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FEATURED ARTICLE



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CBCT & Session 3

July 22-24, 2021

Bone Augmentation and Implant Placement in Compromised Sites

Session 4

September 24-25, 2021

Treatment of the Posterior Maxilla: Osteotome & Lateral Wall



Margaritaville Resort Hotel
Orlando Florida

Session 1

September 10-11, 2021

Socket Grafting, Treatment Planning, & Implant Placement into Abundant

ARE CBCT IMAGES ACCURATE TO EVALUATE DENTAL IMPLANT SUCCESS AND PERI-IMPLANT DISEASE?

The use of CBCT in oral implantology today has most commonly been used for diagnosis and treatment planning. However, little has been documented on the evaluation of peri-implant disease and long-term success of dental implants. Peri-implant disease is a major post-operative concern as recent studies have shown a very high prevalence. Therefore, it is imperative that the dental implant clinician have the ability to evaluate accurately the post-operative peri-implant condition around implants.

Problem:

Intra-Oral Radiographs: In clinical practice today, in the evaluation of dental implants, intraoral radiographs (periapical and bitewings) are the most commonly used. However, these radiographs have significant limitations as they are a two-dimensional representation of a three-dimensional

anatomic structure, high degree of geometric distortion and magnification, and have a low spatial resolution. Most importantly, these radiographs do not depict the amount of buccal or lingual bone loss which is a crucial aspect of evaluating the peri-implant health. Numerous studies has shown that intra-oral radiographs actually underestimate the amount of peri-implant bone loss.^{1 2}

CBCT Images: Cone Beam Computerized Tomography (CBCT), with its inherent 3-dimension capability, is the idea radiographic modality to evaluate all aspects of the implant without overlap. However, CBCT images have been depicted as having a degree of artifact inaccuracies. This is mainly a result of the dental implant material absorbing x-rays which lead to deterioration of images through artifacts such as beam hardening, scatter, and streaking. **cont'd page 2**

MISCH RESNIK COMPLETE COURSE SCHEDULE

SURGICAL SESSION Dallas

CBCT BOOT CAMP

July 22, 2021

Session 3

July 23-24, 2021

Implant Placement &
Bone Augmentation into-
Compromised Sites

Session 4

September 24-25, 2021

Treatment of the
Posterior Maxilla:
Osteotome & Lateral Wall
Technique

Session 5

November 12-13, 2021

Immediate Placement
& Loading, Soft Tissue
Considerations

COMPLICATIONS Las Vegas

October 15-16, 2021

CAESAR'S PALACE

Avoiding & Treatment of
Implant Complications

SURGICAL SESSION Orlando

Session 1

September 10-11, 2021

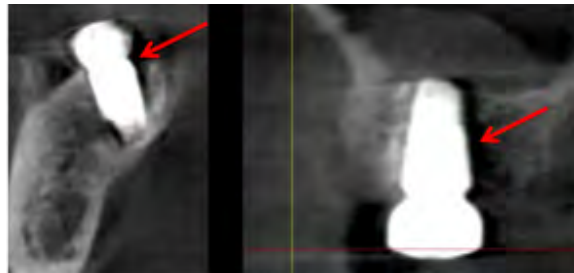
Socket Grafting,
Treatment Planning, &
Implant Placement into
Abundant

Session 2

October 29-30, 2021

Multiple Implant Place-
ment and Treatment of
the Edentulous Ridge

ARE CBCT IMAGES ACCURATE TO EVALUATE DENTAL IMPLANT SUCCESS AND PERI-IMPLANT DISEASE?



Beam Hardening artifacts (red) around a dental implant which often lead to a mis-diagnosis of bone loss.

These artifacts have been shown to negatively affect the evaluation of the bony contours around an implant. When an x-ray beam contacts a high-density object (e.g. implant, abutment, prosthesis), lower energy photons are absorbed more than high-energy photons. This will result in what is called beam hardening, which creates cupping, streaks, and band artifacts. Often these artifacts result in the misdiagnosis of pathology or bone loss.

