

Unusual position of impacted mesiodens

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ABSTRACT

The term ‘supernumerary’ defines teeth that form additionally to the normal dentition. It can be found anywhere in the dental arch. A mesiodens is a supernumerary tooth located between the two maxillary central incisors, usually palatally or within the alveolar process. Less frequently, the mesiodens is in relation to the nasal floor and the nasopalatine canal walls. The paper reviews and presents three case reports with rare locations of impacted mesiodens which were found incidentally during Cone Beam Computed Tomography (CBCT) evaluation for endodontic purposes..

Keywords:

Mesiodens, nasopalatine canal, supernumerary teeth, CBCT

1. Introduction

A supernumerary tooth is a development anomaly of number characterized by the presence of a tooth in addition to the normal series.^[1] Various etiologies including atavism, dichotomy of the tooth germ, hyperactivity of the dental lamina, and genetic and environmental factors have been suggested.^[2,3] Most common supernumerary tooth is mesiodens with a prevalence of 0.15-1.9%.^[4] Mesiodens are commonly located palatal to maxillary incisors however it may present in other locations which are rarely reported in literature. The paper reports three cases with unusual positioning of impacted mesiodens with two within the nasopalatine canal and one in the midline of the hard palate.

Case 1

A 20-year-old male was referred by his dentist for CBCT evaluation of impacted mesiodens. CBCT evaluation [Figure 1] revealed evidence of conical shaped mesiodens in palatal aspect of maxillary right central incisor (#11) which was placed vertically with its crown in coronal direction and tilted palatally. The root (single) of the mesiodens was completely formed and in close contact with the middle 1/3rd region of root of #11. The root of mesiodens showed palatal curvature in its apical 1/3rd region [Figure 1]. There was evidence of single canal. There was no evidence of radiolucent halo/capsule surrounding the tooth. Approximate length of the tooth considering its apical curvature was about 15.4 mm. There was evidence of an additional calcified structure (mesiodens 2) seen with the mesiopalatal aspect of the mesiodens 1 and located within the nasopalatine canal [Figure 1]. The structure was buccally tilted and fused with mesiodens 1 at its coronal end at the mesiopalatal aspect of the mesiodens 1. The structure showed some evidence of canal. Approximate length of mesiodens 2 was about 5mm. The mesiodens 2 was located within the nasopalatine canal which is a rare presentation. The mesiodens 1 was in close contact with the mesial cortication of the nasopalatine canal. Both mesiodens seemed to cover the medial half of the incisive foramen.



Figure 1. Multi Planar Reformatted (MPR) images of the two mesiodens in case #1

Case 2

A 26-year-old male was referred by his dentist for endodontic evaluation of multiple teeth. On CBCT evaluation [Figure 2], an incidental finding of conical-shaped, inversely impacted mesiodens was found within the nasopalatine canal. The supernumerary tooth was placed obliquely with its root in close approximation to root of 11 and crown placed cranially near the midline and traversing through the nasopalatine canal and perforating the nasal floor. Approximate length of mesiodens was about 10 mm. As the mesiodens were located within the nasopalatine canal in both cases 1 & 2, a recommendation was made to the dentist to evaluate neurological symptoms.



Figure 2. CBCT images of the inverted mesiodens present within the nasopalatine canal in case #2

Case 3

A 57-year-old male was referred by his dentist for implant analysis in multiple locations in all four quadrants. CBCT evaluation [Figure 3] revealed an incidental finding of an impacted conical-shaped supernumerary tooth in the hard palate in midline in a horizontal position with an inverted orientation of size about 15mm. Narrow arch and thin palatal bone were noted. The crown portion was seen invading the nasal space on right side. The pneumatization of right maxillary sinus in the edentulous molar region was seen extending up to the lateral portion of impacted supernumerary tooth.

