Applying CBCT To Endodontics Can Reveal Deficiencies That Otherwise Might Go Undiagnosed

By Ernesto Jaconelli

When on site CBCT technology systems first became available, the early adopters were Implantologists. The significant improvement that a 3D view brought to the accuracy and success of implant preparation was immediately apparent encouraging investment in the new technology. However a CBCT, 3D scan can bring the same benefits to other dental procedures and in particular to Endodontics.

Dr. Alan Holland is the founder of the highly successful Bristol Specialist Dental Clinic which incorporates Bristol Endodontic Clinic and Bristol Oral Surgery Clinic. He is the principal Endodontist and has developed his Clinic to offer state of the art excellence. For the past twenty years the Endodontic Clinic has offered solutions to complex endodontic problems.

Alan became one of the early Endodontist Adopters of CBCT when he decided to invest in his own CS 9000 3D System (was originally Kodak now Carestream Dental) in January 2012. An important consideration when choosing the CS 9000 3D was its ability to produce high definition 76 micron images focused on a 3.5 x 5 mm quadrant view with no distortion in length and angulation. This ensures truly accurate images with no magnifications or distortion. The effective patient dose is similar to a conventional panoramic scan and so justifies its use for a wider range of cases.

Alan explains, “The in-house 3D imaging service attracts those patients for whom diagnosis of complex endodontic failures and atypical anatomical anomalies is rendered transparent using the new technology. With the introduction of 3D scanning, Endodontists now have the ability to critique their work in much greater detail. Often a shocking realization is that what appears to be an excellent result in a 2D parallel radiograph, when viewed in a 3D format reveals an aspect of anatomy which highlights deficiencies that would otherwise go undiagnosed when retrainging failed endodontic cases or diagnosing complex Oral Surgery problems.”

This is best illustrated by the following case: A referred case of an upper first molar previously root treated some 2 years earlier showed a well adapted root filling with perhaps a slight indication of an area which might have healed or still be in the process of resolving. Intermittent mild symptoms had prompted the patient to return having had no sensation from other root fillings completed within our clinic. As a precaution a 3D scan was taken which shockingly revealed the extensive unresolved apical infection. The cory appearance of a 2D radiograph disguising extensive lesions is perhaps a much more common occurrence and the dedicated Endodontic journals are now littered with articles on the nature of complex endodontic lesions, resorption and anomalies which quickly establish that a procedure is either likely to succeed or fail before the patient is subjected to an expensive and perhaps fruitless procedure. “(Three captioned clinical images supplied to support this case)”

“3D CBCT allows us to offer better, more accurate diagnosis and enhances the patient’s perception and confidence in the knowledge that their endodontic needs are being met in a safe and thoroughly professional environment”.

When Alan originally invested in the CS 9000 3D System he fully expected it to be monopolized by the Oral Surgeon. It proved to be an important adjunct to many Oral Surgery procedures but surprisingly about 80% of the use has been dedicated to Endodontic diagnosis. “The CS 9000 3D offers an unprecedented vision into the heart of the root canal anatomy which using the 3D rendering is a veritable revelation to patients to whom regular radiographs often remain a black and white mystery. With the rendered image we can easily explain what needs to be done and why. Complex surgical problems are easily understood and treatment plans more readily accepted.”

Alan chose Hulbert Dental as the supplier of his CS 9000 3D and this he believes was just as important a consideration as choosing the equipment itself. Training and support is essential when introducing any new technology to your clinic. This was very competently supplied by Tony Hulbert himself. But the relationship did not end there! Tony and Alan have formed a partnership supported by Carestream Dental to provided CBCT Application and Compliance training to all those who are now incorporating 3D imaging in their practice. The courses are essential for those dentists either considering investing in their own systems or referring patients to clinics such as Bristol Specialist Dental Clinic. These CPD courses contribute significantly to the education and knowledge sharing process aimed at delivering best practice within the profession.

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