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Case report

Presentation of odontoma with root aggregation

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ABSTRACT

Background: We describe a case presentation of a unique type of odontoma with root aggregation.

Case description: A 14-year old female with an impacted maxillary canine was noted to have an irregular presentation of an odontoma with root aggregation rather than the typical coronal deformity. This lesion appeared unique in its clinical presentation of a single crown-like structure and multiple amorphous "roots."

Practical implications: This case represents another possibility in the presentation of hamartomatous dental germ structures.

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1. Case presentation

A healthy 14 year-old female was referred by her orthodontist to an urban, large-scale university clinic for evaluation of an impacted left maxillary canine tooth in order to undergo a surgical exposure and orthodontic bonding procedure. The patient reported a history of orthodontic treatment for the prior three years. She acknowledged only a slight awareness of a subtle buccal swelling near the height of her left maxillary vestibule in the area of this canine tooth but denied the presence of any symptoms including pain, tenderness, paresthesia, anesthesia, crowding, or malocclusion. Her medical history was not significant for any surgeries, medications, allergies, or hospitalizations. She and her parents denied any history of trauma in the orofacial region or significant childhood illnesses including odontogenic infections or extended fevers.

Clinical examination of the area revealed an otherwise normal dentoalveolar development for a 14 year-old with no apparent pathology except for the aforementioned mild buccal vestibular

swelling. There were no areas of ulceration, erythema, leukoplakia, or sensitivity in the vicinity of the left maxillary canine. Both the left maxillary lateral incisor and left maxillary first premolar tested positive to endodontic vitality testing using temperature, electric, and percussive stimuli. The left maxillary canine site remained unobstructed within the dental arch with no appreciable distal or mesial drifts of the adjacent lateral incisor or first premolar.

Initial panoramic radiography revealed an irregular, moderately sized intra-alveolar radiopacity in the radicular area of the left maxillary canine (Fig. 1). The lesion appeared to be between the roots of the lateral incisor and the first premolar, obscuring the apex of the impacted canine. Also noted was mild widening of the periodontal ligament (PDL) space around the left maxillary lateral incisor. The radiopaque area extended from an area immediately distal to the lateral incisor to the maxillary bone immediately apical to the root of the left maxillary second premolar.

Cone beam computed tomography (CBCT) imaging (Figs. 2 and 3) – coronal and sagittal views of the area, respectively – revealed a mesioangular impacted, vertically positioned left maxillary canine. The crown of the canine had caused only a mild buccal expansion but significant buccal and lingual cortical resorption with possible buccal perforation. Also noted was the presence of an indentation in the enamel of the occlusal surface as well as an extension of the pulp canal into the buccal lobe of the crown. The entire coronal enamel cap was enveloped by a radiolucent dental follicular space that formed a tube-like passage to the alveolar crest reminiscent of a gubernaculum dentis (Fig. 3).

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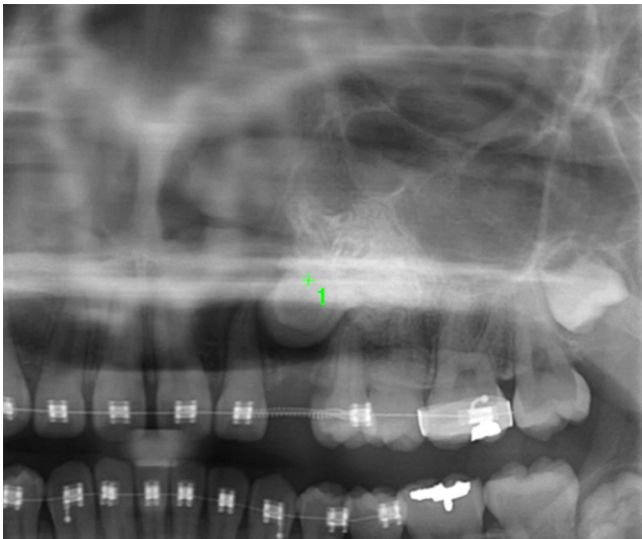


Fig. 1. Initial panoramic imaging revealed an irregular, moderately sized intra-alveolar radiopacity in the radicular area of tooth #11.