Dental Implant Material: The type of dental implant material is very significant with respect to the amount of artifacts present. In comparing titanium alloy and zirconia implants, Sancho-Puchades et. al. showed that zirconia implants produced significantly more artifacts than titanium implants. The amount of photons that are absorbed is directly dependent on the material. Because zirconia has a higher atomic number than titanium, there exists a greater formation of artifacts with this type of material.³
CBCT Linear Measurements: Although CBCT images have been shown to be very accurate for millimeter range measurements, studies have shown a degree of inaccuracy when measuring around implants. Recent research has shown measurements less than 0.5 mm have

inherent inaccuracies.^{4 5} Therefore, absolute linear measurements directly next to implants may be associated with errors with very thin and incipient compromised sites.

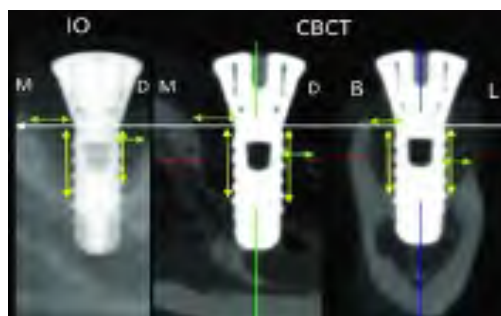
Conclusion:

In the evaluation of bony defects around implants, CBCT has been shown (even with artifacts) to be more accurate than conventional intraoral radiography with respect to the detection of fenestrations, dehiscence's, and periodontal defects.⁶ Therefore, what does the future of CBCT in the evaluation of implants hold? The amount of artifact on CBCT images is highly dependent on the type of CBCT unit, protocol settings, and implant material. First, implant clinicians may improve accuracy by decreasing the voxel size of the CBCT unit as the voxel size has been shown to be clinically relevant with respect to artifacts. A voxel size of 0.150 mm³ has been shown to be the ideal size to accurately view bony defects.⁷ As far as future research and development in improving CBCT image quality, the most promising includes software modifications such as the metal artifact reduction (MAR) algorithms. These algorithms appear to be the answer in decreasing artifacts and improving linear measurement calculations.⁸

³Christiaens, V., De Bruyn, H., De Vree, H., Lamoral, S., Jacobs, R., & Cosyn, J. (2018). A controlled study on the accuracy and precision of intraoral radiography in assessing interproximal bone defect morphology around teeth and implants. *European Journal of Oral Implantology*, 11, 361-367.

cont'd pg 6

In the evaluation of bony defects around implants, CBCT has been shown to be superior to Intra-Oral radiographs.





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Spendthrift Trust

Dr. Ronald J. Trevisani is a Board Certified Oral and Maxillofacial Surgeon, Pharmacist, and an Attorney. As a Misch Institute faculty member, he has a passion for teaching clinical dentistry as well as advising dentists from a legal perspective on protecting your assets.

Spendthrift Trust

The "Spendthrift Trust", sometimes called a "Spendthrift Clause" or "Provision" is an important component of an asset protection program. The primary goal of a spendthrift provision within a Trust is to maintain control of the distribution of the assets of the estate after the grantors death. Additional reasons for including a spendthrift provision are to minimize estate taxes and avoid issues with probate. Of significance, the spendthrift trust has the ability to protect the beneficiaries from both current and future creditors.

This article will address the creditor protection benefit for beneficiaries within the trust. A spendthrift trust is a legal document that limits how much a beneficiary receives from the Trust, when those funds are to be distributed, and under what circumstances. The goal of a spendthrift provision within a trust is to prevent wasting of resources by the beneficiary. These protections include unnecessary wasteful spending, poor investment decisions, and protection of assets from creditors. This provision may prevent a beneficiary, who may not be able to handle immediate wealth from wasting the resources within the trust. For example, this prevents a teenager or immature adult from receiving the funds and utilizing them in a non-ideal fashion (e.g. Buying a Ferrari, Lavish Vacations, Gambling,

etc.) Also, this prevents a creditor from forcing distribution of these assets to cover an outstanding debt.

How Does this Spendthrift Provision Work?

