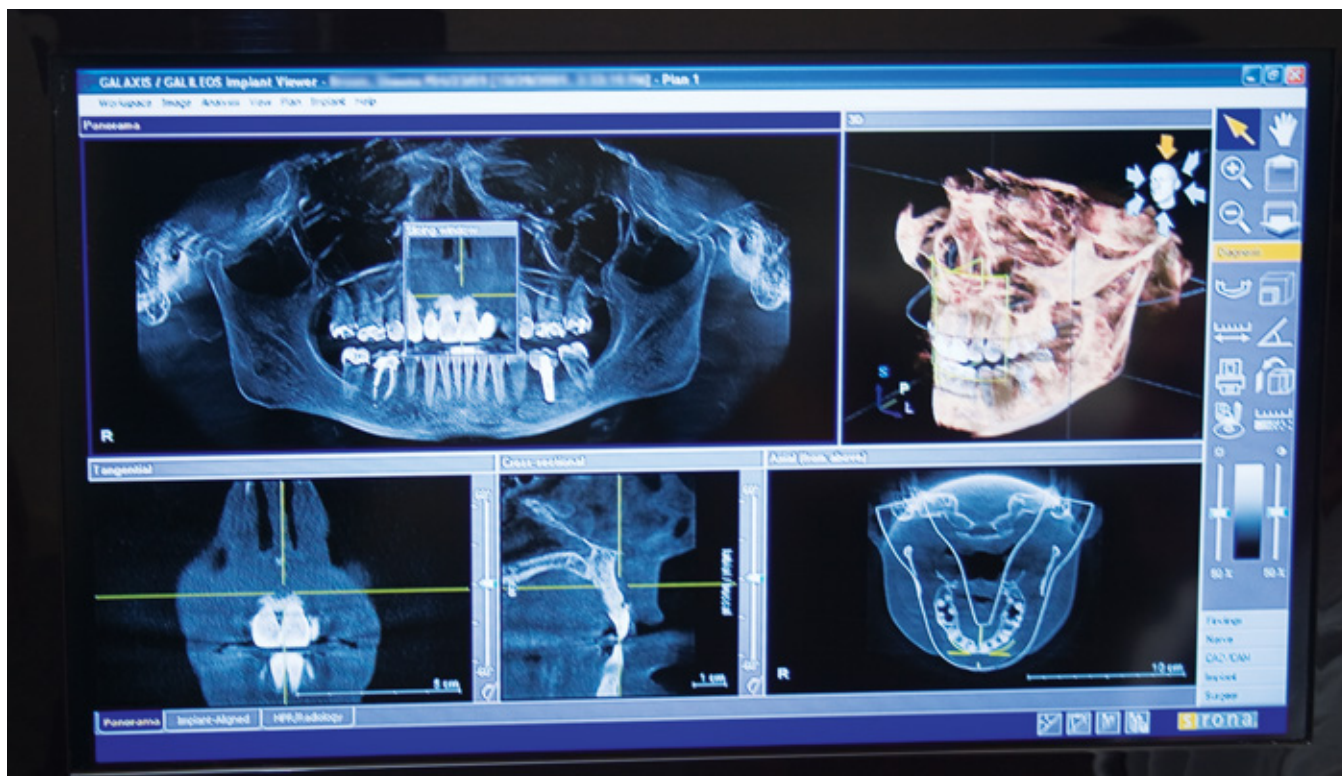


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Dentistry Moves into the Next Dimension

Implant, Cosmetic, and General Dentistry

Cone beam technology enables dentists to use low-radiation 3D CT scans to provide patients with more accurate diagnoses, improved treatment planning, and higher-quality results.



Cone beam

technology for patient imaging, diagnostics, and treatment is rapidly becoming a vital element in dental practices, announces Clark F. Brown, Jr., DDS, a comprehensively trained and experienced dentist who has practiced implant, cosmetic, and general dentistry in Melbourne for more than 30 years.

