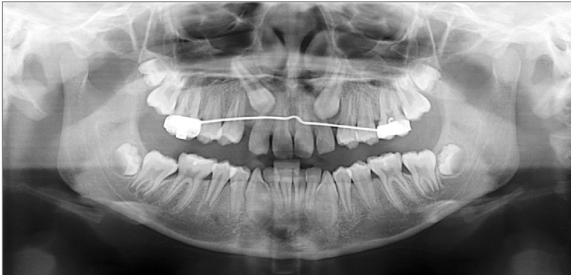
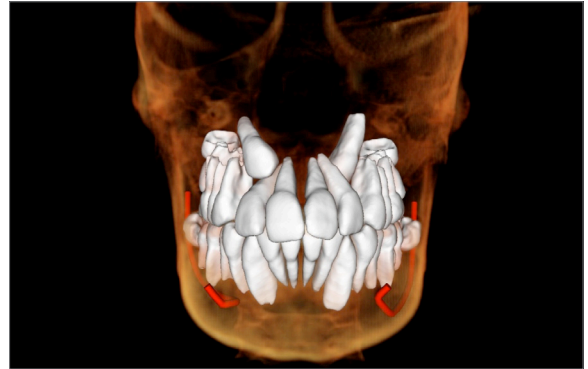


Serious Consequences Averted By i-CAT®



Two impacted canines on the two-dimensional panoramic x-ray



Unusual positioning of the impacted canines brought to light by CBCT

In the following case, having three-dimensional scans averted a potentially serious outcome. The patient was referred by her dentist who noted two impacted canines on his 2D panoramic x-ray.

At the diagnostic session, we captured an i-CAT® scan and sent for an "Anatomodel" to assist in virtual treatment planning. To my surprise, the scan showed the upper right canine was actually positioned facial-buccally on top of the upper right lateral incisor, and the contralateral impacted canine was positioned palatal or lingual to the maxillary left lateral incisor. In 16 years of practice, I had never encountered this.

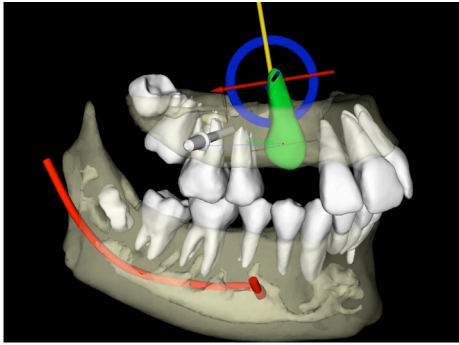
I simulated extractions of the premolars using the Anatomodel, and simulated placements of a temporary anchorage device (TAD) to perform a virtual tooth movement. If I had exposed the tooth and put a chain on it to bring it down against the archwire, the tooth would have moved slightly to the lingual and collided against the root of the lateral incisor, potentially resulting in root resorption on the lateral incisor, and leading to the loss of this tooth later. On a CBCT, it was easy

...Case continued on next page



Dr. Juan-Carlos Quintero DDS, MS

Dr. Quintero received his Dental Degree from the University of Pittsburgh in Pennsylvania and degree in Orthodontics from the University of California at San Francisco (UCSF). He also holds a Masters of Science Degree in Oral Biology. He has served as National President of the American Association for Dental Research- SRG, is a faculty member at the L.D. Pankey Institute and an attending professor at Miami Children's Hospital, Department of Pediatric Dentistry, as well as immediate past-president of the South Florida Academy of Orthodontists (SFAO). He currently practices in South Miami, FL.



Simulated tooth movements on the Anatomodel

to see the appropriate course of action. I placed a TAD between the upper right first molar and upper right second premolar. The movements were instituted in two phases: the crown of the tooth had to be tipped distally away from the roots of the lateral incisor first, to allow the tooth to straighten.

Six months into treatment, we performed a collimated (smaller) mini 4.8-second progress scan to evaluate root and tooth position and determine if we had cleared the root of the lateral incisor, making it safe to force-erupt the tooth. As we had predicted, the tooth had moved perfectly, and it was now safe to change the vector of force and redirect the retraction of the canine. This treatment avoided iatrogenic collision and damage to adjacent teeth and structures.

Why 3D, Why i-CAT®

Armed with the 3D information, we were able to treatment plan this case for clear, predictable, concise movements. If I had planned this case in 2D, I would have risked being 100 percent wrong at least on one side. With impacted canines, our planning protocol is to find out where the teeth are in 3D. The more we see, the more we know, and the fewer mistakes we make. CBCT offers us more efficient treatment planning.

The i-CAT® was my machine of choice because of its operator versatility—from field-of-view to time of exposure, pixel size, and image resolution – variables controlling dosimetry. As a radiation-conscious practice, the beauty of the i-CAT is that it allows for a limited field of view, a full scan, or just the maxilla or mandible. I can control exposure time and space since not all cases or patients require the same parameters for the CBCT.