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Erupting Odontome- A Compilation of Two Rare Case Reports

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Odontomas are the most common type of benign odontogenic tumours; they are asymptomatic and are often discovered during routine radiographs of the jaws. Odontomes can be used as stem cell reservoirs and generally eruption of an odontome into the oral cavity and occurrence of a complex odontome in the anterior maxilla is rare. We report two cases of odontomes one a rare case of erupting complex odontome in the anterior maxilla and the other rare case of partially erupted odontome.

Keywords: Odontome; erupted odontome; unerupted odontome.

1. INTRODUCTION

Odontomas are hamartomas arising during normal tooth development, often reach a fixed size, and are composed of mature enamel, dentine, cementum and pulp tissues [1].

The term odontome refers to a tumor of odontogenic origin. In a broad sense, it means growth with both epithelial and mesenchymal components exhibiting complete differentiation, with the result that functional ameloblasts and

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odontoblasts form enamel and dentin. Due to disorganization of odontogenic cells enamel and dentin are usually laid down in an abnormal pattern [2]. Rarely odontomas can erupt into the oral cavity with or without causing features of inflammation of adjacent hard and soft tissues. Two cases of odontomas with uncommon stages of eruption are presented here.

2. CASE 1

A 12 year old male child came with chief compliant of missing upper right lateral incisor and spacing in upper front teeth. The patient was healthy, asymptomatic, and his past medical and dental history were not significant except his deciduous right lateral incisor had exfoliated ten months ago.

Intra oral examination revealed a missing maxillary right lateral incisor and a midline diastema. On routine panoramic radiograph an erupting maxillary right lateral incisor was seen with resorption of the deciduous right canine. The maxillary right lateral incisor was at the level of crest of the alveolar ridge. On the panoramic radiograph the coronal portion of the lateral incisor was obliterated by a thick lobulated radio density measuring about one centimeter. An intra oral periapical radiograph was made in the area of the radio density. The root was normal except for a dilaceration at apical third of root apex (Fig 1). Based on the WHO definition a provisional diagnosis of complex odontome was made and as routine treatment it was considered for open extraction. After the extraction it was sent to histopathological examination and diagnosis of complex Odontome was confirmed (Figs. 2,3,4).

3. CASE 2

A female patient 13 years of age came with a chief compliant of partially erupted upper right front teeth. On examination patient was healthy and asymptomatic, past medical and dental history were not significant.

On intra oral examination partially erupted tooth like structure was seen in the maxillary right lateral incisor area (Fig. 5). The contralateral teeth were normal while the right central incisor had notching in the middle third of the crown portion and yellowish hypoplastic enamel. On a periapical radiograph, a malformed crown with complete root formation was evident but the apical third portion of the root was surrounded and overlapped by many tooth like structures and surrounded by thin radiolucent line. (Fig. 6) Based on the clinical and radiological examination a provisional diagnosis of a compound odontome associated with a partially erupted maxillary right lateral incisor was made. No treatment has been rendered and patient is kept under observation.

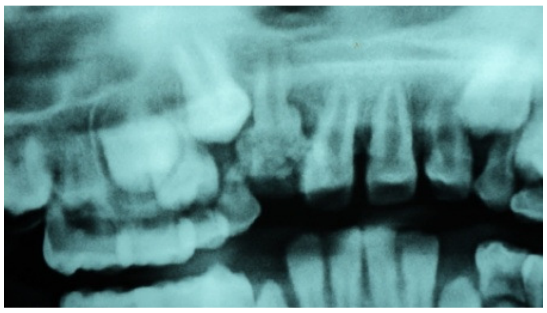

Fig. 1. Erupting maxillary right lateral incisor (odontome) seen with resorption of the deciduous right canine, at the level of crest of the alveolar ridge

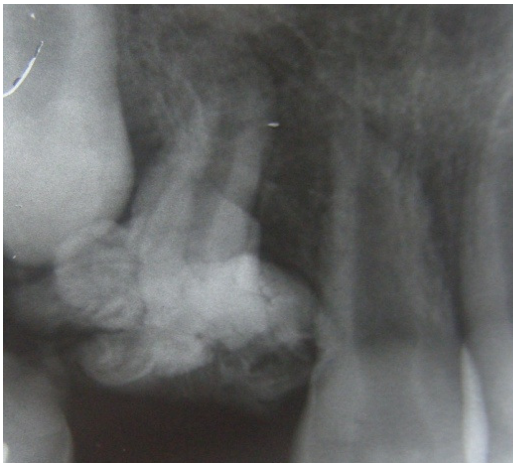

Fig. 2. Maxillary right lateral incisor with root dilacerated at the apical third

