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 diagnosis and management.

Objective: The aim of this review was to explore the role of cone beam computed tomography (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 from 1972 onward yielded 395 articles (case reports, case series, studies, and systematic reviews), but only 11 articles met our inclusion criteria.

Results: Eleven articles with 168 cases were included in a full-text qualitative analysis. Females comprised 66.6% of cases (mean age 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% had taken antiangiogenics. Administration was mostly by the oral route (45%). Several articles included information on management, with 90% reporting antibiotic and chlorhexidine use and 10% reporting surgical intervention.

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

References

1. Olutayo J, Agbaje JO, Jacobs R, Verhaeghe V, Velde FV, Vinckier F. Bisphosphonate-related osteonecrosis of the jaw bone: radiologic pattern and the potential role of CBCT in early diagnosis. J Oral Maxillofac Res. 2010;1:e3.

ADAPTIVE CAPABILITIES OF THE TEMPOROMANDIBULAR JOINT: A CONE BEAM COMPUTED TOMOGRAPHY PILOT STUDY

S.T. SIVALENKA, M. STRICKLAND, S.R. SINGER, G.M. HEIR, and A.G. CREANGA, RUTGERS SCHOOL OF DENTAL MEDICINE, NEWARK, NJ

Background: The term *temporomandibular disorders* (TMDs) is a common broad clinical descriptor for a group of clinical signs and symptoms. Morphologic changes may underlie the clinical presentation.

Objective: This blinded case-control study aimed to correlate osseous changes of the condylar head in patients presenting to the Orofacial Pain Clinic with TMD-related complaints.

Materials and Methods: Institutional review board approval was obtained, and 60 patients (30 study patients and 30 age- and gender-matched controls; age 18−40 years) were enrolled. After a clinical examination, each subject underwent cone beam computed tomography (CBCT) of the temporomandibular joints (TMJs). The Revised Diagnostic Criteria (RDC)/TMD Diagnostic Form was used to record and assess clinical TMJ findings and InVivo v6.0 software to visualize and assess condylar volume and morphologic changes. The findings were recorded on an Excel spreadsheet.

Results: Remodeling was primarily observed in the anteromedial, anterolateral, and posterior condylar surfaces. Clinical findings included disk displacement, temporalis and TMJ headache, and pain in the temporalis and masseter muscles and lateral pole of the TMJ.

Condylar dimensional changes between groups were found to be nonsignificant.

The results demonstrated that reduction in condylar volume correlated significantly with clinical evidence of disk displacement.

Discussion: Although osseous changes in older age groups have been well documented, changes seen in younger patients are not well reported in the literature.

References

1. Robinson P. Articular cartilage of the temporomandibular joint: can it regenerate? Ann R Coll Surg Engl. 1993;75:231−6.
2. Benson BW, Otis LL. Disorders of the temporomandibular joint. Dent Clin North Am. 1994;38:167-185.
3. Nilner M, Petersson A. Clinical and radiologic findings related to treatment outcome in patients with temporomandibular disorders. Dentomaxillofac Radiol. 1995;24:128-131.
4. Hayashi H, Fujita T, Shirakura M, et al. Role of articular disc in condylar regeneration of the mandible. Exp Anim. 2014;63:395-401.
5. Douglas CR, Aviglio JL, de Olivera. Stomatognathic adaptive motor syndrome is the correct diagnosis for temporomandibular disorders. Med Hypothesis 2010;74:710-718.
6. Schiffman E, Ohrbach R, Truelove E, et al.; International RDC/TMD Consortium Network, International association for Dental Research; Orofacial Pain Special Interest Group, International Association for the Study of Pain. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for clinical and research applications: recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group. J Oral Facial Pain Headache. 2014;28:6-27.

CONE BEAM COMPUTED TOMOGRAPHY PRESENTATION OF CASES WITH PRE-ERUPTIVE INTRACORONAL RESORPTION: A CASE SERIES AND REVIEW OF THE LITERATURE

M. TAHMASBI ARASHLOW, M.K. NAIR, and P. JALALI, TEXAS A&M UNIVERSITY COLLEGE OF DENTISTRY, DALLAS, TX

Background: Pre-eruptive intracoronal resorption (PEIR) is a rare condition, characterized by the existence of a radiographic radiolucent area inside the coronal dentin before dental eruption. The etiology for PEIR is unknown. However, the following conditions are the proposed etiology for PEIR: being resorptive in nature, local inflammation, ectopic positioning of teeth or teeth with abnormal contact, dental development defects, systemic conditions (herpes **z**oster infection).

Objective: This report presents the cone beam computed tomography (CBCT) images of 3 cases with PEIR and describes the pattern of resorptive defects in these cases.

Materials and Methods/Clinical and Radiographic Findings: Cases 1 and 2: A 66-year-old female and a 54-year-old male presented for implant evaluation. CBCT images of the first case showed a radiolucent intracoronal area involving an impacted

tooth #16, which encroached on the pulp chamber. CBCT images of the second case showed the same radiographic appearance involving the unerupted tooth #1. Case 3: A 64-year-old male came for evaluation of the airway. CBCT images revealed an intracoronal radiolucent area involving the impacted tooth #17 with an intact pulp. The involved tooth was asymptomatic in all cases, and no history of trauma was reported by patients.

Results/Differential or Definitive Interpretation:: On the basis of radiographic presentations and clinical findings, pre-eruptive intracoronal resorption was considered the most likely diagnosis. The management of such lesion ranges from no treatment to surgery, surgical exposure, tooth extraction.

