Background: Maxillary anterior teeth play an important role in aesthetics, phonetics, and mastication. Because of the aesthetic and functional significance, it is important to evaluate their position in association with surrounding structures in 3-D before initiating orthodontic treatment. With the advent of cone beam computed tomography (CBCT) in orthodontic diagnosis, it is now possible to identify these structures. One such structure is the incisive canal. Uncertainty in locating the canal can cause root resorption postorthodontic retraction of anterior maxillary teeth.

Objective(s): The aim of this study was to calculate the relative distance between the incisive canal and maxillary central incisor using CBCT and utilize the results for orthodontic treatment planning.

Study Design: All quantitative measurements between the incisive canal and both maxillary central incisors were performed using CBCT on 61 patients. The anteroposterior measurements were taken on both sides, and the average of both values was considered for the statistical analysis. The Steiner cephalometric analysis was performed to select patients with skeletal and dental Class I relationship. All linear measurements were performed on the axial plane at 3 different vertical reference points located on the sagittal plane: (1) the palatal opening of the incisive canal (opening level, P1), (2) midlevel between the opening level and the root apex of the maxillary central incisors (midlevel, P2), and (3) the root apex of the maxillary central incisors (root apex level, P3).

Results: The average anteroposterior distance between the maxillary central incisor roots and the incisive canal was approximately 56 mm.

Discussion/Conclusions: The results of our study could be clinically helpful to plan orthodontic treatment that requires significant retraction of maxillary incisors. The authors support the idea of a pretreatment CBCT in cases that require maximum anterior retraction in the maxilla.

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CYCLICAL CHANGE IN THE APPEARANCE OF FLORID CEMENTO-OSSEOUS DYSPLASIA OVER 15 YEARS: A CASE REPORT.

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Background: Florid cemento-osseous dysplasia is a dynamic dysplastic bone abnormality where normal bone is replaced with fibrous tissue and various patterns of nonmature bone. Over time, these changes can be appreciated on imaging with the appearance of an early radiolucent entity becoming a mixed radiopaque/radiolucent entity and finally a predominantly radiopaque entity with a radiolucent rim of variable width.

Discussion/Conclusions: We present a case of florid cemento-osseous dysplasia, which did not follow a typical pattern, with imaging spanning 15 years in a single patient. The patient, a 41-year-old female, first presented to our clinic in 2008. Previous images from 2002 demonstrated typical patterns of florid cemento-osseous dysplasia in the mandible; radiolucent foci; and mixed radiolucent/radiopaque foci with epicenters located inferior to the apices of the teeth. In 2006, the pattern then changed to a wholly radiolucent one, and we interpreted this as being a simple bone cyst developing within the mixed radiopaque/radiolucent focus in the left mandible. Later images in 2013 showed peripheral new bone deposition; an appearance that we interpreted as being consistent with healing. Similar changes in the foci in the right mandible were also seen between 2013 and 2016. The left mandible showed fluctuations between both bone resorption and deposition over the years of imaging. External root resorption of the mandibular teeth also occurred, and these eventually involved the apical one-third of the affected teeth—a process that is rare, but occasionally seen.
This case illustrates the dynamic clinical behavior that can occur with florid cemento-osseous dysplasia. It is important to recognize the range of variations in the presentation of this dysplastic bone entity and to correlate imaging findings with a clinical history to avoid misdiagnosis and mismanagement. Monitoring in certain cases may be necessary to confirm an initial interpretation of florid cemento-osseous dysplasia.

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DENTAL IMAGING DILEMMAS IN KLIPPEL-FEIL ANOMALY.

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Background: Because of the broad range of findings, Klippel-Feil syndrome has also been referred to as *Klippel-Feil sequence* and *Klippel-Feil anomaly*. It is classified into 3 types that differ in degree and location of vertebral fusion. Another contemporary classification also includes patterns of inheritance.