Fig. 3. Extracted specimen

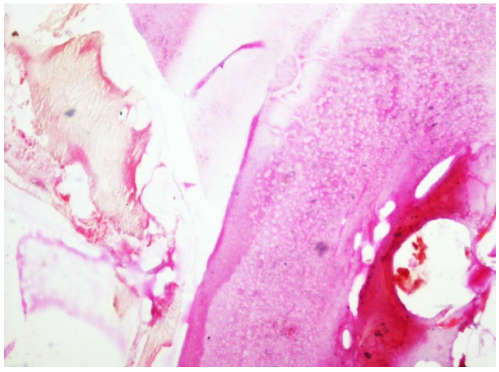

Fig. 4. Histopathological appearance

Fig. 5. Partially erupted tooth like structure seen in the maxillary right lateral incisor area

Fig. 6. IOPA image malformed crown with complete root formation and the apical portion of the root surrounded and overlapped by many tooth like structures and surrounded by thin radiolucent line

4. DISCUSSION

The term "odontoma" was coined by Paul Broca in 1867. Broca defined the term as a tumor formed by the overgrowth of complete dental tissue [3].

Various classifications of odontomes have been proposed. A recent classification is as follows.

Riechart (2004) [4] classified odontomas as

Intraosseous	**Odontomas occur inside the bone and may erupt into the oral cavity**
Extraosseous or peripheral	Odontomas are those occurring in the soft tissue covering the tooth bearing portions of the jaws, having a tendency to exfoliate

In our first case, a complex composite odontome occurring in anterior maxilla was unique. Resorption of roots of the retained primary canine was noted which may be due to the pressure exerted by the erupting odontome. Surgical excision of the odontome revealed that there was complete root formation with–apical closure and a dilaceration at the root apex. One of the reasons known for the noneruption of teeth is dilacerations which was described by Tomes as the 'forcible separation of the cap of the developed dentine from the pulp in which the development of dentine is still progressing [5,6]. The condition is thought to be due to trauma during the period in which the tooth is forming, with the result that the position of the calcified portion of the tooth is changed and the remainder of the tooth is formed at an angulation [6]. Hence in our case the dilacerations was present in the apical third, it can be suspected that trauma could have occurred during the end stages of the tooth development. It has been emphasized by Van Gool that such an injury to a permanent tooth, resulting in dilaceration, often follows traumatic injury to the predecessor in which that tooth is driven apically into the jaw [7]. As in our case there was completely formed root and the odontome was fused to a major portion of the crown causing hindrance in the eruption of the adjacent permanent canine and also causing resorption of the deciduous canine. Based on these findings we considered it has the erupting odontome or false erupting odontome.

Eruption of the odontome was not because of the growth of the odontome but most likely due to the erupting potential of the tooth.

The second case of a partially erupted compound composite odontoma was found in the

anterior maxilla which is in accordance with the reported literature. The first case of an erupted odontoma was described in 1980 by Rumel et al. To the best of our knowledge since then only 20 cases have been documented in the literature. The mean patient age was 25-35 years, thus confirming potential presentation of these lesions between the second and third decades of life. Of the 20 reported cases of erupted odontoma; 9 corresponded to compound and 11 to complex composite odontomas [8]. Eruption can cause pain, inflammation of the adjacent soft tissues, or infection associated with suppuration [8] but these were not seen in our case.

Of all the odontomas combined, 67% occurred in the maxilla and 33% in the mandible. The compound odontoma has predilection toward the anterior maxilla (61%), whereas only 34% of complex odontomas occurred here. In general, complex odontoma had a predilection for the posterior jaws (59%) and lastly the premolar area (7%) [9].

