



Apical third of root canals and cone beam

- **What is the crucial moment during root canal therapy?**
- **Which areas of the root canal are the most difficult to clean?**
- **Where are most curvatures in lateral canals and isthmuses?**

The answer is obvious to anyone involved in endodontics.

The anatomy of the apical third of root canals is still a major obstacle to achieving success, especially when it comes to retreatments and complex cases. Despite technological advances, we still embark on this challenge with the same tools of many years ago. Stainless steel hand instruments, sodium hypochlorite and gutta-percha are the same materials that were used 50 years ago.

When we make a prognosis of retreatment, there are many doubts and few certainties. We often see complex anatomy and previously unknown areas of canal by the end of a treatment. In all medical specialties, the result is planned before performing the treatment. You wouldn't ask a surgeon to operate on you without first having seen a CT scan, would you?

We must therefore encourage the studies and research that technology now makes available to us. Today a technology called 'cone beam' is available to us. Cone beam computed tomography (commonly referred to by the acronym CBCT) is a medical imaging technique consisting of x-ray computed

tomography, where the x-rays are divergent, forming a cone. CBCT has become increasingly important in treatment planning and diagnosis in implant dentistry, among other things. Perhaps because of the increased access to such technology, CBCT scanners are now finding many uses in dentistry, such as in the fields of endodontics and orthodontics. During a CBCT scan, the scanner rotates around the patient's head, obtaining up to nearly 600 distinct images. The scanning software collects the data and reconstructs it, producing what is termed a 'digital volume' composed of three-dimensional voxels of anatomical data, which can then be manipulated and visualized with specialized software.

There are already cone beam equipment models on the market that enable the display of just one or two teeth, thus reducing the radiation dose for the patient. The cone beam should be used before a complex root canal treatment, especially if it involves combined endo-periodontal lesions. Just like our implantologist colleagues, before performing an implant procedure on the jaw area or prior to working on the maxillary sinus area, we should also include a cone beam x-ray in our preparation.

This is to have more certainty and less doubt.

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