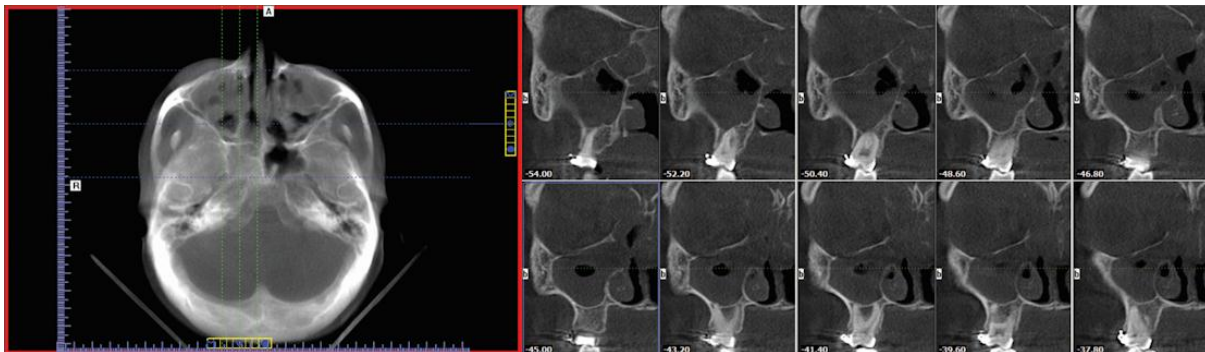


### 3-D Diagnosis: The Saving Grace For This Dilemma

By Bradford N. Edgren, DDS, MS

While some say that the “eyes are the mirrors to the soul,” in this case, a CBCT scan provided a clear vision of a patient’s eye swelling and pain. The 33-year-old female was in treatment at my orthodontic office approximately one year ago, and was diagnosed with an impacted maxillary right canine and impacted left canine. Many months later, she began experiencing pain around the eye, blurred vision, and swelling that appeared to be pushing the eye out of the socket (proptosis). When she underwent treatment to have the upper right canine tooth exposed, she noticed that her eye swelling seemed to subside while she was taking antibiotics. She sought help from several physicians. Her family doctor suggested that the condition resulted from a wire that had poked into her cheek from her braces several months earlier. This was unlikely, since the “poker” was small and was quickly fixed at the time. An ophthalmologist prescribed eye drops. I referred the patient to an oral surgeon. By that time, her face was hot, and her teeth were sore on the upper right side, indicative of an infection. After prescribing an antibiotic and consulting with the ophthalmologist, the oral surgeon suggested a CBCT, which we took the next morning on my office i-CAT®. The scan showed that the maxillary sinus was filled with polyps and inflammation, and the right ethmoid sinus was totally occluded; the left sinus was still open, but inflammation was beginning. Although I had sent the CBCT scan to the general physician, the patient was sent for a medical CT. Subsequently, she was admitted to the hospital for IV antibiotics, and surgery to remove polyps from ethmoid and maxillary sinuses. After surgery, the eye swelling abated, and she has totally recovered.

While much time was spent consulting with other clinicians, the insight that saved this woman’s eyesight was first provided by the precise information on a dental CBCT. With CBCT, the voxels are immediately adjacent to each other when the volumetric data is obtained, resulting in an extremely accurate reconstructed digital image. The isotropic voxel resolutions are equal on all three dimensions, eliminating image distortion. In contrast, a medical CT is anisotropic. Because of linear detectors, medical CTs have gaps between each slice, and algorithms in the imaging software fill in these gaps, resulting in a loss of precision. It is interesting that it took an orthodontist to straighten out the situation between all of these doctors. This patient is grateful that the i-CAT scan provided the vision and the confidence to pursue a quick solution.



CBCT’s axial and cross-sectional views—a true picture of the anatomy (i-CAT® scan in i-CATVision™)



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