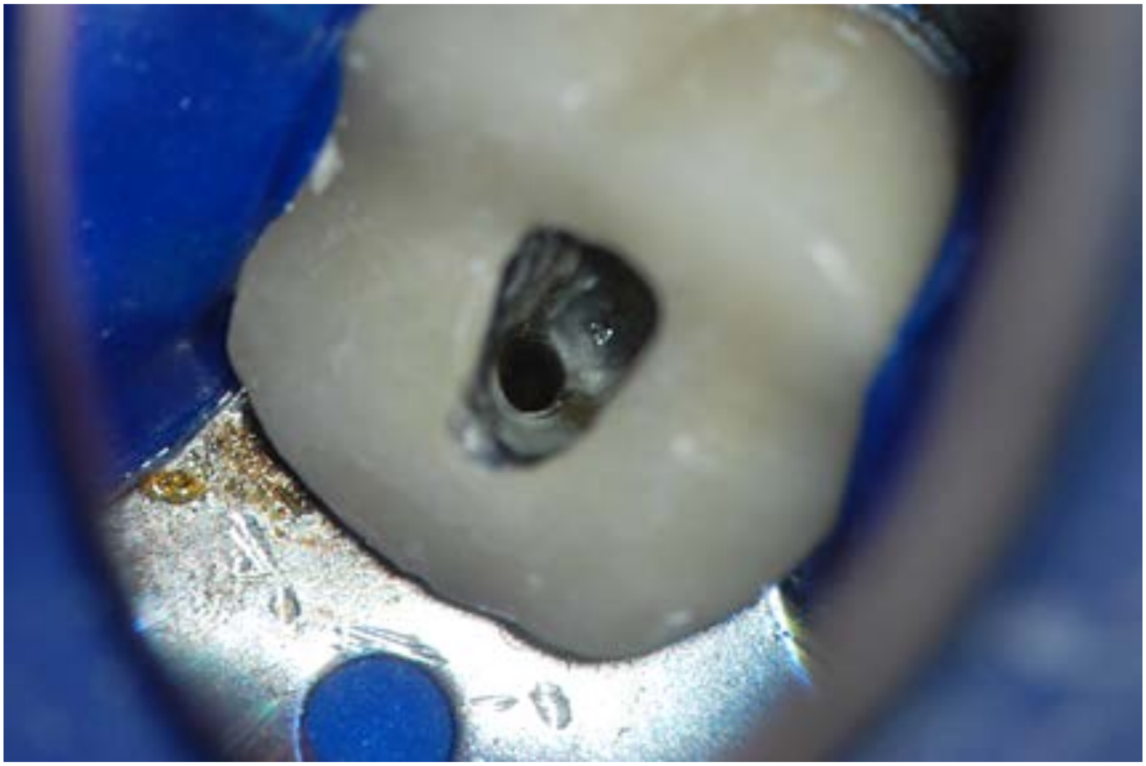
Prior to the scan, a small piece of gutta percha was left over the chamber floor where the access was stopped. This radiopaque mass could then act as a marker to see how far from the canal we were. The scans were taken with the Kodak 9000 Extraoral Imaging System. The first axial scan below shows an arrow pointing to the gutta percha over the palatal root. The opaque material in the other canals is calcium hydroxide. Note that the location (bottom left information) is at 1.15 mm.

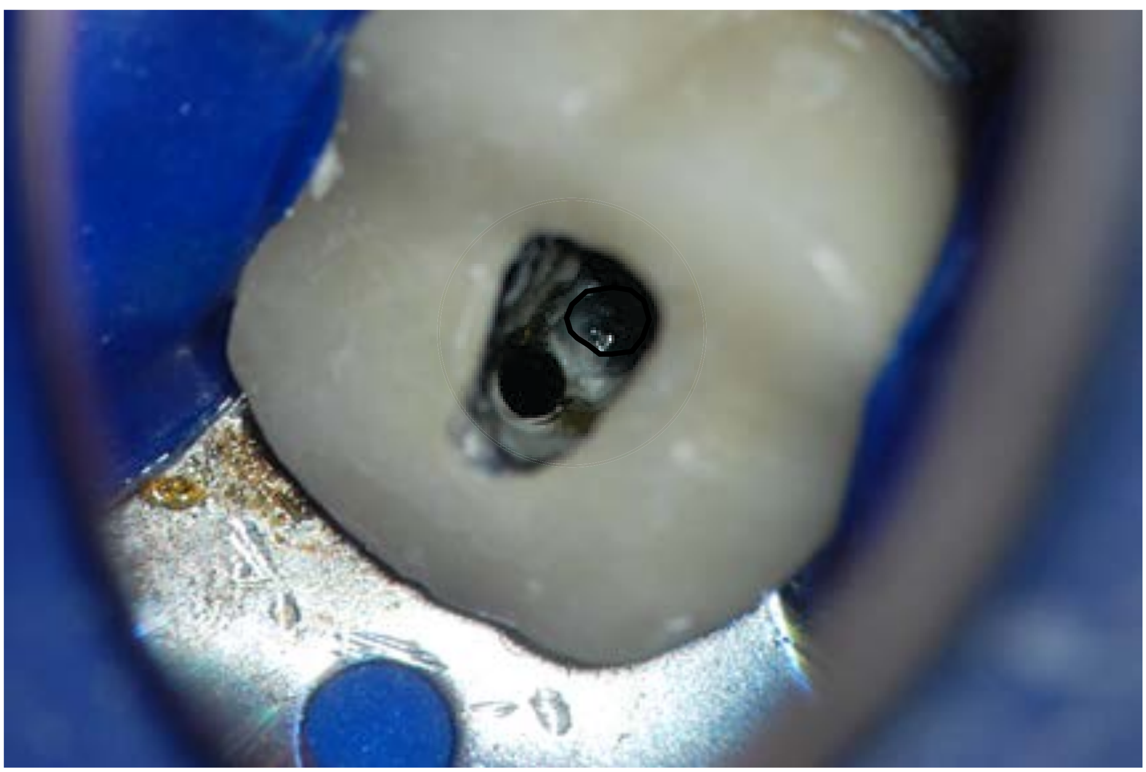
The scan below is apical to the previous one and shows the beginning of the palatal canal. The location is at 2.07mm which indicates that the canal is about 1 mm apical to the gutta percha. The scan also shows that the arrow pointing to the calcium hydroxide in the MB canal is centrally located, suggesting that there is most likely one canal in that root.

The scan below measures the distance from the gutta percha marker to the estimated center of the canal. The center is a little more than 1 mm from the gutta percha in a slight distal direction.

The coronal scan below shows that if the access were continued in the original direction, a perforation would have resulted into the furcation. The arrow points to the gutta percha marker.

The first photo of the access opening shows the instrumented palatal canal. The second photograph shows the original location of the gutta percha marker. The distopalatal location of the canal from the original access location is evident.





The photograph below shows the conservative access opening that was possible with proper imaging techniques. This is just one example of how CBCT technology has enhanced the practice of endodontics. At Limited to Endodontics, we are constantly striving to enhance the quality of the patient's endodontic experience.

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209 Harvard St., Suite 500, Brookline, Massachusetts 02215
617-262-5700 • Fax 617-731-5689

One Washington St., Wellesley, Massachusetts 02481
781-235-5700 • Fax 781-239-0649

1666 Massachusetts Ave., Lexington, Massachusetts 02420
781-863-5700 • Fax 781-674-2953

Two Center Plaza, Boston, Massachusetts 02181
617-523-5700 • Fax 617-720-5768

One City Hall Mall, Medford, Massachusetts 02155
781-396-5700 • Fax 781-396-3344