

The Wisdom of Using CBCT with Hidden Molars

by Jeff Sessions, DMD, MSD, PC

Meet Zack, a typical teenager visiting my orthodontic office. His maxillary second molar, tooth #15, was not erupting as seen radiographically over time. Previous 2D progress panoramic X-rays were unremarkable other than showing #15 not making eruptive progress (Fig.1). Our recent 3D scan captured by my i-CAT, showed that some action was going on, literally behind the scenes. After cross-sectioning the scan axially and sagittally (Figs. 2 & 3), the parents, patient and I saw that a third molar, undetectable on a 2D pan, was interfering with eruption. This finding by a 3D scan did not surprise me. Since I implemented CBCT imaging, I have found six other teens with similar circumstances in the last year and a half. While some people say, “seeing is believing,” that is not always the case with 2D imaging. In fact, without a 3D scan, my treatment plan would have been completely different.



Fig. 1: Zack pan view

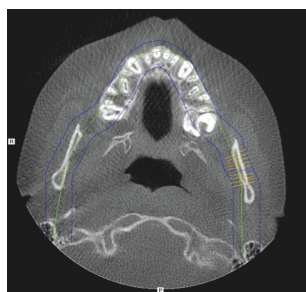


Fig. 2: Zack axial slice

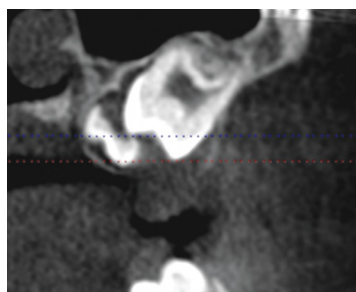


Fig. 3: Zack sagittal



Zack

Most likely, I would have waited six to 12 months to evaluate eruption of this tooth. If or when no progress was seen, I would have conjectured that the tooth might be ankylosed. I might have sent Zack to the oral surgeon to luxate the tooth. Depending on the surgeon’s approach to luxate or mobilize this tooth, he *still* might have missed the palatal third molar that was interfering with eruption. Following mobilization, we would have again waited six to 12 months and checked progress with a 2D radiograph. If progress continued to be lacking or not occurring, we would then have entertained surgical exposure and bonding with a button and chain or extraction. In Zack’s case, I could very well have followed the wrong treatment approach because of the lack of correct information.

Even though we do our best to make orthodontics fun, visiting the orthodontist is not always the highlight in a teenager’s day. Getting the best and most correct information out of our imaging is paramount. This allows us to choose the most appropriate treatment plan. Optimal treatment planning not only gives us the best treatment results, but often translates into shorter treatment times and the least discomfort. Three-dimensional imaging helps orthodontists to make the right decisions during this time of life when deciduous teeth and permanent teeth often share the mouth. The extremely beneficial feature of having 3D in orthodontics is that I no longer have to guess at a tooth’s position based on a “flat” two-dimensional panoramic image. At an exam, records or progress imaging appointment, I can now see the exact tooth position, its path of eruption and proximity to adjacent roots. I am getting

continued on page 48

Author's Bio

A native Oregonian, **Dr. Jeff Sessions** graduated fourth in his dental class from Oregon Health Science University in 1985, then proceeded to Indiana University in Indianapolis, Indiana. He has been in private practice in Lake Oswego since 1987. Dr. Sessions is an active member in the American Association of Orthodontists, the Pacific Coast Society of Orthodontists, the Oregon Society of Orthodontists, the American Dental Association and the Clackamas County Dental Society. Positioning himself and his practice on the forefront of technology is a high priority.

"I have had quite a few cases now where there is a supernumerary tooth in the palate or out of the focal trough of the radiograph that does not show up in conventional 2D imaging."

more and more referrals from dentists and pediatric dentists to evaluate the positions of unerupted teeth. It helps them treatment plan extractions, treatment timing and referrals.

Before implementing cone beam 3D about 18 months ago, I had researched this imaging modality and had been waiting for an orthodontist-friendly 3D machine and especially for software that was very user friendly to a busy orthodontic practice. i-CAT fit this profile. There are many scanning profiles available, but I primarily use two different types of scans: the 8.9-second scan and the 4.8-second scan. With the flexibility to change resolution and radiation exposure, I know that 3D scans at my office are in an acceptable range as compared to taking a panoramic X-ray (or a full-mouth series) and a ceph. The important aspect of CBCT imaging is that with the 3D scan available, I can very vividly and accurately show patients and parents teeth on a computer screen. Patients trust that I am choosing the right course of treatment because they can actually see the anatomy as I do, in three dimensions from all angles.

There are other anatomical situations where 3D easily reveals something and 2D is completely "blind." I have had quite a few cases now where there is a supernumerary tooth in the palate or out of the focal trough of the radiograph that does not show up in conventional 2D imaging. A more common use for our i-CAT

is accurately locating the position of ectopic canines that have to be surgically exposed and bonded to assist eruption. While my oral surgeon colleagues are skilled clinicians, they sometimes have to guess whether a palatal approach verse a labial approach is best. Knowing exactly where the crown of a cuspid is relative to the adjacent roots and alveolar ridge eliminates the guesswork. This shortens the surgical procedure and results in less trauma to the tissues. As a result, the patients get better post-operative healing with less pain and discomfort.

Looking back over my past 24 years in practice, I remember countless instances where having the improved information of a 3D image in advance would have better served my patients. Teens like Zack live fun and active lives and want their orthodontics to be as easy and fluid as possible. With CBCT imaging, I know that I have provided the best service possible. ■

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