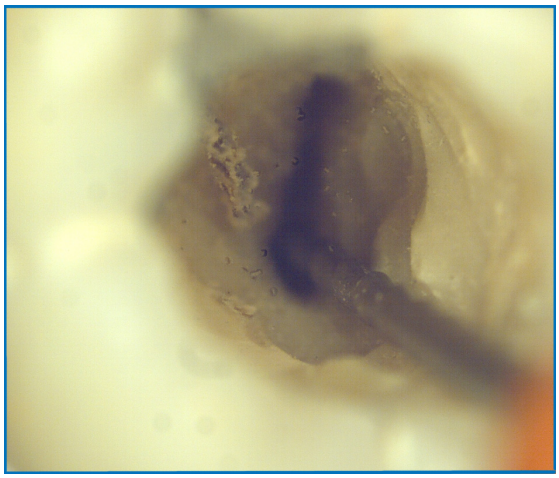
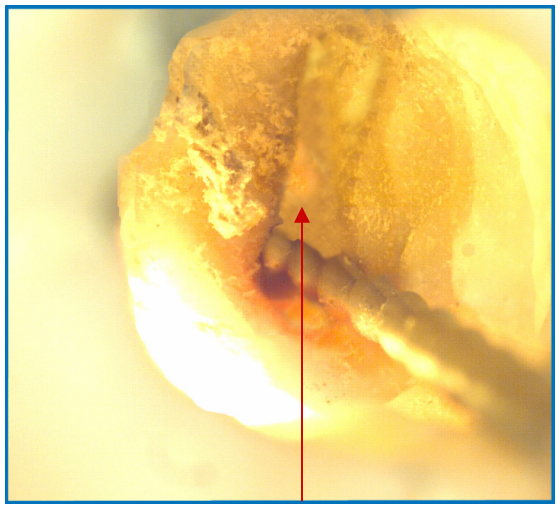
J.T. McSpadden

Some techniques recommend routine canal preparation using .04 and .06 tapered instruments to the canal working length. Not only are the diameters of these larger tapers that might transverse a curvature a consideration for potential breakage, the lateral extent that the canal can be enlarged without the threat of perforation is an important consideration. The radiograph at the left illustrates that using larger tapered instruments at the mid-root portion of this particular canal could easily have resulted in a perforation.



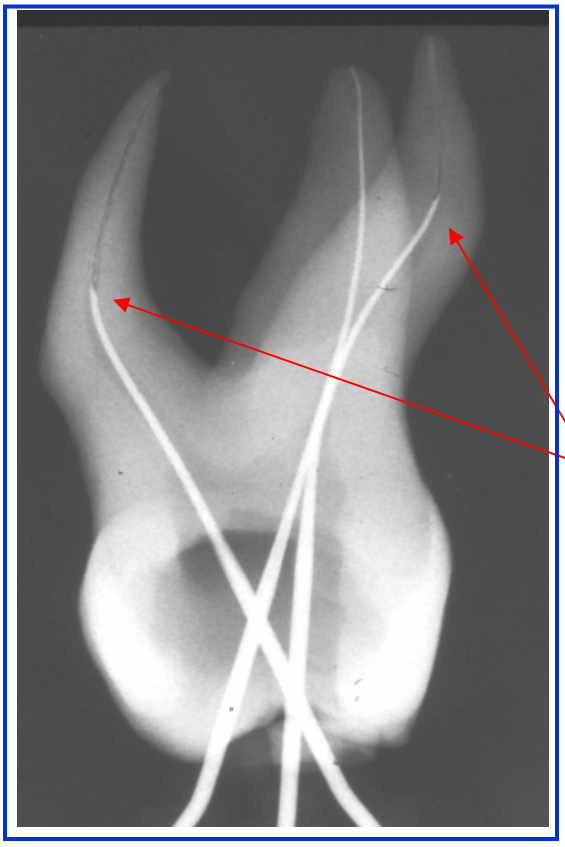


Thin canal wall

Increasing file tapers can reveal the limitation of routine canal enlargement by placing a fiber-optic probe adjacent to the root. Thin canal walls appear more translucent, and additional canal enlargement at this position can result in a perforation.

Once the working length of a canal is determined and prepared with a size 15 or 20 manual or rotary file, the position of the **most coronal curvature can be determined** by carefully inserting the same size stainless steel file **without rotation.** If resistance is met short of the working length it is an indication a curvature has been encountered. With experience the position and approximate degree or radius of curvature can be determined by the amount of resistance the files meet even while using nickel titanium rotary files.

In addition to the tactile determination of curvatures, much information can be determined mathematically. For instance, if a canal has been negotiated to working length with a size 15/.02 file, a size 25/.02 file should easily go 5 mm short of the working length. This can be expected since removing 5 mm of the tip portion of a 15/.02 file would result in the same tip dimensions as the 25/.02 file. If the larger more rigid file encounters resistance before the 5 mm mark, this is an indication of a curvature.



Selecting a file that is smaller than the canal and inserting it without rotation until resistance is encountered can determine the location of curvatures. The amount of resistance can be an indication of the degree or radius of the curvature.

Points of resistance due to curvature