Case Report: A 19-year-old male needed panoramic imaging to evaluate his third molars. However, because of Klippel-Feil disfigurement, his head and neck posture did not fit into various panoramic imaging units. With an altered oblique head positioning in a cone beam computed tomography (CBCT) scanner (NewTom VGi), his jaws were scanned. The CBCT volumetric data were then realigned and reconstructed in CBCT viewing software (InVivoDental 6.0). These reconstructions were appropriate to assess the indicated dental status and to update the assessment of the cervical vertebral development—a limiting condition of Klippel-Feil syndrome.

Definitive Interpretation: The scan data were able to provide the indicated periapical assessment, particularly of the third molars. Postural compromises were also noted in the anterior alignment of the odontoid process−C1 articulation and their alignment to the clivus of the occipital bone. There was also cervical vertebral aplasia with complete fusion of C2-C7. These findings were contributory to his altered posture.

Discussion of Imaging: The availability of large volume CBCT scanners, with their larger footprint, scanning circumference, and larger scanning size area, provide an imaging option for patients with mental and physical disabilities. In the past, a single large field of view (FOV) CBCT scan has been purported by CBCT manufacturers to be a one-stop imaging solution for all extraoral imaging. Dosimetry data and FDA selection criteria have since contraindicated the use of large volume FOV scanning to replace standard periapical, panoramic, and cephalometric imaging. This case report supports the alternative use of CBCT to acquire standard extraoral images when standard imaging is not possible.

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DETECTION OF PERINEURAL SPREAD OF PALATAL ADENOID CYSTIC CARCINOMA BY CT.

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Background: A large fraction of adenoid cystic carcinoma (ACC) tumors progresses to perineural spread (PNS), with correspondingly low long-term survival rates, and ACC is often not diagnosed in early stages because the primary tumor site is hard to detect.

Objective(s): This study aimed to improve detection of ACC by better understanding the imaging features of PNS. Specific aims included (1) determining whether ACC could be effectively diagnosed by CT alone using a CT bone window to examine osseous changes; (2) determining the accuracy of CT-based diagnosis; and (3) exploring the relationship between the presenting clinical features and perineural spread.

Study Design: A retrospective medical records search was performed from 2000 to 2017 to identify patients with a diagnosis of ACC, clinical history, and pretreatment imaging with CT and/or MRI. Descriptive statistics, as well as sensitivity and specificity data, were compared using likelihood ratio test.

Results: Forty-four patients (median age 51 years; range 20−87 years) met the inclusion and exclusion criteria. The most common symptoms, not mutually exclusive, included pain (41%), mass (41%), paresthesia or numbness (39%), and sinonasal congestion (21%). Most (46%) patients presented to their dentist for initial evaluation, and 55% were evaluated by a dentist at some point before diagnosis. The most common initial impressions were infection (50%) and/or dental disease (32%). Average time to histologic diagnosis from initial symptoms was 18 months. PNS was identified in 82% of all patients. Significantly, findings of erosion and/or enlargement of any foramina, fossae, or canals noted via bone-windowed CT were 97% sensitive and 100% specific for PNS. PNS was statistically associated with paresthesia ($P = .003$; specificity 100%; sensitivity 47%) but not with tumor size ($P = .096$).

Discussion/Conclusions: Palatal ACC PNS can be reliably diagnosed via bone-windowed CT. Dentists are often the first care providers and should be aware that patients presenting with numbness should be evaluated for PNS.

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DIAGNOSTIC PERFORMANCE OF INTRAORAL AND EXTRAORAL RADIOGRAPHS DISPLAYED ON TABLET COMPUTER AND LED MONITOR RETRIEVED USING VIRTUAL DESKTOP APPLICATION AND CLOUD-BASED PACS.

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Background: Information retrieval and sharing is key for today's multidisciplinary patient care. Radiographic interpretation of conventional 2-D images is the standard protocol for most dental schools across the United States, and it is imperative to assess image quality on various display devices as well as image retrieval systems.

Objective(s): The purpose of this study was to investigate whether common dental conditions seen on conventional 2-D intraoral and extraoral radiographs can be diagnosed with the similar accuracy on handheld tablet computer and LED display as on a dedicated radiology diagnostic display. In addition, to investigate