

Cone Beam CT Scans in Everyday Use

Check out this great collection of cases demonstrating the diagnostic power of Cone Beam CT. 3-D views can be habit forming. Log on today to participate in this discussion and thousands more.

itrtgums

Posted: 1/22/2008

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I have been a big advocate for the use of CT [computed tomography] scans for implant treatment planning for almost five years now. In 1991, I gave a presentation at a dental symposium on the use of reformatted CT scans on diagnosis and treatment planning for periodontal disease. Of course then CT machines were in hospitals and computing power was not what it is today. So it was just an interesting concept back then. When I opened my practice in 2003, I bought an Instrumentarium digital pano, and I thought that was the bomb. However, I recently had a Galileos CBCT (by Sirona), installed in my periodontal office and decided to make it standard to take CT scans on every patient (periodontal disease, ortho uncovering, implants, etc., except soft tissue work (frenectomies, etc.). The information that is gleaned from these scans is immense and for the same radiation amount as a film panograph, it is a no-brainer. I was asked to post some cases to show the diverse information that can be had from these scans. These are some recent patients that I chose to show that showed some interesting findings.



This first case is a 28-year-old male who presented with a problem (6mm pocket) on the mesial of #6. He had a history of impaction of #6 and uncovering for orthodontics (nine years ago). He said that this area was giving him some discomfort and seemed to start about one year ago. The GP took an X-ray and did not see anything. He came to my office and we did a CBCT. This pano view from the scan does not show anything radiographically.

The axial view however, does show a radiolucent area on the mesial of #6. The buccal and palatal bone mask this area in a regular 2-D X-ray. The patient and I can now visualize the problem and put together the appropriate treatment plan.



This next case is a 30-year-old female who had a root canal on #30 done seven years ago and is now experiencing discomfort in the area. No swelling was seen intraorally. A CBCT was taken and some radiolucent area can be slightly made out on #30 apically, but to what extent?



Fig. 4



Fig. 5



Fig. 6

Figure 4: Here is a tangential show and the radiolucency is more visible. This is just one slice... imagine being able to look at many slices at different depths in succession to see the extent of the problem.

Figure 5: Here is the axial view at the apex and we can now see the extent of the apical lesion. It is being held in by the thick buccal and lingual bone, which is probably why a parulis is not present.

Figure 6: Here is a cross-sectional view. We can see that the root canal fill appears to be short and we can actually measure the lesion and also see that it is very near the IA canal. She was sent to see an endodontist right away for evaluation and possible retreatment.



This next patient is a 40-year-old male who came in because his GP said he needed to see a periodontist. He had SCRCP [scaling and root planning] done earlier, but still had deep pockets. From the pano view, we can see that this is a severe periodontitis case. This case is an extreme case that I wanted to present as the other views

show the extent of bone loss around the teeth.

This is the axial view of the mandibular teeth. Here we can very accurately see the class III furcations (but in class II can be seen in moderate cases, more accurately also with this view, so more optimal treatment planning). The extent of circumferential bone loss can be visualized more precisely and therefore less guesswork in terms of prognosis, ability for regenerative procedures, etc. In this case we are going to extract some hopeless molars (1, 2 and 16) and then LANAP the rest since he wants to try to keep his teeth. I don't want this to be a discussion of treatment options, but to demonstrate this powerful diagnostic tool.



Conclusion: I will post some orthodontic cases another time. However, imagine if you have a root canal that is failing and you could look down the root and see if there was a missed canal (without opening the tooth) and therefore making a more accurate diagnosis and treatment plan for the patient. Or seeing the extent of hard tissue swelling/lesions prior to extraction to see if vital structures are being impinged. Or visualizing vertical defects in periodontal disease, so that regeneration potential can be determined, etc. I won't even go into implants, but if you are not using this technology regularly (and since radiation is not an issue), what are you waiting for? The amount of information is almost endless. As for price (which I am

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sure most of you are saying is a limiting factor in patient acceptance), in the month that we have had the Galileos, only one patient has complained about having to pay for the scan. Patients seem to realize the benefits of this type and amount of information prior to any surgical procedure. CBCTs they're not just for implants anymore! ■ **Allen Honigman DDS, MS, Chandler Periodontics & Implant Dentistry, Chandler, AZ**

jasonl

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Post: 3 of 20

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That is a fantastic use of the machine!
Being able to utilize it in the manner you have described really makes it more and more of a necessity.

Thanks! ■ **Jason Luchtefeld, DMD**

billbusch58

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I know that there are new dental codes for this technology. Has anyone used them yet to see if the insurance companies are paying for them? ■

NY2AZ

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Post: 5 of 20

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Thanks for sharing these great cases! This is just the beginning of a new era in digital imaging. Evaluating a root canal system in three dimensions before treatment is an exciting concept, as well as seeing root anatomy prior to extractions. ■ **Thomas Giacobbi, DDS, FAGD, Editorial Director, Dentaltown Magazine**