"For decades, we have used x-rays in dental practices," observes Dr. Brown. "Of course, x-rays are a two-dimensional image of a three-dimensional object, and while x-rays could tell us a lot, there is still that third component of depth that they didn't provide."

For the past 30 years, CT scanners have become more and more prevalent in the practice of medicine, but not so in dentistry, points out Dr. Brown: "In fact, it wasn't until about a decade ago that a technology was developed that could even capture three-dimensional images of precise areas of the mouth, sinuses, and throat in a reliable, affordable way."

He adds that this carefully controlled, cone-shaped beam emits very low doses of radiation: "The exposure to the patient is only a fraction of a typical medical-grade CT scan, and even the Panorex film x-rays that are still typically used in most dental offices emit approximately twice as much radiation as the Galileos Compact scanner by Sirona that I use. An average CT scan is approximately six to seven hundred microsieverts [radiation dosage measurement] while the Galileos is approximately seventy microsieverts. So for me, switching from the film-based Panorex to the cone beam provides me with an additional dimension of crystal-clear information while exposing our patients to less radiation."

Another benefit of cone beam technology is that the scan takes only about twenty seconds and the images are reconstructed on the computer screen in less than a minute after that, describes Dr. Brown.

Improving procedures

In the dental arena, this newer technology is useful for many different procedures, including implants, other oral surgeries, orthodontics, extractions, impactions, periodontics and bone grafting.

“The Galileos has a significant impact on the placement of implants,” informs Dr. Brown. “Traditionally, implants have always required a certain amount of guesswork. Relying solely on the x-ray, we would have the depth of the bone but we really would not have its width. Further, sometimes tissue can be thick, which leads to the conclusion that there is more bone there than patients actually have. With the Galileo scanner, not only can I see the width and depth, but I can also see the angle at which the implant needs to be placed. Therefore, I can choose the exact size for the implant that will be perfect for the bone...no compromises and no guessing. It also alerts me to whether or not there are any small issues with the quality or density of the bone that I should take into consideration before deciding on the types of implants or coatings that I may want to use to better adapt to the particular bone or bone density.”

Dr. Brown gives an example.

“I recently had a patient whose tooth broke off at the gum line. A traditional x-ray indicated that extracting the tooth and placing an implant would be the best treatment. However, with the CT scanner I could see a large defect in the bone that was not apparent in the conventional x-ray. A simple tooth implant would have probably suffered premature failure.

“However, thanks to the 3D image, I diagnosed the defect and now can perform bone grafting first before placing the implant, which should ensure good success.”

Treatment of an impacted tooth, which is partially or completely below the gum line because it is unable to erupt properly, can also benefit greatly from cone beam technology.

“Wisdom teeth, or third molars, are the teeth most commonly impacted,” educates Dr. Brown. “Often, the nerves of those teeth, and the nerve in the jawbone particularly, can be fairly involved with the roots of the teeth. With the CT scan, I can see exactly where the nerve is and where the roots of the teeth are so that I can foresee any potential problems ahead of time, as opposed to trying to deal with something after the fact.”

There have also been instances where Dr. Brown’s patient has complained of a pain in the tooth area but an x-ray failed to detect any problems. However, with the 3D technology, Dr. Brown was able to pinpoint and clinically confirm a small periodontal pocket, which he could then treat accordingly.

Galileos meets CEREC

“One of the advantages of the Galileos is its integration capability with the CEREC [see Sidebar],” observes Dr. Brown. “By combining CEREC data with data from Galileos, the new Sirona Implant software enables me to see exactly what the final result will look like in three dimensions. I can super-impose the design from the CEREC onto the Galileos and line up everything perfectly. This allows me to see exactly where the final crown should be and to place the implant at the ideal angle to accomplish that. I can virtually place my implant into the bone so that all of the prosthetic abutments are perfectly placed. It is called prosthetically driven implant placement, and it is remarkable. It guarantees not only a safe implant placement, but also exact integration of the prosthetic planning. Before I even begin, our patient is assured of a perfect final result.”