

IMPLANT TRIBUNE

The World's Dental Implant Newspaper · U.S. Edition

DECEMBER 2008

www.implant-tribune.com

VOL. 3, No. 12

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An implant treatment coordinator can help



Consider hiring an implant treatment coordinator to drastically increase the effectiveness of your practice.

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Workshop focuses on narrow implants



Dr. Sang-Choon Cho teaches on "Advanced Narrow Diameter Implant Technologies for Replacement of Patients' Missing Teeth in Narrow Bone and Limiting Spaces" at NYU workshop hosted by Dentatus.

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AAID: Use of mini dental implants on the rise but questions linger

There is spirited debate in the field of implant dentistry about proper use of mini dental implants.

Proponents are urging wider use of the shorter, less costly procedure while others advocate a more conservative approach until several long-term outcomes studies are published, according to the American Academy of Implant Dentistry (AAID).

Concerns also have been raised about whether general dentists who adopt mini implants receive sufficient implant training. Though mini-implant companies provide weekend training sessions, AAID believes such instruction falls short of what dentists must know before adding

implants to their practices.

"Dentists need to be well versed in implant dentistry before using mini implants," said Kim Gowey, DDS, a past AAID president. "Without extensive implant knowledge, they will not know proper surgical techniques and all the basics about bone healing critical for implant success. If you want to practice implant dentistry, there are no short-cuts for gaining the necessary knowledge and training."

In a plenary-session presentation at the recent AAID annual scientific meeting in San Diego, Todd Shatkin, DDS, said mini implants are half the diameter of traditional implants — almost toothpick size — and the

insertion procedure is less invasive and half the cost of traditional implants.

"Mini implants made from titanium alloys are strong enough to withstand normal chewing force and can be used confidently for immediate-load, long-term restorations," Shatkin said. He added that he now uses mini implants for stabilizing dentures, single-tooth implants and even full-arch restorations.

"The FDA has approved some mini implant systems for long-term use, and patients can have a denture stabilized in about an hour or get a

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Radiographic evaluation of the implant site

By Dr. Pankaj Singh

Since Dr. Branemark's historic lecture at the Toronto symposium in 1981, implant dentistry has not been the same. The biggest challenge in my opinion has not been so much performing the surgical procedure, but in the diagnosis, treatment planning and accurate evaluation of the potential implant site.

Traditional 2-D radiography had been used in dentistry for decades,

and is still being used today with great success. The ease of use, interpretation and low cost make it a very affordable and routine diagnostic tool for most general dentistry.

When it comes to advanced dental therapies like implants, 2-D radiographic assessment of the implant site is just not enough as the buccal-lingual (cross-section) view of the site is often the missing critical third dimension.

First came spiral CTs and dentists used them sparingly, mostly for oral-maxillofacial procedures or for ruling out pathology that wasn't visible on the traditional 2-D radiographs. Off site, high radiation dose exposure and high cost and not being insurance reimbursable, these referrals often met with



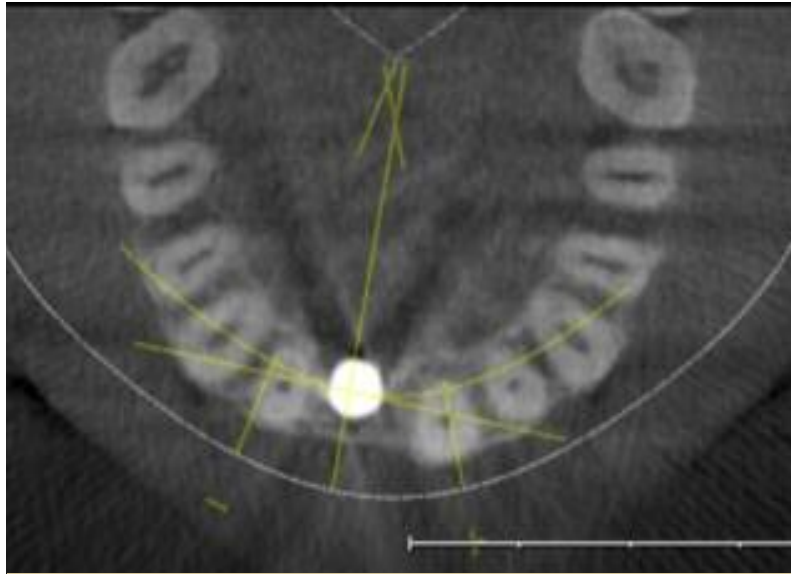
AP view of the proposed #8 site.

resistance from the patient.