The prevalence of PEIR reported on panoramic images in a previous study for both the subject and the tooth were 1.55% to 27.3 % and 0.5% to 2.1%, respectively. The prevalence of PEIR as shown by CBCT in the previous study were 9.5% to 15.1% for subject prevalence and 1.93% to 3.5% for tooth prevalence. The previous study showed that a single tooth was usually affected with PEIR in an individual and that the most commonly affected teeth were the premolars and the molars.

Discussion: PEIR affects the coronal dentin of unerupted teeth. The etiology for PEIR is unknown, and it may be commonly misdiagnosed as dentinal caries because of radiographic similarities. These lesions are usually identified incidentally during radiographic evaluation, and early detection is important for effective management. The diagnosis should be made on the basis of clinical and radiographic findings, and CBCT imaging is a valuable adjunct for early diagnosis.

References

1. Wood PF, Crozier DS. Radiolucent lesions resembling caries in the dentine of permanent teeth. A report of sixteen cases. Aust Dent J. 1985;30:169-173.
2. Seow WK, Wan A, McAllan LH. The prevalence of pre-eruptive dentin radiolucencies in the permanent dentition. Pediatr Dent. 1999;21:26-33.
3. Seow WK, Lu PC, McAllan LH. Prevalence of pre-eruptive intracoronal dentin defects from panoramic radiographs. Pediatr Dent. 1999;21:332-339.
4. Nik NN, Abul Rahman R. Pre-eruptive intracoronal dentin defects of permanent teeth. J Clin Pediatr Dent. 2003;27:371-375.
5. Manmontri C, Mahasantipiya PM, Chompu-Inwai P. Preeruptive intracoronal radiolucencies: detection and nine years monitoring with a series of dental radiographs. Case Rep Dent. 2017;2017:6261407.
6. Al-Batayneh OB, AlJamal GA, AlTawashi EK. Pre-eruptive intracoronal dentine radiolucencies in the permanent dentition of Jordanian children. Eur Arch Paediatr Dent. 2014;15:229-236.
7. Uzun I, Gunduz K, Canitezer G, Avsever H, Orhan K. A retrospective analysis of prevalence and characteristics of pre-eruptive intracoronal resorption in unerupted teeth of the permanent dentition: amulticentre study. Int Endod J. 2015;48:1069-1076.
8. Demirtas O, Tarim Ertas E, Dane A, Kalabalik F, Sozen E. Evaluation of pre-eruptive intracoronal resorption on cone-beam computed tomography: aretrospective study. Scanning. 2016;38:442-447.
9. Demirtas O, Dane A, Yildirim E. A comparison of the use of cone-beam computed tomography and panoramic radiography in the assessment of pre-eruptive intracoronal resorption. Acta Odontol Scand. 2016;74:636-641.
10. Al-Tuwirqi A, Seow WK. A controlled study of pre-eruptive intracoronal resorption and dental development. J Clin Pediatr Dent. 2017;41:374-380.

HEMINASAL APLASIA IN A PATIENT WITH CLEFT LIP: A CASE REPORT

A. TSATALIS, S. KALIM, P.J. TSATALIS, and A. GOHEL, OHIO STATE UNIVERSITY COLLEGE OF DENTISTRY, COLUMBUS, OH

Background: Heminasal aplasia is a rare congenital unilateral malformation of the facial region caused by the failure of embryologic development of a nasal placode. To date, less than 100 cases have been reported globally.

Objective: We report here a case of a 13-year-old female presented for evaluation of a supernumerary tooth with no history of consanguinity or comparable family history of reported findings. The patient had a history of cleft lip repair and cannulation of the right tear duct. The patient exhibited right heminasal aplasia untreated by surgery.

Materials and Methods: Cone beam computed tomography (CBCT) showed complete aplasia of the right maxillary, sphenoid, and ethmoid sinuses.

Results: The right nasal cavity, corresponding nostril, and nasal septum were absent and the right lacrimal duct was only partially formed. Facial asymmetry was noted on an axial view as a depression in the right maxilla. No orbital involvement was noted.

Discussion: The absence of both external and internal ipsilateral structures is inherent to heminasal aplasia. According to Mazzola's classification of frontonasal malformations, this case is classified as an "upper face, half nose" nasal aplasia.

References

1. Mazzola RF. Congenital malformations in the frontonasal area: their pathogenesis and classification. Clin Plast Surg. 1976;3:573- 609.
2. Mladina R, Manojlovic S, Markov-Glavas D, Subaric M. An unusual case of heminasal aplasia: proboscis lateralis or cystic teratoma? J Craniofac Surg. 2003;14:41-45.

DEVELOPMENT OF AN IN VIVO ULTRASOUND PROTOCOL TO STUDY THE MUSCULOAPONEUROTIC ARCHITECTURE OF THE MASSETER DURING MANDIBULAR PROTRUSION AND LATERAL EXCURSION

V. VASSANDACOUMARA, T.I. GHEORGHE, R. LEEKAM, E.W.N. LAM, S.E. PERSCHBACHER, B. LIEBGOTT, and A.M.R. AGUR, ORAL AND MAXILLOFACIAL RADIOLOGY GRADUATE PROGRAM, FACULTY OF DENTISTRY; DIVISION OF ANATOMY, DEPARTMENT OF SURGERY UNIVERSITY OF TORONTO, ONTARIO, CANADA

Background: Temporomandibular disorders (TMDs) affect 5% to 12% of the population and lead to disability and pain. It has been suggested that architectural changes occur in the masseter muscle (MM) in TMDs. However, studies on normal in vivo MM architecture are scarce. Previously, our