Straight talk on 3-D imaging from an orthodontist

By Bradford Edgmon, DDS, MS

Studies on learning have shown that visual images provide 80 to 90 percent of the information that the brain receives. So it makes sense that in the dental office, details received from our radiological workups are imperative for precise diagnosis and communication with patients.

Now, cone-beam technology has brought 3-D imaging right into the dental office, expanding the scope of treatment for my patients as well as other dental practitioners.

The greatest benefit of 3-D imaging is the amount of information obtained from each scan. The 360-degree scan of the entire head shows the maxillofacial complex in a format that can be rotated or sliced to access the best view of these structures.

For oral surgeons, periodontists or general dentists placing implants, the opportunity to view the dentition from all of these angles is of great benefit during diagnosis and planning.

My cone-beam system has even revealed supernumeraries, cysts and foreign objects hidden within standard radiographs.

When evaluating for implants, 3-D imaging allows the clinician to determine the height and width as well as the quality of the bone in the implant area.

Moreover, 3-D provides the ability to precisely evaluate the distance and angulation between roots of adjacent teeth to avoid damaging said teeth during implant planning.

Because implants are generally the preferred restoration for the missing single tooth, an orthodontist can scan a patient before demanding to determine exactly how the teeth are aligned within the bone and make any necessary corrections.

Organizations such as DOCS Education offer continuing education programs in both oral and IV sedation, along with essential emergency preparedness courses to equip you with the skills and knowledge to safely and effectively administer sedation in your office.

To learn more about offering sedation dentistry, go to DOCSeducation.org or call (866) 592-9617.

If you’ve ever considered offering sedation dentistry at your practice, now is the time to do it.

There are more than 1,540,000 reasons to pursue the training — and patients waiting in the wings to receive your care.
I discovered a horizontal root fracture on a patient and subsequently referred him to an endodontist for evaluation. This patient needed to be aware of the likelihood that the tooth could be lost because of previous trauma. Without this insight, foreshortening of the root or even tooth loss may have been blamed on the orthodontic treatment.

For TMJ disorders, with one scan that takes just a couple of minutes, I get panoramic, frontal and lateral views as well as corrected tomographs that would have taken me an hour or more with 2-D methods. After implementing cone-beam, I discovered some interesting cases that will be discussed in my Webinar at 11:35 a.m. EST on October 17. In one case, we were waiting patiently for the second permanent molars to erupt before initiating phase II treatment.

After the other three second molars had already erupted, as part of progress records, the i-CAT® scan showed that an impacted third molar was impeding the eruption of the maxillary right second molar (Fig. 1).

On previous “standard” pans, the fourth third molar was perfectly superimposed with the second molar and was not evident. This second molar may never have erupted, or worse yet, would have been presumed to be anklylosed.

In another example, a patient was referred from an oral surgeon for an i-CAT scan. The referring oral surgeon wanted to clarify diagnoses made at another office based upon previous digital pans, including a supernumerary, odontoma, failure to erupt and/or anklylosed deciduous second molar.

On the scan (Fig. 2), it was evident that it was just an anklylosed deciduous second molar, eliminating the need for a previously planned exploratory surgery. This patient also owes her future nice occlusion to 3-D imaging and diagnosis.

Our cone-beam also gave us a great view of another patient’s horizontally impacted maxillary central incisor (Fig. 3). When treatment started, the i-CAT machine aided the oral surgeon in exposing and placing a gold chain on the central for guided eruption. Her impacted canine, detected on the previous scan, has also since been brought into place.

Regarding patient education, an oral surgeon referred a patient for an i-CAT scan to verify the position of the mandibular canal in relationship to the impacted third and dentigerous cyst before extraction (Fig. 4).

This helped the patient visualize the extent of the third molar impaction and appreciate the size of the cyst. The patient was so impressed...
One of my most unusual cases involved a young patient who came in for braces, but after the i-CAT scan left with some clues that led to an ENT solving the mystery of her hearing loss (Fig. 5).

I’ll be discussing these cases and others in detail at my Webinar. While some of these cases show hidden pathologies, it is no secret that 3-D imaging sheds light on our more difficult cases, and no matter what our specialty is, adds a new dimension to our practices.

Fig. 4: Patient educated on pathology.

Fig. 5: Mysterious hearing issue resolved.

Attend Edgren’s Webinar
11:35 a.m. EST
Oct. 1

Register (it’s free!) for Dr. Edgren’s live online broadcast and earn C.E. credits.

Register at: www.OTStudyClub.com (did we mention it’s free?)

Dr. Bradford Edgren earned a doctorate of Dental Surgery from University of Iowa, College of Dentistry and a master’s in orthodontics.

He is certified by the American Board of Orthodontics (ABO), is a diplomate of the American Board of Orthodontics and a member of the College of Diplomates of the American Board of Orthodontics.

He is also a member of the American Association of Orthodontists, Rocky Mountain Society of Orthodontists, Colorado Orthodontic Association, The Edward H. Angle Society of Orthodontists—Southwest Component, American Dental Association, Colorado Dental Association and Weld County Dental Association.

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