

and was predominantly radiolucent but with internal radiopaque entities. There was thinning of the mandibular buccal and lingual cortices, with possible disruption of the lingual cortex.

Differential Diagnosis: Calcifying odontogenic cyst (COC), ameloblastic fibro-odontoma, calcifying epithelial odontogenic tumor (CEOT), and ossifying fibroma were considered in the differential diagnosis.

Diagnosis and Management: The histologic investigation determined all 3 lesions to be radicular cysts. The radiopaque entities seen in the mandibular lesion were identified as cholesterol granulomas with multiple foci of calcification. Management included extraction of tooth #29 and surgical removal of all 3 radicular cysts.

Discussion: Radicular cysts with internal calcifications have been described in histopathologic evaluations but rarely in radiographic evaluations of radicular cysts. The differential diagnosis of COC was believed to be the most likely diagnosis because of its variable presentation. CEOT was not considered because of the advanced age of the patient but could not be ruled out. Similarly, the differential diagnosis of an ameloblastic fibro-odontoma was unlikely because it is typically seen in a much younger age group, but was included in the differential diagnosis. Radicular cyst was not initially considered in the differential diagnosis because of the presence of internal radiopaque entities. This case reinforces the importance of correlating clinical findings with radiographic findings. Even though radicular cysts with internal calcifications are rare and not often documented in the literature, under the right circumstances and with the aid of proper clinical information, a radicular cyst should be considered in the differential diagnosis of a lesion with internal calcifications. The proper diagnosis of radicular cysts may lead to a more conservative treatment approach, such as endodontic therapy vs enucleation, greatly improving the patient's comfort and prognosis.

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CONE BEAM COMPUTED TOMOGRAPHY IS SUPERIOR TO DIGITAL PERIAPICAL RADIOGRAPHY FOR DIAGNOSIS OF STRIP

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Background: Strip root perforation requires meticulous diagnosis and may compromise the prognosis, if left undiscovered. It is a common reason for endodontic failure. Strip perforations, usually seen in the mid-section of a curved canal, may result from excessive instrumentation. Radiographic detection of strip perforations may be challenging.

Objective: The aim of this study was to compare the sensitivity, specificity, and accuracy of digital periapical (PA) radiography compared with cone beam computed tomography (CBCT) in detecting simulated perforation in filled and unfilled canals in extracted teeth.

Materials and Methods: After obtaining institutional review board approval, canals of 30 extracted mandibular molar teeth were prepared. Mesial roots of the 15 study teeth were perforated, and all canals were filled in the 15 study and 15 control teeth. The teeth were mounted in simulated D-3 bone. All teeth were imaged by using CBCT and triangulated PA radiography before and after obturation. Discontinuity seen near the furcations was considered perforation. Receiver operating characteristic (ROC) analysis was used to show sensitivity, specificity, and accuracy. Analysis of variance (ANOVA) was used to compare the results, and the kappa statistic for interobserver agreement.

Results: Az values for CBCT before and after obturation were 0.941 and 0.873, respectively, and for PA radiography, the values were 0.640 and 0.776, respectively ($P < .01$). In unfilled canals, the sensitivity and specificity of CBCT were 91% and 100%, respectively, and for angled PA radiography, these values were 52.5% and 49.5%, respectively. In obturated canals, the sensitivity and specificity of CBCT were 82%, and 90%, respectively; in angled PA radiography, the values were 70% and 88%, respectively. Interexaminer agreement was significantly better for CBCT than for PA radiography ($P < .01$).

Discussion: CBCT is more reliable than PA radiography for the detection of perforations, especially in unfilled canals. The accuracy of CBCT decreased after filling because of artifact formation. Accurate diagnosis of perforations in unfilled canals using PA radiography is limited.

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SYSTEMATIC REVIEW OF CONE BEAM COMPUTED TOMOGRAPHY USE IN DIAGNOSIS OF MEDICATION-RELATED OSTEO-NECROSIS OF THE JAW G.M. BADABAAN, S.R. SINGER,

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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 multi-detector computed tomography (MDCT) with regard to radiation exposure and is superior to 2-dimensional (2-D) imaging in the detection of MRONJ features.

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

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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.

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

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Background: Pre-eruptive intracoronaral 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 zoster 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 intracoronaral area involving an impacted