Fig. 2. CBCT coronal image demonstrating a mesioangular impacted vertically positioned #11 within the resorbed buccal and lingual cortical plates. Note the presence of an indentation in the enamel of the occlusal surface as well as an extension of the pulp canal into the buccal lobe of the crown, suggestive of a possible gemination.

The root area of the impacted canine consisted of multiple octopus leg-like extensions, with each “leg” exhibiting all three distinct enamel, dentin, and pulp radiodensities. Interestingly, several areas showed an apparent inversion of the enamel lamellae, with a central black radiolucency outlined first by white enamel then by a grey shell of dentin as if to indicate an irregular, anoma-

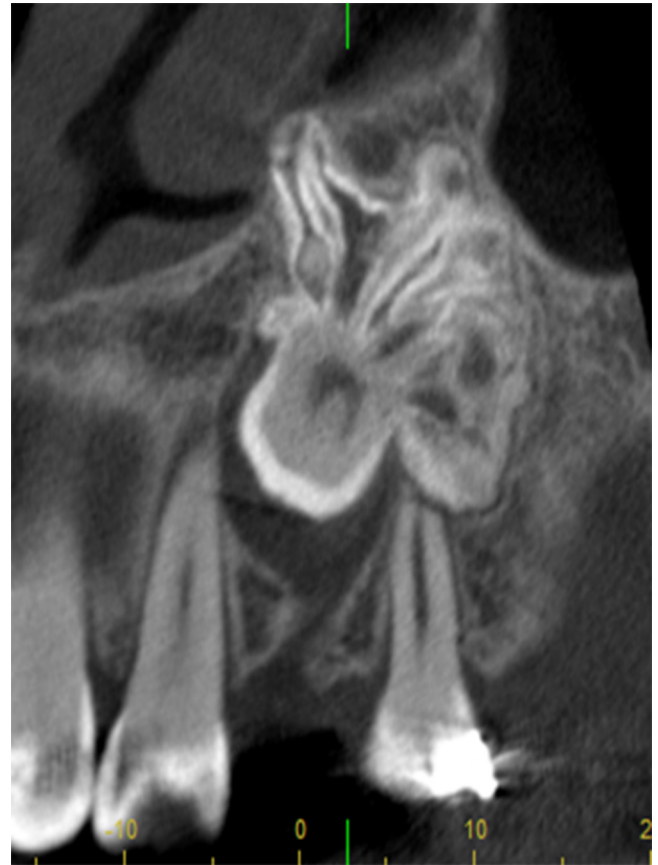


Fig. 3. CBCT sagittal image demonstrating the root area of #11 possessing multiple octopus leg-like branches, with each “leg” exhibiting all three distinct enamel, dentin, and pulp densities.

lous proliferation of the odontogenic epithelium. Root branches extended superiorly to the area of the floor of the left maxillary sinus and the lateral wall of the left nasal cavity. These extensions appeared to cause minimal apical resorption of the neighboring lateral incisor and first premolar. Overall, the branch-like lesions measured approximately 17 mm vertically, 23 mm mesio-distally, and 18 mm antero-posteriorly. 3-dimensional (3D) volume rendering of the lesion aided in determining the exact spatial orientation and position of the lesion (Fig. 4).

2. Differential diagnosis

Several differential diagnoses were considered. An intrabony, asymptomatic, tooth-like lesion residing in an edentulous area of a healthy individual suggested the possibility of malformed tooth (MT), dilated odontoma/dens-in-vaginatus (DO), and some variant of complex odontoma (CO). Soft or glandular tissue lesions were unlikely considering the highly radiopaque nature of large parts of the mass.

A malformed tooth (MT) represents a reactive process secondary to trauma, infection, or genetics. These factors often occur on primary teeth, which then indirectly transfers their effects to the underlying permanent dentition [1]. Though it is difficult to document the exact number of all trauma and infections that occur in children, anecdotal evidence indicates that trauma to the anterior region of the maxilla remains one of the more common etiologies behind MT. Malformed teeth are not rare and can be isolated to a single family member without previous history of childhood trauma or illness. Tooth malformation typically manifests as a disruption in the secretory phases of the hydroxyapatite-producing

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