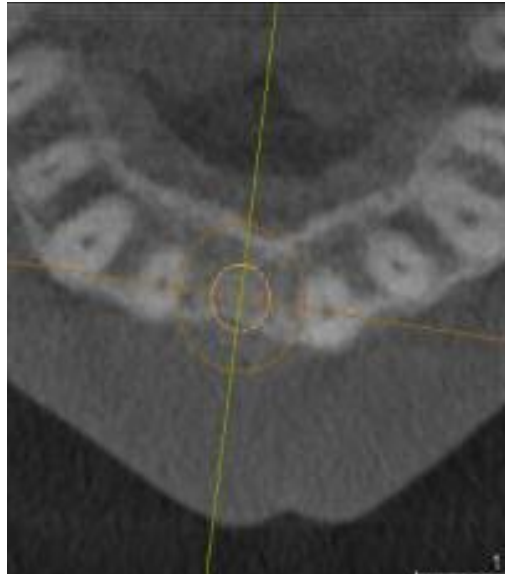
In May 2001, cone beam volumetric tomography (CBVT) imaging specifically for the use in dentistry in the United States was first introduced by QR SRL of Verona, Italy, the manufacturer of Newton (April 2008 CDA Journal). Since then, several different CBVT manu-

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Axial view of the implant #8 with expanded buccal plate.



Axial view of the planned implant #8 position.

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facturers and software developers have significantly contributed to the advancement and adoption of the technologies (see references 1 and 2 of the April 2008 CDA Journal), allowing clinicians to practice prosthetic driven implant dentistry. The ever so important and multifaceted task of determining the accurate placement of implants and assessing bone-grafting procedures (guided bone regeneration) prior to surgery is paramount.

Two-dimensional images such as a panograph and periapical (PA) films have inherent shape and size distortion, along with changes in magnification. In order to minimize potential surgical complications, one of the most important steps is obtaining appropriate radiographs utilizing the data from a CBVT, and combining the images with an interactive 3-D implant treatment planning software, can significantly increase the accuracy of the implant placement for and ideal prosthetic result.

The accuracy of the CBVT results from the size of a voxel, which is short for volume pixel. The smaller the voxel size, the more accurate the resulting scan, and the better the resolution. A voxel is to a CBVT, as a pixel is to a digital PA. The ability to assess an area of interest in three dimensions can benefit both novice and experienced clinicians alike.

High resolution limited CBVTs have been designed for dental applications, as opposed to sliced-image data of conventional CT imaging. CBVT captures a cylindrical volume of data that offers advantages over CT that include increased accuracy, higher resolution and decreased radiation dose exposure.

I will try to illustrate thru the report of a case involving a missing maxillary central incisor, this concept can also be applied for multiple implants. The use of planning tools allows the clinician to effectively communicate the plan with the other members of the Implant team as well as with the patient

Case study

A 38-year-old male patient presented as a new patient to our office. His chief complaint was that he was unhappy with the esthetics and the stability of the three unit Maryland bridge that was constructed to replace a maxillary right central incisor (tooth #8) that was extracted secondary to sustaining a fractured root during post and core insertion after endodontic therapy approximately 20 years ago.

Since then he has had to have the bridge recemented numerous times. His medical history revealed no significance findings. The retracted antero-posterior (frontal)

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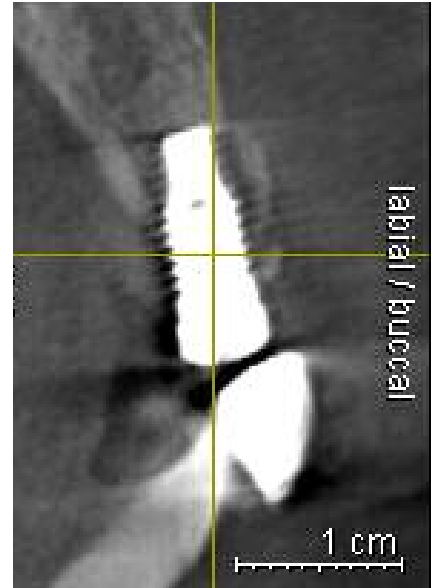
Pre-Sx frontal view #8 without the Maryland bridge.

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view shows the prosthesis in place and the gingival recession coronopically as compared to the adjacent natural teeth, resulting from years of absence of a root and a resorbed socket supporting the overlying soft tissue. The axial (occlusal) view shows the severe buccal recession resulting in a concavity and an inadequately contoured buccal plate in the area of tooth #8.

The 2-D PA of tooth #8 revealed adequate interdental space needed to place a wide enough diameter that would provide for a properly contoured crown with the appropriate amount of interproximal emergence profile.

It also provided us with the



Cross section view of the implant.

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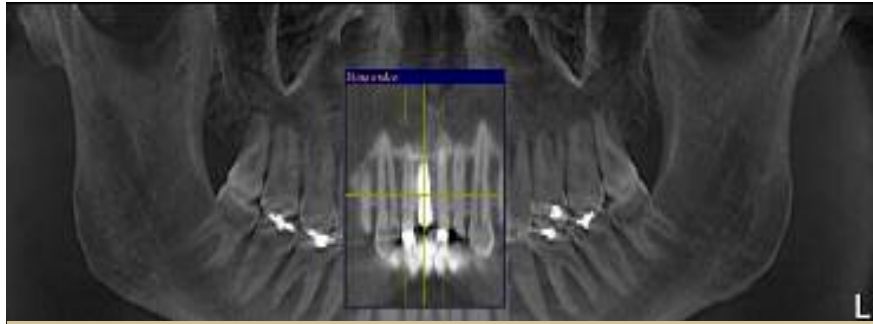
height of the alveolar crest in the implant site and the amount of corono-apical resorption of the alveolar crest allowing us to plan for a straight walled implant long enough to provide enough osseointegrated surface area to resist and allow for the long term loading effects on the implant.

