

CS 9300

The Critical Role of the Radiologist as a Part of the Interdisciplinary Dentofacial Therapy Team

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Case Overview:

A 48 year old patient was referred by her restorative specialist for periodontal consultation and to begin collaborative management of interdisciplinary dentofacial therapy case planning.

The clinical examination revealed a diagnosis of generalized chronic periodontitis with moderate and advanced loss of periodontal support. In addition, she presented with a myofascial pain and temporomandibular joint dysfunction secondary to retrodiscal tissue impingement. Additional diagnoses included a localized recession based attachment loss #6 with slight to moderate loss of periodontal support, excessive gingival display due to dental alveolar eruption of the anterior sextant, class II skeletal and dental Malocclusion, and pathologic migration #9.



Clinical photo showing class II skeletal and dental Malocclusion, and pathologic migration of #9



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Dr. Mandelaris is in private practice with Dr. Alan Rosenfeld at Periodontal Medicine & Surgical Specialists, LTD in Park Ridge and Oakbrook Terrace, Illinois. He limits his practice to Periodontology and Dental Implant Surgery.

A graduate of the University of Michigan, School of Dentistry, Dr. Mandelaris later completed a three-year post-graduate residency program in Periodontology at the University of Louisville, School of Dentistry. He also holds a Master of Science (M.S.) degree in oral biology from the University of Louisville, School of Dentistry.

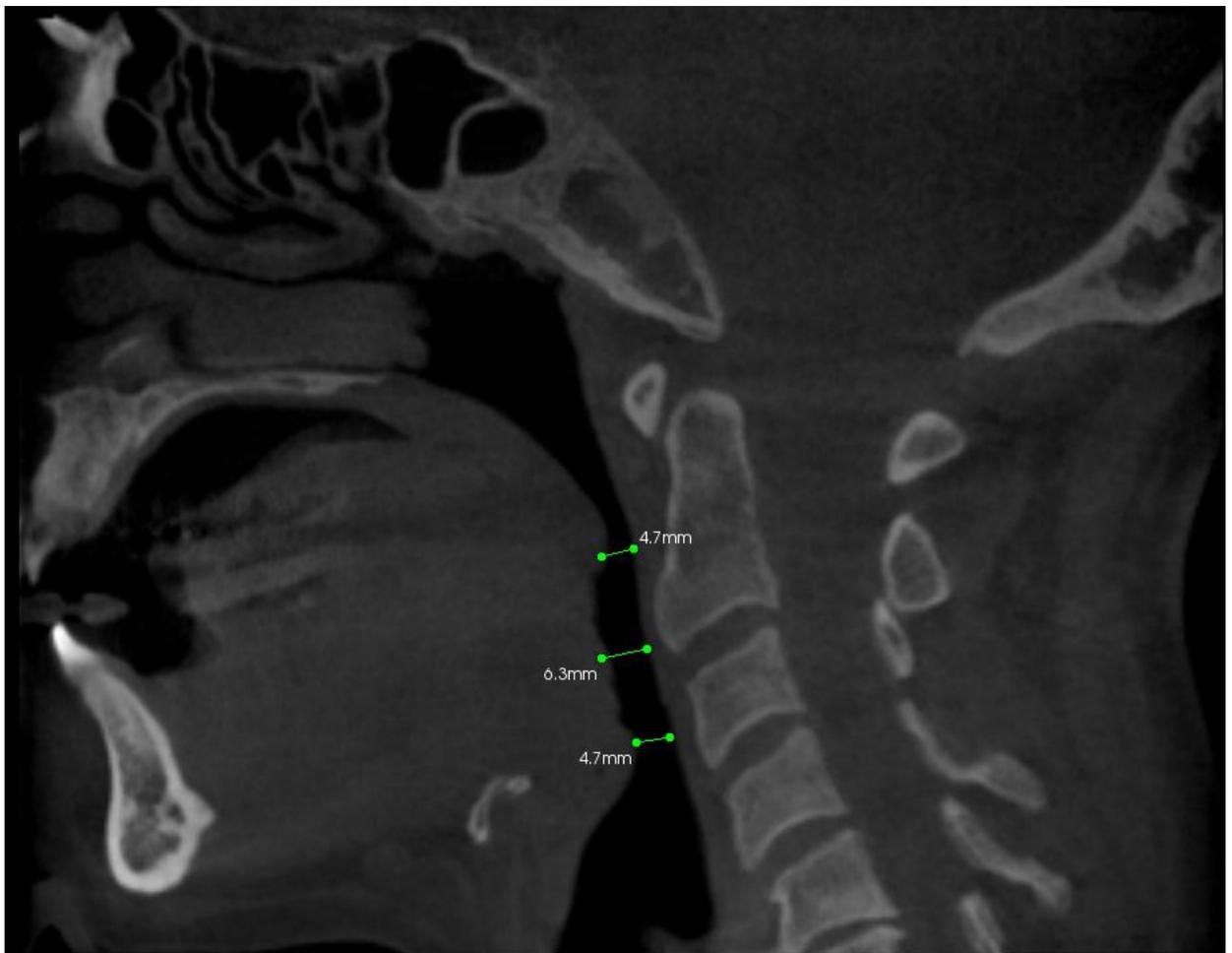
Dr. Mandelaris is a Diplomate of the American Board of Periodontology and is also an examiner for Part II (oral examination) of the American Board of Periodontology certification process. He has been published in numerous textbooks and peer-reviewed journals, and has served as a peer-reviewer to the Journal of Periodontology, the International Journal of Periodontics and Restorative Dentistry, and the International Journal of Oral and Maxillofacial Implants.

Currently, he is President of the Illinois Society of Periodontists and serves on several committees for the American Academy of Periodontology.



An MRI was ordered to understand the position of the articular disc, and a 17cm x 13.5cm CBCT volume was ordered to understand the regional dental maxillofacial and TMJ structural conditions and positions, using the CS 9300 unit. This volume size also allowed the pharyngeal space to be measured to determine airway competency, given the dental and skeletal findings, in order to assess the need for further inquiry into the potential for sleep disordered breathing problems.

The DICOM volume was then evaluated by a board certified oral and maxillofacial (OMF) radiologist for interpretation of anatomy and to ensure patient safety. The interpretation of the raw DICOM data resulted in a diagnosis of fibrous dysplasia of the skull base and necessitated a referral to a neurosurgeon for further assessment and medical management.



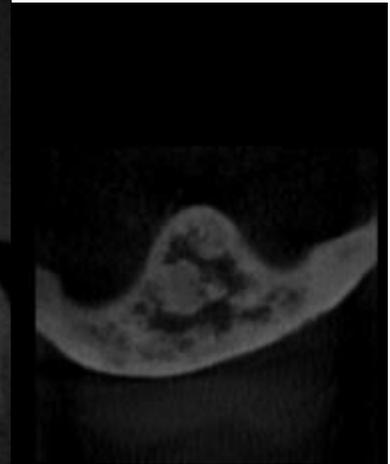
Measurements of pharyngeal space to determine airway competency



Treatment Plan:

The diagnosis of fibrous dysplasia of the skull base, as well the structural integrity of the condyles and pharyngeal/airway space, were facilitated by having the OMF Radiologist on the team to review patient anatomy as a part of the diagnostic process. This helped to ensure the patient's medical status was managed with a comprehensive medical approach to care prior to embarking on elective dental therapy.

Clinical Case Study



Fibrous dysplasia of the skull base with border irregularities and expansive qualities, necessitating further medical evaluation

The interpretation of the raw DICOM data resulted in a diagnosis of fibrous dysplasia of the skull base



Testimonial:

Dentistry has historically imaged “the front of the system” (i.e. teeth and jawbone) with little to no regard of the position and condition of the condyles, articular eminence or TMJs. In fact, when interdisciplinary dentofacial therapy or more routine dentistry is performed, the “back of the system” (i.e. TMJ system and other craniomandibular structures) is rarely considered in patient diagnosis, even before embarking on treatment plans that will surely change their situation. These “back of the system” structures can be clearly visualized and assessed in three dimensions using the CS 9300, which means that proposed treatment plans can now take into account the potential impact on the structures’ condition and position.

The analysis of this case using 3D imaging was highly important for several reasons:

1. It underscored the risks associated with undertaking large volumes of anatomic information with little familiarity of interpretation, based on how dentistry has historically evaluated patients via imaging. A medical diagnosis, fibrous dysplasia of the skull base, was properly identified and managed medically prior to proceeding with elective dental therapy. This process, which was initiated from the “dental” team using a medical model approach, also allowed the patient to realize her medical conditions and bone anatomy.
2. The TMJs could be evaluated to ensure that the position and condition of the condyles were sufficiently stable to withstand biomechanical load.
3. The airway space was assessed to have a potential impact of sleep disordered breathing, a finding consistent with additional dental observations made during the examinations. Appropriate referrals could be made to a sleep medicine physician based on the findings.
4. Anatomy review allowed the patient to understand her periodontal and dentoalveolar deficiencies and appreciate the level of complexity of treatment. It also provided a level of informed consent for the patient that was much more vivid.
5. The impact of medical findings on routine 3D volumetric imaging might have gone unnoticed if it were not for the inclusion of the OMF radiologist overseeing the anatomic structures and ensuring their integrity.

Perhaps what is most underappreciated about this technology is the opportunity for informed consent in an environment of complete disclosure. The understanding of factual anatomy allowed the treatment planning discussion to be directed in an environment of complete disclosure to the patient as well as to all treating colleagues. This level of informed consent prior to initiating treatment would have been virtually impossible using 2D analysis alone.

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