

Clinical and Radiographic Presentation: A 9-year-old female with multiple impacted supernumerary teeth was referred by an orthodontist requesting a cone beam computed tomography (CBCT) scan for evaluation of impacted teeth. According to the clinic notes from the orthodontist, the patient was not complaining of any pain and had not been previously diagnosed with any medical disorder. There was no concerning medical history reported for the patient. The family history revealed that the patient's mother was deaf. The CBCT scan revealed multiple impacted permanent and supernumerary teeth in the jaws. On the basis of the radiologist's recommendation, the patient was referred to the University of Iowa Hospital and Clinic for genetic tests to rule out a possible underlying disorder.

Differential Diagnosis: Cleidocranial dysplasia, Gardner syndrome, Apert syndrome, and Crouzon syndrome were considered.

Diagnosis and Management: The CBCT scan revealed 19 impacted supernumerary teeth, apart from the impacted permanent teeth. The scan also showed a dentigerous cyst around the unerupted permanent mandibular right first molar. The image revealed multiple open sutures. A chest radiograph revealed marked variations in the clavicles bilaterally. On genetic testing, in addition to the findings from the scan, led to the diagnosis of cleidocranial dysplasia. The patient is currently scheduled for systematic removal of the supernumerary teeth as part of the comprehensive treatment plan.

Discussion: This case demonstrates the crucial role and importance of interpretation of CBCT volumes by a radiologist and the immense benefit of interdisciplinary care provided to a patient. CBCT is an excellent imaging tool to evaluate the location of teeth and aids in the treatment plan by revealing incidental findings that could be life changing for a patient and by enabling better patient care and outcomes.

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SYSTEMATIC REVIEW OF CONE BEAM COMPUTED TOMOGRAPHY USE IN DIAGNOSIS OF MEDICATION-RELATED OSTEO-NECROSIS OF THE JAW

G.B. BADABAAN, S.R. SINGER, A.G. CREANGA, and M. STRICKLAND, RUTGERS SCHOOL OF DENTAL MEDICINE, NEWARK, NJ

Background: Medication-related osteonecrosis of the jaw (MRONJ) is an adverse drug reaction, marked by bone destruction. Most studies have focused on its diagnosis and management.

Objective: The aim of this review was to explore the role of CBCT in MRONJ diagnosis.

Materials and Methods: The following databases were searched: PubMed, Scopus, Web of Science, Trip, and Cochrane Library. Search terms were "osteonecrosis," "medication-

related," "radiography," "bone resorption," and "CBCT." The search for publications from 2003 onward yielded 395 articles (case reports, case series, studies, and systematic reviews). However, only 11 articles met our inclusion criteria.

Results: The 11 articles with 168 cases were included in a full-text qualitative analysis. Females comprised 66.6% of cases. Mean patient age was 58.5 years. CBCT findings included osteolytic lesions, osteosclerosis, sequestra, and sinus mucosal thickening. The most frequent location was the posterior mandible (62.6%). Stage 1 was most often reported (36.4%). The most frequent precipitating event was extraction (75%). Of the included cases, 52.4% were oncologic cases, and 23.8% were osteoporosis cases. Of the patients, 72.7% had taken antiresorptive medications and 4.5% antiangiogenics. Administration was mostly oral (45%). Several studies included management; 90% of articles reported antibiotic and chlorhexidine use, and 10% reported surgical intervention.

Discussion: CBCT is a reliable tool in the detection and staging of MRONJ. It is reported to offer advantages over multi-detector computed tomography (MDCT) with regard to radiation exposure and is superior to 2-dimensional imaging in the detection of MRONJ features.

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THE ROLE OF IMAGING IN MRONJ: AN EVIDENCE BASED, INSTITUTIONAL EXPERIENCE

S. BHULA, S. MALLYA, and S. TETRADIS, UNIVERSITY OF CALIFORNIA AT LOS ANGELES SCHOOL OF DENTISTRY, LOS ANGELES, CA.

Background: Medication-related osteonecrosis of the jaw (MRONJ) refers to devitalization of bone caused by external insults. Radiographic features of sclerosis, osteolysis, periosteal reaction, and sequestration are seen in varying degrees of stages of MRONJ and may serve as a predictor for future morbidity. However, currently there are no protocols to guide the clinician for appropriate imaging in patients with MRONJ.

