



Three-Dimensional Evaluation of Non-Syndromic Bilateral Mesiodens Using Cone Beam Computed Tomography

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Abstract

Mesiodens is a type of supernumerary tooth located in between maxillary central incisors. It may be an isolated finding or associated with syndromes. Presence of mesiodens can result in results in problems such as midline diastema, dilaceration of permanent teeth, malocclusion, poor aesthetics, and cyst formation. We present a non-syndromic case of bilaterally impacted mesiodens diagnosed during early mixed dentition.

Introduction

Hyperdontia or supernumerary teeth are extra teeth that develops in addition to the normal complement of teeth either in the maxillary or mandibular arch or both. This trait can occur as an isolated form when there are fewer number of extra teeth, and it is associated with syndromes if multiple supernumerary teeth are found.[1]

Morphologically, these extra teeth may be normal or abnormal and may appear in any direction.[2] The most common supernumerary teeth is the mesiodens that forms between the maxillary central incisors either in the erupted or unerupted form.[3] Prevalence of mesiodens in Malaysia is approximately 1.05% with male predominance. Previous studies have claimed that males are predominantly affected.[4] These teeth are observed incidentally during routine radiographic examination.[5] The aim of this paper is to describe a non-syndromic case of vertically placed bilateral impacted mesiodens.

Case Presentation

A 9-year-old boy was referred to Department of Oral Medicine and Oral Radiology for CBCT for evaluation of impacted teeth. He was medically fit and there was no history of syndromes. No extraoral abnormalities were detected. Occlusal radiograph taken previously revealed two supernumeraries in relation to the retained primary maxillary central incisors. His permanent maxillary central and lateral incisors were impacted. CBCT was taken to localize the supernumerary teeth. Sagittal section shows two supernumerary tooth palatal to retained primary maxillary central incisors. (Figure 1) Presence of impacted permanent maxillary central incisors were seen in Coronal section. (Figure 2) Axial section shows location of supernumerary teeth at the apical level and all four maxillary incisors are impacted. (Figure 3).



Figure 1a) Sagittal section shows presence of mesiodens palatal to primary right maxillary central incisor.



Figure 1b) Sagittal section shows presence of mesiodens palatal to primary left maxillary central incisor