From the PA we weren't able to determine the buccal-palatal dimension of the alveolus or do an accurate virtual implant planning so after explaining the limitations of the PA to the patient and receiving his consent, we scanned him using our in-office Galileos CBVT (Sirona Dental Systems GmbH).

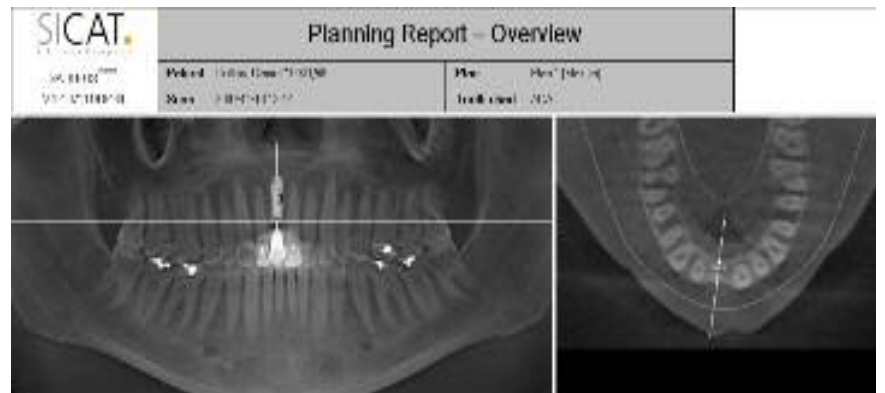
Utilizing the highly interactive viewing software (Galaxis [SiCat]) which is the software component of Galileos, not only visualization of the proposed implant site simultaneously in all three dimensions was possible, also ruling out of any pathology in the general vicinity that might affect the prognosis of the initial healing process or osseointegration. It's also possible to import from a library of implants in the implant planning module that is native in Galaxis and virtually place the appropriately sized implant (Certain straight walled, internal hex implant [BIOMET 3I]) using the existing pontic as a guide that would result in an ideal prosthetic result and conservatively manageable periodontal sulcus depth.

We were also able to determine the need for implant site development at the time of the implant placement which included an internal socket ridge expansion with bone grafting and coronal advancement of the gingival margin along with a sub-epithelial connective tissue graft to increase the zone of keratinized tissue.

When planning for an implant, it is important to consider the available bone volume, bone density, proximity to vital anatomic structures like roots of adjacent teeth, in the mandible the mental foramen and its anterior loop and inferior



Panoramic view of #8.



Implant planning report.

‘the acceptance and utilization of CT and CBVT has helped clinicians expand beyond their conventional imaging modalities to understanding the 3-D anatomic presentations and the importance of this technology.’



Cross section view of pre-op site #8.



Pre-Sx Occlusal view.

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alveolar nerve canal, in the maxilla the nasal and sinus floor.

The cross sectional views are the most critical as they show the available bone area and aid in determining the available bone volume, the ratio of cortical bone vs. medullary bone and the thickness and integrity and continuity of the cortical plates surrounding the trabecular bone.

As we were keeping the implant prosthetic position the same as the existing pontic and not changing the occlusion, from the initial study model a vacume formed surgical guide was fabricated and used at the time of the surgery.

The 3-D model can be rotated in any position, allowing for the ultimate inspection and appreciation of the implant site.

The body and thread design of the implant was fully visualized and an accurate assessment of apical and implant body proximity to vital anatomic structures were determined to be non critical.

The images from the scan and implant planning were incorporated into a CASEY (Patterson Dental) presentation helping the patient understand the recommended treatment.

Conclusion

In the past 2-D imaging was the only way to help diagnose a potential implant site, especially for a single tooth replacement. However the acceptance and utilization of CT and CBVT has helped clinicians expand beyond their conventional imaging modalities to understanding the 3-D anatomic presentations and the importance of this technology.



Pre-TX frontal view with Maryland bridge in place.



Immediate post-sx frontal view with modified Maryland bridge in place.

II About the author



Dr. Pankaj Singh is the founder of Arch Dental Associates and Le Visage Cosmetic & Implant Dentistry with offices in New York City, Huntington and Garden City, Long Island. A graduate of New York University’s School of Dentistry, he has received his advanced training in dental implants at Brookdale Hospital and NYU. Dr. Singh has been in private practice for over 15 years, specializing in implant, cosmetic, restorative and laser dentistry. His use of 3-D imaging in planning dental implant procedures and restorations is regarded as a unique and fresh approach to traditional techniques. He is a dual Diplomate of the International Congress of Oral Implantology and the American Board of Oral Implantology. He is also an active member of the Academy of Sleep Medicine. He has received advanced certification in I.V. and Oral Sedation from Montifiore Medical Center. Dr. Singh lectures nationally on implant, sleep and aesthetic dentistry.