Objectives: The aim of this study was to provide an overview of the pathophysiology of MRONJ; to discuss the role of radiographic imaging during the assessment of patients with MRONJ; to review the recent literature on radiographic imaging of MRONJ; and to propose a guideline to aid in clinical decision making to perform imaging of MRONJ.

Study Design: The review included studies examining the contribution of imaging to MRONJ, a study by our own group.

Results: There are no current applicable results for this research presentation.

Discussion: The diagnosis and staging of MRONJ is currently based on patient history and clinical findings. Panoramic and intraoral radiographs help make an overall assessment. However, the presence or extent of necrotic changes may be underestimated on panoramic radiographs, complicating differentiation of MRONJ from dental disease. Although cone beam computed tomography (CBCT) provides improved visualization of the MRONJ lesion, criteria to identify patients who would benefit from this modality are lacking. Certain radiographic parameters seen in stage 0 MRONJ may predict progression to clinical bone exposure. Thus, imaging findings play an important role in evaluating the extent of disease, facilitating staging, and determining subsequent management. This report provides a review of the literature pertaining to the value of CBCT imaging in MRONJ management. Guided by these data, we propose an imaging protocol to facilitate clinical decision making and appropriate application of CBCT imaging.

DOUBLE CONTOUR SIGN IN TEMPORO-MANDIBULAR JOINTS IN CONE BEAM COMPUTED TOMOGRAPHY: A CASE SERIES.

J. BRINER J., K. BRINER K., M. BRINER M., and A. BRINER, UNIVERSIDAD FINIS TERRAE, PROVIDENCIA, SANTIAGO, CHILE; UNIVERSITY OF FLORIDA COLLEGE OF DENTISTRY, GAINESVILLE, FL

Clinical Presentation: A double contour of the cortical border in the temporomandibular joints (TMJs) is a rare sign that can be seen in the mandibular condyles and/or in the glenoid cavity. This sign can be attributed to several causes and may have different clinical manifestations and management.

Differential Diagnosis: Subcortical erosion, incipient formation of subchondral cysts, and crescent sign were considered. Movement artifacts may sometimes create a false-positive sign.

Diagnosis and Management: Double contour of the TMJs can be better visualized on *cone beam computed tomography*. Because it is a nonspecific sign, it must be correlated with a complete medical history to be linked to a specific diagnosis.

Discussion: Double contour of the components of the TMJs can represent a sign of active pathosis and be a sign of bone remodeling in asymptomatic patients. Magnetic resonance imaging and clinical studies have shown a strong correlation between double contour and disk dislocation. It is important that the radiologist identify this sign and its clinical significance, with the purpose of helping the clinician in diagnosis and management.

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RETROPHARYNGEAL INTERNAL CAROTID ARTERY: A REVIEW OF 3 CASES

M. BRINER, R. JAGTAP, M. HANSEN, and D. KASHTWARI, UNIVERSITY OF FLORIDA COLLEGE OF DENTISTRY, GAINESVILLE, FL

Introduction: The internal carotid artery (ICA) can take multiple pathways as it extends from the carotid bifurcation to the skull base. An aberration of its normal pathway may place the ICA in a retropharyngeal position in close proximity to the posterior pharyngeal wall.¹⁻³ Radiographic classification is based on its proximity to the pharynx and/or pathway.^{1,4,5} We present a series of 3 cases of retropharyngeal ICAs with the goal of reporting and classifying these variations.

Case Presentation: Case 1: Retropharyngeal right ICA. Minimum distance to the pharyngeal wall was approximately 4.9 mm (high risk of vascular injury) with a tortuous pathway.

Case 2: Bilateral retropharyngeal ICA. ICAs were in contact with the posterior pharyngeal wall (very high risk of vascular injury). The left had a kinking pathway, and the right was tortuous. Case 3: Bilateral retropharyngeal ICA. Minimum distances of the right and left ICAs to the posterior pharyngeal wall were approximately 3.5 mm and 3.3 mm, respectively (high risk of vascular injury). The right had a kinking pathway and the left was tortuous.

Discussion: Closeness of the vessel to the retropharyngeal wall increases the risk of surgical and nonsurgical complications.^{1,6} It is worth noting that the position of the artery is not constant and can change in position over time.⁷ It is important for oral and maxillofacial radiologists to have knowledge of the anatomy and variations of the ICA. This enables clinicians to take necessary precautions to reduce complications if performing any procedure in the region.

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QUALITY ASSURANCE IN DIGITAL IMAGING: IT REALLY DOES MATTER

A.K. BUCHANAN, S.M. KALATHINGAL, and R