Clinical and diagnostic advantages of PreXion 3-D imaging system

By Dan McEowen, DDS

For nearly 100 years, dentists have relied on 2-D radiographic imaging for diagnosis and treatment planning. With the 1999 introduction of cone-beam computed tomography (CBCT), all dentists now have tools available for more accurate diagnosis and treatment.1

The ability to look at a tooth in any direction and orientation, as well as in 3-D, eliminates much of the guesswork commonly experienced with 2-D radiographs.

We have been limited in most cases to only a buccal-lingual view provided by periapicals, bitewings and panoramic radiographs with the occasional axial view of an occlusal film. Medical CT scans and images began in the early 1970s and were sometimes used by dentists, offering our first multi-planer views.2

The adoption of 3-D cone-beam imaging is appropriate and has important advantages for all modalities of dentistry. From every specialist to the general dentist, the increased amount of radiographic information as well as increased accuracy will aid in the most sound diagnosis possible.

CBCT description

CBCT is a single or partial rotation of an X-ray source around the head, capturing X-rays on various flat panel arrays and sensors. The information is converted to a series of axial slices by computed tomography and stored as arrays and sensors. The information is converted to a series of axial slices by computed tomography and stored as 2-D radiographs.

Fig. 1: Saggital CBCT MPR showing bone defect at point of dehiscence of the implant coating.

Clinical and diagnostic

advantages of

PreXion 3-D imaging system

JOI: Gene combination identified as risk factor in success of dental implants

The health of the surrounding tissue affects the success of a dental implant. Identifying and reducing risk factors is therefore a key step in the implant process. Now a combination of genes has been identified as a possible indicator of greater tissue destruction leading to negative outcomes for implants.

The authors of an article in the Journal of Oral Implantology report on a study of individuals with the combination of interleukin (IL)-1 allele 2 at IL-1A−889 and IL-1B+3954. These people are “genotype positive” and susceptible to increased periodontal tissue destruction.

Peri-implantitis, or the process of tissue inflammation and destruction around failing implants, is very similar to periodontal disease. The researchers sought to find any association of these genes with the severity of peri-implantitis progression and the effect of this combination on treatment outcomes.

This study compared two groups of patients, all of whom had implants. The first group consisted of 25 patients with peri-implantitis, while the second group of 25 patients had healthy tissue. Seventeen patients from the first group and five from the second group were genotype positive.

Patients in the first group, those with peri-implantitis, took part in a treatment and maintenance program. The genotype-positive patients in this group experienced greater periodontal tissue destruction and increased discharge from tissues. The genotype-negative patients responded better to treatment. Statistically significant differences were noted between the groups.

The combination of these two alleles in patients with inflamed periodontal tissues denotes a risk factor that can lead to further tissue destruction. Patients with the specific genotype can have exaggerated local inflammation. Gene polymorphism may affect the outcomes of treatment for peri-implantitis in genotype-positive people and affect the long-term success of implants.


About the Journal of Oral Implantology

The Journal of Oral Implantology is the official publication of the American Academy of Implant Dentistry and of the American Academy of Implant Prosthodontics. For more information about the journal or society, visit www.joionline.org/orimonline/?request=index.html.