3-D provides what doctors need

By Daniel McEowen, DDS

In the modern world of today’s dentistry, doctors need the ability to accurately diagnose and treatment plan with complete confidence and knowledge they have not missed anything. From the first dental radiograph in 1896, dentists have been asked to accomplish this task using 2-D X-rays and 3-D models of the patient’s mouth. We have been largely successful in diagnosis in many ways, but we must admit that, on occasion, a patient has been improperly diagnosed or completely not diagnosed.

With the introduction of medical-grade computed tomography in 1972, the dentist had the first opportunity to visualize multiplanar views (slices) of the patient’s anatomy. With the gradual improvement of software, we were able to look slice-by-slice in the axial, coronal and sagittal views.

Although these views are 2-D, it gave us the opportunity to look virtually anywhere in the head and in almost any direction. As software became more sophisticated and computing power more robust, we were able to handle the large data sets generated by more sophisticated CT machines, and eventually 3-D volumetric rendering was possible.

The drawback for the dentist was the lack of access to the CT technology and the downside for the patient was both high costs and the high levels of radiation the studies generated.

Since 1999, with the introduction of cone-beam computed tomography specifically for dentistry, the specialist as well as the general dentist is now able to afford the technology to offer the patient the very best in diagnosis and treatment planning. The rapid advances in software and image acquisition during the last few years have given the dentist even more choices.

PreXion Cone Beam offers low radiation doses acquisition with the benefits of all three two-dimensional views as well as spectacular 3-D renderings with its proprietary hardware and software packages.

Cone are the days of guessing and misdiagnosis in almost every clinical case. One can visualize any area in the mouth, TMJ, sinus and alveoli in any direction or slice thickness. The PreXion software allows for the removal of a single tooth or root for an extreme close-up examination of the dental problems.

It has been said by many that it is overkill to take a CBCT scan on every patient or that because one owns "a hammer" (CBCT scanner) that everything looks like a nail. As clinicians, we owe it to our patients to provide the very best we can.

The term “standard of care” scares or annoys doctors, and I am not suggesting we make the CBCT scan the standard; however, we should look at the technology for what it can do for both the patient and the clinician.

The amount of information is staggering and many shy away from it because they do not want to be responsible for everything they see. I choose to look at it from a different angle. Why not embrace the technology and renew your skills as a dental radiologist? Get out the old text books and improve your knowledge of dental anatomy. Become a better diagnostician and improve your treatment outcome not by shying away from more information, but by embracing it and making it your standard of care.

High-resolution, small field-of-view scanners like PreXion give you accurate information and change the way you treat your patients.

I cannot tell you how many of my patients ask me why their old dentist did not have a 3-D scanner. Is it fear? Is it cost? Is it too new? I don’t know the answer, but I will tell you my patients get excited about their treatment and learn more from seeing their own problems right in front of their eyes.

If you are performing any kind of invasive procedures from endodontics, oral surgery, implants, periodontics or orthodontics, I firmly believe you owe it to yourself and your patients to incorporate 3-D imaging into your practice.

Dr. Daniel McEowen is a 1982 graduate of Loma Linda School of Dentistry and has been in private practice for 20 years. He is a founding member of the World Clinical Laser Institute and has been active in FDA approval of oral surgery techniques using erbium lasers. McEowen has been involved in cone-beam technology for more than five years and owns 5-D Imaging Center in Maryland. He lectures throughout the United States and is an advanced trainer for PreXion 3-D Cone Beam systems. McEowen is in a multidiscipline practice where he incorporates many new technologies into his practice.

PreXion, Inc. (www.PreXion.com), a leader in dental and industrial CT systems, recently announced a new high-resolution panoramic feature for its PreXion 5-D CBCT scanner and the PreXion 5-D Viewer, the company’s advanced visualization platform.

PreXion’s state-of-the-art dental CBCT scanner delivers high-resolution volume acquisition. It offers superior image quality through the use of PreXion’s innovative hardware-based imaging solutions. The 5-D Viewer application includes powerful diagnostic 3-D planning tools, unrivaled for their functional and ease-of-use.

PreXion now adds panoramic imaging to its scanner.

“We are very excited to be the first company offering this high-resolution CT-based panoramic imaging capability, which very significantly improves clarity over standard panoramic equipment. It also greatly reduces X-ray exposure and examination time because the panoramic image and 3-D CT volume are generated simultaneously in one scan,” said Robert Meier, PreXion’s president and CEO.

PreXion also announced its customer support team will upgrade the hardware and software of existing customers, free of charge, through their maintenance agreement. Therefore, even current customers can benefit from this significant upgrade.

(Source: PreXion, Inc.)

A comparison of a 2-D image, left, and a cone beam scan.