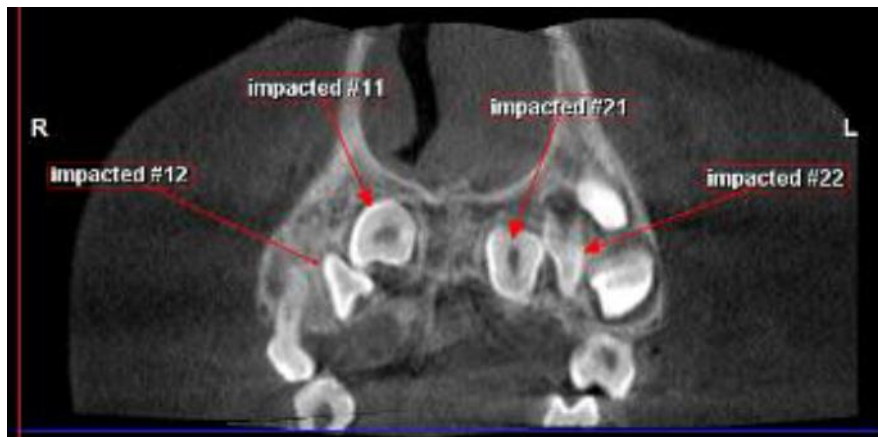


Figure 2 Coronal section shows presence of four permanent maxillary incisors

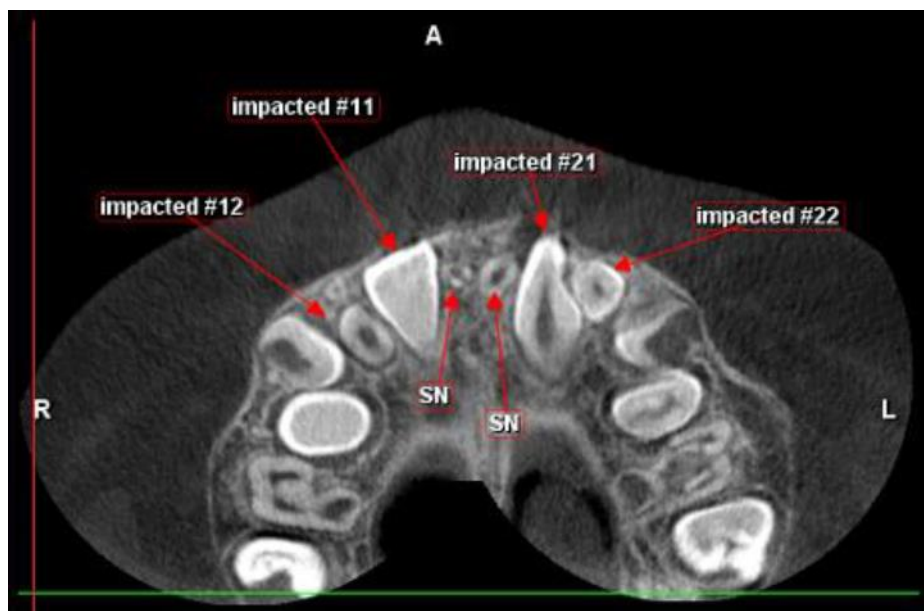


Figure 3 Axial section shows relationship of all four permanent maxillary incisors with supernumerary teeth.

Discussion

The first documented report of supernumerary teeth has been found in ancient human skeletal remains since the Lower Pleistocene era.[7] Various theories have been postulated for etiology of supernumerary teeth. Studies have claimed that the hyperactivity of dental lamina is the sole cause of this dental anomaly.⁶ Other studies have postulated theories of genetic predisposition, phylogenetic theory, or the impact of environmental factors.[8,9].

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Supernumerary teeth can be classified into 3 types based on morphology, location, position, and orientation.^{2,10} (Table 1)

Morphology	Location	Position	Orientation
Conical	Mesiodens	Buccal/ Labial	Vertical
Tuberculate	Paramolar	Palatal/Lingual	Inverted
Supplemental	Distomolar	Transverse	Transverse
			Horizontal

Presence of erupted and unerupted mesiodens may have implications like crowding, delayed eruption of associated permanent teeth, midline diastema, crown displacement like rotation, root resorption of neighbouring teeth and cyst formation.[11]

Early diagnosis of mesiodens during mixed dentition phase is pertinent and removal of mesiodens will assist the alignment of adjacent teeth and avoids further complications like failure of eruption of permanent maxillary central incisors, midline shifting and mesial drifting of lateral incisors.[12]

Diagnosis using 2D imaging like single intra-oral periapical radiograph and panoramic radiograph have inherent technical limitations like image superimposition while locating the supernumerary tooth. However, SLOB technique can reveal the bucco-lingual position of unerupted mesiodens. CBCT aids in locating the precise position and orientation of mesiodens and thus aids the general practitioner during the removal of mesiodens.^{10,12} CBCT also helps to determine anatomical relationship of the supernumerary tooth with adjacent vital structures such as nasopalatine canal, floor of nasal cavity and maxillary sinus.[13,14]

Garvey recommended monitoring of mesiodens for satisfactory eruption of the succeeding teeth, absence of any associated pathologic lesions and risk of damage to the vitality of the related teeth. It is recommended to keep symptomless unerupted mesiodens, which do not affect the dentition.[15] Extraction of mesiodens in the early mixed dentition phase is recommended as this will pave the way for eruption and proper alignment of adjacent teeth which may reduce the need for orthodontic treatment. It might take six months to three years for an unerupted tooth to erupt after removal of the mesiodens.[16]

Conclusion

Mesiodens should be treated by multidisciplinary approach with involvement of Orthodontist, Oral radiologist, and Oral Surgeon. Early identification and investigation with the use of three-dimensional evaluation like CBCT can aid the surgeons to choose the appropriate surgical approach and thus, help in achieving a better prognosis and prevent future dental complications from these types of supernumerary teeth.

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