Without questions, Cone Beam Computed Tomography has provided clinicians with an amazing imaging modality to assess our patient’s individual anatomy. In fact today, many clinicians will not place a dental implant without a CBCT scan prior to any surgical intervention. While this alone is a powerful statement, there are still questions that need to be asked with regard to how the technology is utilized. Are we seeing what we need to see? Having a CBCT scan does not in itself mean that clinicians are able to clearly visualize all aspects of the bone, soft tissue, teeth, and adjacent vital structures. The implication is that if clinicians can not see everything that we need to see, are we able to diagnose properly? In my opinion, diagnosis is a key.

The data that is derived from a CBCT is invaluable for certain, but it does require software intervention to convert that data into information that can be used for diagnosis and treatment planning for a variety of different purposes. Managing the DICOM data from the CBCT device perhaps the most important consideration that can define the clinicians’ ability to visualize everything necessary for proper diagnosis. One example of the impact of the software capabilities is how the data is revealed on our computer screen. The software should easily allow for each cross-sectional, axial, coronal, and 3-D reconstructed volume to be enlarged without distortion for careful inspection at high levels of magnification. The ability to change the opacity of various anatomical structures, as I have previously termed, “selective transparency” is essential to provide clinicians with very powerful tools to visualize relationships between these structures.

When the software attempts to create beautiful and visually pleasing three-dimensional reconstructed volumes, problems often occur when there are existing crowns, or metal within the field of view resulting in scatter artifact. This scatter can mask underlying anatomy in critical regions that clinicians need to analyze, making the scan useless for diagnosis. Therefore, the software must have an ability to help remove or diminish scatter artifact, and this may require ancillary superimposition of intra-oral scans or optical scans of stone casts to improve surface accuracy, as an aid for planning and the eventual fabrication of surgical templates via stereolithography, 3-D printing, or CAD/CAM processes.

In the pages of CBCT International Magazine, we continue to strive to provide our readership with information that will help inform and educate about state-of-the-art tools as utilized by world-class authors who have taken the time to document their cases and concepts. The information will illustrate that there are vast differences in how data is used from various CBCT devices and software applications. The underlying and most important goal for our publication is to deliver the “clarity of vision” to help clinicians make the best decisions for our patients.

Please enjoy our latest issue!

Dr Scott D. Ganz
Editor-in-Chief