Cone-beam computed tomography ... 
What’s not to like?

First approved by the Food and Drug Administration in March 2001, cone-beam computed tomography (CBCT) is unlike other digital X-ray imaging technologies and has experienced rapid adoption in the past decade. This is because it improves the clinical decision-making across a wide variety of dental disciplines. It is dentistry’s newest disruptive technology. Dentists do not place an implant every day or even a three-unit fixed prosthetic bridge. Dentists and dental specialists perform different imaging examinations on almost every patient and certainly every day in their practices.

X-ray imaging procedures have the highest profit margin of any procedure in the dental office. Most clinicians are not aware of this because they could not perform the actual tasks of image acquisition. Dentists interpret the image data to help them make a treatment plan and to help decide what procedures are necessary. In this regard, CBCT provides more precise, more useful and more graphically detailed information to help clinicians with their diagnostic tasks. Whether one is imaging a prospective implant site, the condyles, the morphology of the tooth to be treated endodontically, an impacted tooth or orthodontic or airway analysis, CBCT data sets can provide thin slice, highly accurate, 2-D multiplanar grayscale images, or if necessary, full 3-D color reconstructed images to assess both anatomy and pathology. No other technology can provide this type of information at such a low dose to the patient. What’s not to like?

However, just as they must with any other newly introduced technology, dentists or dental specialists must navigate their way through myriad claims, sometimes inappropriate, made by manufacturers about the capability of the various machines that they are investigating to purchase. Stated simply, “the technology is always introduced ahead of the education.” Thus, the early adopters often make purchases based upon pretty images and manufacturers’ claims and are sometimes disappointed with the results of the technology. This happened with panoramic imaging many decades ago.

Before the understanding of simple positioning adjustments that could render almost any image useless for diagnosis, many clinicians would use panoramic images that were unacceptable for their clinical decisions. Thus, the modality was panned by many early critics as being inappropriate and too high a dose to use instead of using intraoral images for many of the dental tasks that the dentist wished to perform.

Today, thanks to decades of the training dental students, practicing clinicians and dental auxiliaries have received about panoramic positioning errors, the acceptance and use of panoramic X-ray imaging is universal. Because CBCT has many more applications, and because of the tremendous improvements in imaging and computer technology, this modality has been accepted much more rapidly than previous X-ray techniques. What’s not to like?

Therefore, we will continue to see manufacturers make improvements to their machines in their software. We will continue to see widespread adoption of the technology, and we will continue to see better decision-making arising from the use of this technology. Again, what’s not to like?

If clinicians, manufacturers and oral and maxillofacial radiologists worked together to provide the missing piece, genuine and robust education, CBCT technology will lead to a true and appropriate imaging revolution. Let’s all work together to make this happen. What’s not to like?

Sincerely,

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