

Redefining What Is Possible With 3D Cone Beam Imaging

By

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In the past every dentist has relied on conventional 2 dimensional x-rays to view certain tooth conditions for diagnosing dental disease. Recently though, a new technology has been introduced in dentistry to give the ability to view x-rays in 3 dimensions, so called 3D Cone Beam Computed Tomography (CBCT). Cone Beam Tomography is a diagnostic imaging modality that provides high-quality, accurate three dimensional (3D) representations of the osseous elements of the maxillofacial skeleton. This requires specialized equipment of which there are about 20 systems on the market. During the past 2 years our office has researched the possible adoption of this technology into our practice rather than referring patients to an outside radiology lab for this type of CT x-ray. We are pleased to now be able to offer this service in house which has resulted in many more possibilities for use of this technology than we had ever imagined at a reduced cost to the patient.

The majority of CBCT machines on the market take images of the full head even though dentists concentrate on the area immediately surrounding the mouth. In our search of the current x-ray machines, we found the Kodak 9000C 3D machine offered the most benefit for our patients because of its reduced radiation dosages due to being able to concentrate on specific areas of the mouth. The FDA has approved the Kodak 9000C 3D as the highest resolution unit on the market (Wm Scarfe, M Levin, D Gane, A Farman; Use of Cone Beam Computed Tomography in Endodontics; Intl Journal of Dentistry; 2009; 1-20). With radiation dosages as much as 80% less than competing 3D systems, Kodak CBCT imaging systems make getting great images faster and safer than ever before.

In addition the Kodak 9000C 3D offers the ability to take 2D standard panoramic and cephalometric images needed for orthodontic treatment in a digital format that allows for much lowered radiation exposure levels than conventional x-ray machines of the past. As we have implemented this technology, we have come to discover that new diagnostic abilities never available before are becoming routine.

Many uses are found for 3D Cone Beam CT imaging. Use with implant dentistry is enhanced by offering advanced placement planning with diagnostic images that show the height, width and angulations of the bone in the area where the implant is to be placed, in addition to the location of vital structures to be avoided. If you are planning to have any implant dentistry performed, 3D Cone Beam CT (CBCT) is an absolute necessity in certain areas of the mouth.

In orthodontics, 3D Cone Beam CT imaging is useful to assess the location of impacted teeth such as the upper eye teeth or submerged baby teeth. This can be invaluable for accurate positioning of appliances to move teeth into proper positions and for making accurate diagnosis to decide to remove teeth to make more room for permanent teeth to be moved into position.

Use with Endodontics gives better images for better diagnoses in the following areas:

- Diagnose endodontic pathosis
- Assess canal morphology
- Assess pathosis of non-endodontic origin
- Evaluate root fractures and trauma
- Analyze external and internal root resorption and invasive cervical resorption
- Plan surgeries around roots

If you have questions about 3D Cone Beam Imaging or have a patient that you feel may require a CBCT for your diagnosis, please call our office at 253-838-9333 for details or visit our website: edgardentistry.com for more information.