When a trust contains a spendthrift provision, creditors of a beneficiary are unable to force the distribution of the assets to satisfy the debt. The trustee must follow the wishes of the Grantor, and protect the assets in the beneficiaries' best interests. As an example, a trust with a spendthrift provision is set up for the educational requirements of a beneficiary. This beneficiary owes \$100,000 due to a bad investment. The creditor then requests these funds to be distributed. The trustee can refuse to distribute the funds to the creditor. The funds are protected for the educational requirements of the beneficiary. However, once these funds are released to the beneficiary, the creditor can use whatever legal resources he has to access these funds. In this instance, if these funds that are now the property of the beneficiary, the spendthrift provision within the trust does not apply. Thus, the importance of the Spendthrift provision protection can easily be seen with respect to creditors. Of course, there is always exceptions. In Florida, the exceptions include child support responsibilities (court ordered.) and the spendthrift provision does not apply if the beneficiary has any Federal or State Tax liabilities. More details next month. See ya then!!! *The Florida Bar-2021*

QUESTIONS OF THE MONTH

1 QUESTION OF THE MONTH?



Over 60 million Americans over the age of 18 take herbal supplements on a regular basis. These medications can have life-threatening consequences with respect to other medications (drug reactions) and dental procedures. Therefore, it is imperative that implant clinicians are aware of patients taking these medications. Studies have shown what percent of patients that take herbal supplements on a regular basis provide this information to health care providers?

- A. 12 %
- B. 34 %
- C. 61 %
- D. 79 %

2 RADIOLOGY QUESTION of the MONTH

What anatomic structures (green arrows) are missing from this coronal CBCT image?

Why were these structures removed?



3 IMPLANT STUDY of the MONTH



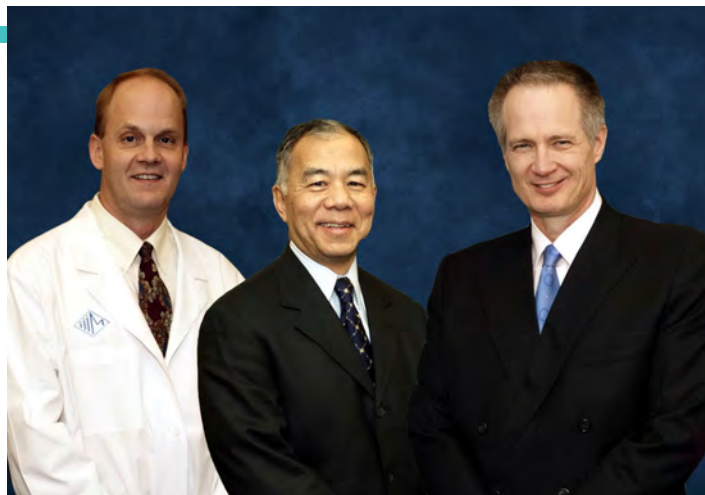
A recent study evaluated approximately 200 maxillary immediate placement implants inserted into patients that smoke cigarettes on a regular basis. Implant Stability Quotient (ISQ) values were evaluated at the time of insertion (primary stability) and also 6 months later (secondary stability). What did this study conclude with respect to cigarette smoking and bone density around implants?



Randolph R. Resnik, DMD, MDS

Jon Suzuki, DDS, PhD, MBA

Carl E. Misch, DDS, MDS



**...and the beat goes on with the
SECOND GENERATION**

Christopher R. Resnik, DMD, MDS

Prosthodontist - Orlando FL

Kevin R. Suzuki, DMD, MS

Periodontist - Seattle, WA

Jonathan Misch, DDS

Periodontics Residency- Univ. of Michigan



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Randolph R. Resnik, DMD, MDS
Director, Misch Resnik Implant Institute

CBCT BOOT CAMP: THE USE OF CBCT IN ORAL IMPLANTOLOGY

07/22/2021 – Dallas, TX

The Westin Irving Convention Center
at Las Colinas

COURSE OBJECTIVES

- Normal Anatomy
- Abnormal & Variant Anatomy
- Identification of Anterior Loops
- Dual Scan Technique
- CBCT 3D Printing
- Bone Density Evaluation
- CBCT Inherent Complications
- Mandibular Nerve Mapping
- Maxillary Sinus Pathology
- Maxillary Sinus Implant Placement
- CBCT Interactive Treatment Planning
- Digital Impression Surgical Template Design
- Surgical Template Protocol
- CBCT Bone Models
- Immediate Placement & Loading
- Legal Considerations With CBCT Scans