In 70% of the odontomas, pathologic alterations are observed in the neighboring teeth, such as devitalization, malformation, aplasia, malposition, and remaining embedded [10]. In our second case the odontome had partially erupted into the oral cavity but did not resemble morphologically to any tooth and also delayed eruption was observed. Radiographically the root portion was surrounded by number of small tooth like structures; hence it was provisionally diagnosed as compound composite odontome.

Interestingly, both types of odontoma occur more frequently on the right side of the jaw than on the left (Compound 62%, Complex 68%) [9], which was in accordance with our both the cases.

As existing classifications do not fulfill other clinical presentations of odontomes, or help to decide on the treatment plan, there is a need for a new classification, hence we put forward a new classification based on clinical and radiological appearance of the odontomes.

Odontomas may be discovered at any age, although less than 10% are found in patients over 40 years of age. Although they are commonly asymptomatic, clinical indicators of odontoma may include retention of deciduous teeth, non-eruption of permanent teeth, pain, expansion of the cortical bone and tooth displacement. Other symptoms include paresthesia and swelling. Complex odontomas tend to occur in the posterior region of the jaw, and compound odontomas are more common in the anterior maxilla [2].

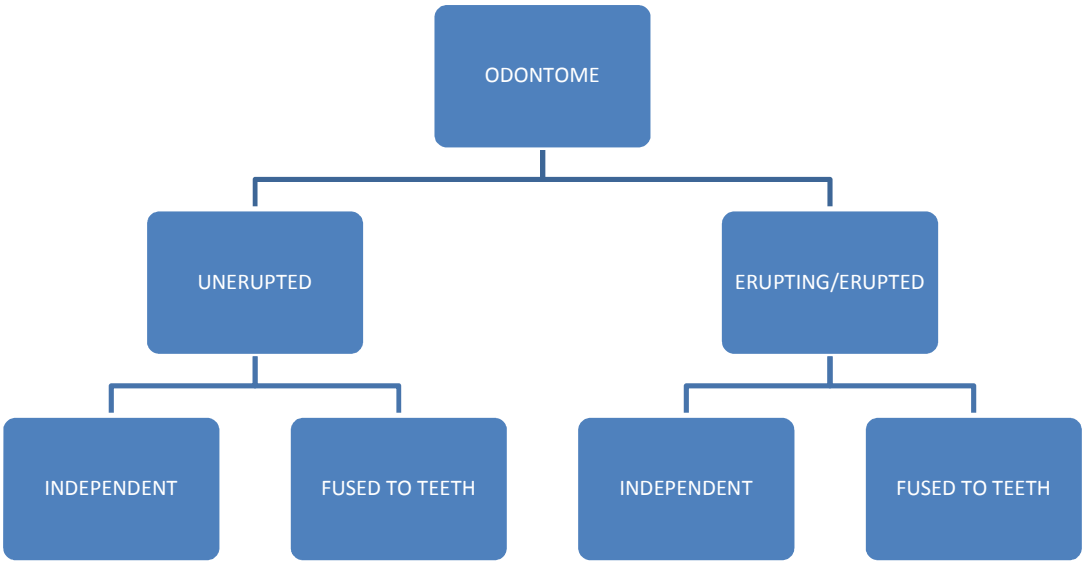

Fig. 7. Shekar's classification of odontome

Etiologies of odontome formation are numerous. Odontomas have been associated with trauma during primary dentition, as well as with inflammatory and infectious processes, hereditary anomalies (Gardner syndrome, Hermann's syndrome). Odontoblastic hyperactivity and alterations in the genetic components responsible for controlling dental development [2]. In either case, a mutation in the epithelial cells of the persistent lamina or of the tooth germ itself may change the inherent capacity of the odontogenic epithelium necessary for dentin formation leading to composite odontoma [11].

5. CONCLUSION

Odontomas have pulp tissue, which encompass the human odontoma-derived mesenchymal cells (HODCs). HODCs differentiated and regenerated into calcified hard tissues in an invivo study. HODCs represented unique odontogenic progenitors that readily commit to formation of dental hard tissues [12].

If odontomes are not infected or have undergone any cystic changes, they do not cause any disfigurement or hinder the path of tooth eruption. These odontomes can be used as the stem cell reservoir for formation of new dental hard tissues.

CONSENT AND ETHICAL APPROVAL

Consent was obtained from patient's parents and Ethical approval was obtained from institutional review board.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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