

EVALUATION OF MULTIPLE SYNTHETIC MATERIALS IN REPLICATION OF SOFT TISSUE DENSITY TO AID STANDARDIZATION IN CBCT BASED EX VIVO STUDIES. K. BAKHSH, A. TADINADA. UNIVERSITY OF CONNECTICUT, FARMINGTON, CT

Background: With a significant increase in the use of imaging in dentistry, several proof of concept studies are being done before embarking on larger-scale studies. Most studies that use ionizing radiation have to be very carefully vetted before conducting a larger sample study and would require simulation of a live human tissue and clinical environment to the best possible extent. There is a significant increase in the number of studies being done with cone beam computed tomography (CBCT), and researchers have struggled with standardization of materials that best simulate the same density of tissues in a patient. Although hard tissue, with the use of dry skulls, is less challenging to simulate, soft tissue often poses a major challenge.

Objective(s): The aim of this study was to evaluate the adequacy of multiple materials to best simulate soft tissue density, as measured by pixel intensity values on CBCT scans.

Study Design: Four different materials—boxing wax, utility wax strips, cotton rolls, and methyl methacrylate (MMA) polymer—were imaged using the Morita Accuitomo CBCT scanner at 88 kVp and 10 mA. The pixel values were compared with the values of soft tissue, cheek, lip, and tongue. Using axial, sagittal, and coronal views, 50 different points were measured for each material. Image evaluations were done using a CBCT reconstruction program, InVivoDental Version:5.3 (Anatomage Inc., San Jose, CA) to determine the pixel values.

Results: All 4 materials showed comparable pixel values. The mean values were 186, -16, -25, and -565 for MMA polymer, boxing wax, utility wax, and cotton rolls, respectively. For the control group, the mean values were -28, 58, 73, and 26 for lips, tongue, cheek soft tissue, and water, respectively.

Discussion/Conclusions: All the evaluated material had comparative pixel values. Future studies evaluating other materials and different CBCT machines could help in standardization for soft tissue simulation.

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EVALUATION OF THE TEMPOROMANDIBULAR JOINT OSSEOUS CHANGES IN PATIENTS WITH ANTERIOR OPEN BITE: A RETROSPECTIVE STUDY. N. DANAEIFAR^{A,B}, M. SOHRABI^{A,B}, A. GHOLAMI^{A,B}. ^A LOUISIANA STATE UNIVERSITY SCHOOL OF DENTISTRY, NEW ORLEANS, LA, ^B ZAHEDAN UNIVERSITY, ZAHEDAN, IRAN

Background: The temporomandibular joint (TMJ) has an important role in different human functions, including speech, mastication, and breathing. It has been found that osseous changes in the TMJ may stem from skeletal deformities of the head and neck.

Objective(s): The aim of this study was to evaluate osseous changes in the TMJs of patients with an anterior open bite skeletal deformity using cone beam computed tomography (CBCT).

Study Design: Thirty-two female patients with skeletal anterior open bite and 32 age-matched normal females (skeletal class I) were included in this study. CBCT images were retrieved from the archives. In the CBCT scans, the presence of condylar deformities, including erosion, sclerosis, flattening, and condylar osteophytes, in addition to shape of condyle head in the sagittal and coronal view, were recorded. Moreover, inclination and height of the articular eminence were measured. Data were analyzed in SPSS version 24 software (SPSS Inc., Chicago, IL), with a confidence interval of 95%.

Results: The frequency of condylar head and articular eminence erosion was significantly higher in patients with open bite in comparison with the normal group ($P < .05$). A significant association was observed between the condylar head shape and the presence of open bite deformity in the coronal view, with the number of angular condylar shape being higher than that in the normal group ($P < .05$). In addition, inclination and height of the articular eminence was significantly higher in the normal group in comparison with the open bite group ($P < .05$).

Discussion/Conclusions: According to the present findings, osseous changes in the TMJ exist in patients with anterior open bite skeletal deformity. It was found that the shape of condyle was related to the presence of skeletal anterior open bite.

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