ABSTRACT

Odontomas are the most common type of odontogenic tumors and generally they are asymptomatic. Frequently, it may interfere with the eruption of the teeth. This is a case report of a compound composite odontoma in a 10-year-old girl, which results in failure of eruption of the permanent upper right central incisor while the contralateral tooth had erupted. A calcified mass was seen in the radiograph and was provisionally diagnosed as odontoma following which the odontoma was enucleated. Routine follow-up was done for more than a year and no recurrence was seen. This case report indicates that early diagnosis and management ensures better prognosis.

Keywords: Compound odontoma, Odontogenic tumor, Delayed tooth eruption.


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INTRODUCTION

Odontomas are considered to be developmental anomalies resulting from the growth of completely differentiated from the growth of completely differentiated epithelial and mesenchymal cells that give rise to ameloblast and odontoblast. Odontoma is also known a composite odontoma benign tumor of epithelial and mesenchymal origin which exhibit complete dental tissue differentiation.

It’s probably hamartomatous malformations of the normal or supernumerary odontogenic structures. Odontomas are usually asymptomatic and most commonly in association with unerupted teeth and as small solitary and symptomless lesion found on routine radiographic examination.

Paul Broca was the first person who used the term odontoma in 1867. He defined the term odontoma as ‘tumor formed by the overgrowth of transitory and complete dental tissues’. Odontomas has been broadly classified by WHO as follows:

- Complex odontoma: A malformation in which all dental tissues are well formed but occurring in less orderly pattern.
- Compound odontoma: Malformations in which all dental tissues are well-arranged in a more orderly pattern than in the complex odontoma, such that lesion consists of more teeth like structures.

The lesion composed of more than one type of tissue for this reason has been called composite odontoma, so accordingly we have:

- Complex composite odontoma
- Compound composite odontoma

In the past, complex classifications have been devised to include such developmental anomalies as follows:
- Dilated
- Invaginated
- Geminated odontomas.

The etiology of odontoma is unknown. It has been suggested that local trauma and local infection may lead to the production of such a lesion. Hitchin suggested that odontomas are either inherited or are due to a mutant gene or interference, possibly postnatal, with the genetic control of tooth development. On the other hand, Levy has reported the experimental production of this lesion in rat by traumatic injury.

Although the etiology of this malformation is not known, some evidence does show that there is genetic basis for both complex and compound composite odontomas. Heredity is a possible factor and persistent lamina could be the hidden inherited developmental anomaly. The mystery of the cytogenic changes in tooth development and how these changes are controlled by DNA molecules in nuclei, remains unsolved and much research is still to be done.

CASE REPORT

A 10-year-old girl reported to the Department of Oral Medicine and Radiology, Ragas Dental College and Hospital, Chennai, with a chief complaint of unerupted right permanent central incisor since 3 years while the contralateral teeth had already erupted. The family and medical histories were insignificant. Her general medical history was noncontributory. She was taking no medications. She had not attained menarche. She was moderately built, well nourished. There were no signs of anemia, jaundice, there was no significant lymphadenopathy. There was no history of trauma to the face or mouth.

Extraoral examination revealed no facial asymmetry.

Intraoral examination revealed a mixed dentition period, except for the presence of right maxillary permanent central incisor, displaced right permanent maxillary lateral incisor and retained primary right maxillary lateral incisor. No inflammatory signs were noted in gingival and alveolar bone but a slight alveolar bulge appeared on the buccal surface. On palpation, inspector findings were confirmed. Pulpation
over the bulging spot suggested erupting tooth. Palatal aspect of 11, 12, 21 and 22 was normal. There was no regional lymphadenopathy, no anesthesia or paresthesia over the distribution of anterior and middle superior alveolar nerve (Fig. 1).

Intraoral periapical and occlusal radiographs were taken. The intraoral periapical radiographs shows an irregular radiopaque mass impeding the eruption of 11 (Fig. 2). The occlusal radiograph confirms the findings in the periapical radiograph showing an irregular radiopaque mass in 11 region, thereby obstructing its eruption (Fig. 3).

Results of routine blood and urine investigations were normal.

On the basis of clinical and radiographic findings, it was provisionally diagnosed as compound composite odontoma which prevented the eruption of the central incisor. Clark’s radiographic technique revealed the presence of radiopaque mass in the labial region of the upper right central incisor.

Under local anesthesia, surgical removal was done. A total of 1.8 ml of 2% lidocaine with 1:1,00,000 epinephrine was used for local anesthesia. A mucoperiosteal flap on the labial surface from the right maxillary central incisor to left permanent lateral incisor was reflected.

The layer of the bone overlying the labial surface was removed and the calcified mass was exposed. The calcified mass was removed without disturbing the underlying tooth and all the excised tissues were placed in 10% formalin and submitted for histopathological examination. Curettage was done in the area and the area was debrided of any remnants.

Since, the lateral primary root was exposed during the procedure, it was extracted in order to ensure that no denticles remained; radiographs were taken before closure of the flap. After hemostasis, the area was irrigated with saline solution and the mucoperiosteal flap was sutured back in position by 4.0 black silk sutures. Healing was uneventful and on the 7th day after the surgery, the sutures were removed. Patient has been followed up for more than a year and the permanent right central incisor was observed to move down along the path of eruption without any evidence of recurrence of the bony mass. Patient was advised a review appointment once in 3 months.

- To assess the eruption of unerupted tooth 11.
- To examine for the recurrence of odontoma.

The protocol that is followed was clinical and radiographic examination every 6 months and clinical examination alone in the other visits. Macroscopically the specimen was one piece of hard tissue measuring about 1 cm. The decalcified section showed dentin in cross-section and longitudinal sections. It consists of multiple structures resembling small single rooted teeth contained in a loose fibrous matrix. Pulp tissues may be seen is the tooth like structures. These findings were suggestive of compound composite odontoma (Fig. 4).

On the 12th month review, it was seen that the tooth 11 had one-half of root formation and there was a significant change in its position even though it had not erupted into the oral cavity. So the patient was put for monthly review.

**DISCUSSION**

Odontomas are common odontogenic lesions, generally asymptomatic, benign lesions and are composed of mixed tissue of odontogenic origin. Odontomas of all types comprise approximately 22% of odontogenic tumors of jaws. There is no gender predilection and an odontoma can occur at any age but most commonly occurs in the second decade of life. Of all 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 79%. Interestingly, both types of odontomas occurred more frequently on the right side of the jaw than on the left (compound 62%, complex 68%).

In the absence of proven facts related to the etiology, classification must be made on a morphological process concerned in the production of a supernumerary tooth. There are three main types of compound composite odontoma.

- Denticular type—composed of two or more separate denticles, each having a crown and a root or epithelial sheath of hertwig with a distribution of dental hard tissues comparable to that found in a tooth.
- Particulate type—composed of two or more separate masses or particles bearing no macroscopic resemblance to a tooth and consisting of hard dental tissues abnormally arranged.
- Denticulo-particulate type—in this type denticles and conglomerate masses or particles are present side by side. