PREDOCTORAL EDUCATION IN CONE BEAM COMPUTED TOMOGRAPHY.

E. LEE, K. VERNET, G. HOANG, T. YOON. LECOM SCHOOL OF DENTAL MEDICINE, BRADENTON, FL

Background: The introduction of cone beam computed tomography (CBCT) into the dental field in 1998 has become increasingly essential to dental diagnosis and treatment. CBCT can be used for implant placement, orthodontics, endodontics, and pathology detection. Although it is a very useful imaging technology, the teaching and training of CBCT in most dental school curricula are still limited. It would be a tremendous benefit for dental students to graduate with the knowledge on how to utilize CBCT properly and understand the value of CBCT in dental practice.

Objective(s): The purpose of this study was to assess the knowledge of predoctoral dental students through didactic and clinical courses pertaining to CBCT education and provide an accurate indication of the necessity of CBCT training in the future.

Study Design: A literature review was conducted using electronic databases from the year of 2007 to 2017 to fabricate the survey questions. The survey was given to the predoctoral dental students from the LECOM School of Dental Medicine and the Virginia Commonwealth University School of Dental Medicine via email through SurveyMonkey (n = 103). The preliminary data were collected and analyzed accordingly.

Results: One hundred and three survey responses were collected and analyzed. Even though 28.16% of the predoctoral dental students planned on specializing after dental school, almost half of the predoctoral students (50.49%) had not received CBCT training in dental school. 59.34% of predoctoral dental students strongly agreed that the utilization of CBCT can be essential in practicing dentistry; implant placement (93.10%) was the number one procedure that would need CBCT. Most predoctoral dental students (70.89%) strongly agreed that education about CBCT should be part of the dental school curriculum.

References

1 Baranwal AK, Srivastava A, Chaurasia A. Cone beam computed tomography (CBCT): a new dimension of imaging with basics and clinical applications in dentistry. Int J Maxillofac Imaging. 2015;1.
2 Farman AG, Scarfe WC. The basics of maxillofacial cone beam computed tomography. Semin Orthodont. 2009;15:2-13.
3 Buchanan A, Thachil K, Haggard C, Kalathingal S. Predoctoral and postdoctoral education on cone-beam computed tomography. J Evidence-Based Dent Pract. 2017;17:310-316.
4 Macdonald-Jankowski DS, Orpe EC. Some current legal issues that may affect oral and maxillofacial radiology. Part 2: digital monitors and cone-beam computed tomography. J Can Dent Assoc. 2007;73:507-511.
5 Brown J, Jacobs R, Jaghagen L, et al. Basic training requirements for the use of dental CBCT by dentists: a position paper prepared by the European Academy of Dentomaxillofacial Radiology. Dentomaxillofac Radiol. 2014;43:20130291.

STRUCTURAL ABNORMALITIES OF THE TEMPORALIS TENDON IN PATIENTS DIAGNOSED WITH CHRONIC OROFACIAL PAIN CONDITIONS.

G. KRISHNAMOORTHY[A,B], I. CIOFFI[A,B], M. MOAYEDI[A,B], L. HENDERSON[A,B], T. P.Y.[A,B]. [A] UNIVERSITY OF TORONTO, TORONTO, ON, CANADA, [B] UNIVERSITY OF SYDNEY, SYDNEY, NSW, AUSTRALIA

Background: The diagnosis of temporomandibular disorders (TMDs), specifically TMD myalgia, can be challenging. Although the anatomy of the jaw muscles has been extensively characterized, a structural difference in TMD-myalgia individuals has never been demonstrated. Tendons are a highly specialized tissue with a predominately mechanical function. Collagen fibrils, the main contributor to tendon mechanical properties, begin macroscopic failure at 8% to 10% strain. The characterization of tendon/muscle abnormalities in individuals with chronic, painful TMD myalgia will lay the groundwork for utilizing noninvasive magnetic resonance imaging (MRI) for screening and objective monitoring of patients with TMD myalgia. A structural marker unique to TMD myalgia will aid in its diagnosis and treatment.

Objective(s): This study aimed to determine differences in the tendon/muscle volume ratio of the temporalis muscle in patients with TMD myalgia compared with age-/gender-matched controls without facial pain.

Study Design: This was a retrospective, observational study of the temporalis muscle and tendon on MRI images. The comparison between groups was based on a voxel-based morphometry of anatomic T1-weighted MRI images and analyzed for differences in the tendon/muscle volume ratio. The study included at least 14 patients per group to detect a 5% difference in tendon/muscle volume ratio. An intraclass correlation coefficient was used to evaluate the intrarater test−retest reliability. General linear models were used to test whether the outcome measures (muscle/tendon volume, muscle/tendon T1 signal intensity, tendon/muscle ratio) are different between groups.

Results: Our pilot data demonstrated similar muscle volumes but significantly smaller tendon volumes and signal intensity when comparing patients with TMD myalgia with healthy controls ($P < .05$)

Discussion/Conclusions: Preliminary data suggest that chronic TMD myalgia may be associated with structural abnormalities of the temporalis tendon. Should the temporalis tendon/muscle volume ratio prove to be a reliable marker, this metric may be used to evaluate different treatment modalities in a noninvasive manner.

References

1 Sharma P, Maffulli N. Biology of tendon injury: healing, modeling and remodeling. J Musculoskelet Neuronal Interact. 2006;6:181-190.
2 Yushkevich PA, Piven J, Hazlett HC, et al. User-guided 3 D active contour segmentation of anatomical structures: significantly improved efficiency and reliability. Neuroimage. 2006;31:1116-1128.