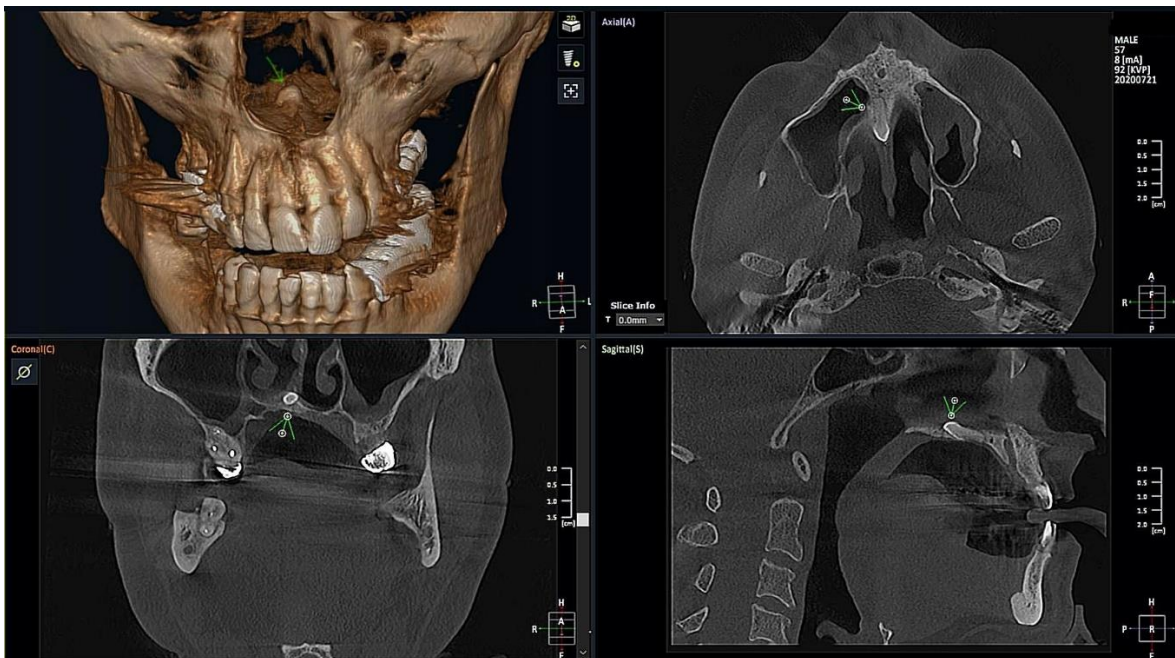


Figure 3. CBCT images of the mesiodens within the mid-palatal region in case #3

2. Discussions

Supernumerary teeth are found more commonly in males, which was evident in all three cases reported here. In the study by Mossaz et al.^[2], 36.75% of mesiodens were inverted and about 96% of the teeth were in palatal location. Out of 49 mesiodens, only one case was reported within the nasopalatine canal and four were reported to partially perforate the canal. In the present case, the supernumerary teeth were mesiodens, conical in shape, palatally positioned and oriented inverted in cases 2 & 3, and vertical in case 1. Approximately 25% of mesiodens erupt normally, but the remainder do not erupt spontaneously and remain impacted.^[4] The impacted mesiodens mostly remain asymptomatic and are often discovered during routine radiographic examination. The shape is usually conical and the position can be normal/inclined or inverted.^[5] Complications include delayed or altered tooth eruption, crowding, diastema, rotation, displacement, root resorption, nasal eruptions and associated cystic lesions.^[6,7,8] In the present case, all mesiodens were asymptomatic with no complications.

The findings of the present case report highlighted the importance of three-dimensional analysis of impacted supernumerary teeth, which has also been highlighted by Goksel et al.^[3], Lee DH et al.^[7] and Kim SD et al.^[8]. Goksel et al.^[3] in their study highlighted the importance of CBCT compared to panoramic radiographs. They classified the mesiodens in all three planes (Coronal, sagittal, and axial) based on their position on each plane. The study found 130 mesiodens with 77 (76.2%) of the cases having single mesiodens and only 19 (18.8%) cases having two mesiodentes. In their study, 65% of the teeth were conical in shape, 78.4% of teeth were impacted, and 56.4% caused delayed eruption of the central incisors. In frontal plane, mesiodentes with long axis parallel to midline without inclination (type A) had the highest percentage (60%). In sagittal plane, impacted mesiodentes in contact with central teeth (type III) were mostly found (65.3%). In axial plane, mesiodentes were mostly found anterior to the nasopalatine canal and in contact with nasopalatine canal (type c) (46.1%). Out of 130 impacted mesiodens, no case was found with a tooth being present within the canal. In their study, they found only seven cases with teeth behind the nasopalatine canal.^[3] These findings suggest the uniqueness of the three cases reported in the present case report and can be an important addition to the literature.

3. Conclusion

CBCT plays an important role in examining the impacted supernumerary teeth in three planes and thus providing details of position, orientation, important neurovascular structures in surrounding, and supplemental findings, all of which can be easily missed on panoramic and conventional radiographs. However, CBCT is associated with increased exposure compared to 2D imaging and thus the dentist needs to assess the benefits and risk of CBCT as 3-dimensional evaluation can affect the surgical outcome and overall health of the patient

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