BONE AUGMENTATION AND IMPLANT PLACEMENT IN COMPROMISED SITES

07/23/2021 - 07/24/2021 – Dallas, TX

The Westin Irving Convention Center
at Las Colinas

COURSE OBJECTIVES

- Osseous Defect Treatment Planning
- Allograft Augmentation Procedures
- Membranes
- Platelet Rich Fibrin
- Division B Implants
- Bone Grafting Complications
- CBCT Interactive Treatment Planning
- Previously Recorded Surgeries
- Practice Management – Integrating Implants Into Your Practice

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ANSWERS to the QUESTIONS of the MONTH



1 EXTRACT or IMPLANT??

ANSWER:

B. 34 % of patients inform their health care providers of herbal supplement use

* Ideally, patients should discontinue the use of herbal supplements for two weeks prior to invasive dental procedures.

Kennedy, Jae. "Herb and supplement use in the US adult population." Clinical therapeutics 27.11 (2005): 1847-1858.

2 RADIOLOGY QUESTION OF THE MONTH

ANSWER: Right and Left Middle Turbinates. It is common practice for ENT's to remove these structures to open up the maxillary ostium, thus ensuring a patent ostium and reducing the likelihood of infection for chronic sinus sufferers.

3 IMPLANT STUDY OF THE MONTH

CONCLUSIONS: The results showed that the ISQ values were significantly lower in smokers compared to non-smokers at 6 months post-implantation ($p = 0.0226$). Therefore, it was concluded that post-operative smoking has a negative effect on the bone density of immediate implants in the maxilla. Clinicians should inform patients of this potential complication and educate them on the importance of smoking cessation after implant placement.

Wychowski, P.; Starzynska, A.; Jereczek-Fossa, B.A.; Iwanicka Grzegorek, E.; Kosewski, P.; Adamska, P.; Wolinski, J. The Effects of Smoking Cigarettes on Immediate Dental Implant Stability—A Prospective Case Series Study. Appl. Sci. 2021, 11, 27. doi.org/10.3390/app1101.

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²Garcia-Garcia, M., Mir-Mari, J., Benic, G. I., Figueiredo, R., & Valmaseda-Castellon, E. (2016). Accuracy of periapical radiography in assessing bone level in implants affected by peri-implantitis: A cross-sectional study. *Journal of Clinical Periodontology*, 43, 85–91. <https://doi.org/10.1111/jcpe.12491>

³Sancho-Puchades, M., Hämmerle, C. H., & Benic, G. I. (2015). In vitro assessment of artifacts induced by titanium, titanium-zirconium and zirconium dioxide implants in cone-beam computed tomography. *Clinical Oral Implants Research*, 26, 1222–1228. <https://doi.org/10.1111/clr.12438>

⁴Gröbe, A., Semmusch, J., Schöllchen, M., Hanken, H., Hahn, M., Eichhorn, W., ... Precht, C. (2017). Accuracy of bone measurements in the vicinity of titanium implants in cbct data sets: A comparison of radiological and histological findings in minipigs. *BioMed Research International*, 2017, 1–9. <https://doi.org/10.1155/2017/3848207>

⁵Pelekos, G., Acharya, A., Tonetti, M. S., & Bornstein, M. M. (2018). Diagnostic performance of cone beam computed tomography in assessing peri-implant bone loss: A systematic review. *Clinical Oral Implants Research*, 29, 443–464. <https://doi.org/10.1111/clr.13143>

⁶Song, Dandan, et al. "Diagnostic accuracy of CBCT versus intraoral imaging for assessment of peri-implant bone defects." *BMC Medical Imaging* 21.1 (2021): 1-8.

⁷Kurt, Mehmet Hakan, et al. "Comparison of the different voxel sizes in the estimation of peri-implant fenestration defects using cone beam computed tomography: an ex vivo study." *International Journal of Implant Dentistry* 6.1 (2020): 1-11.

⁸Nagarajappa, Anil Kumar, Neha Dwivedi, and Rana Tiwari. "Artifacts: The downturn of CBCT image." *Journal of International Society of Preventive & Community*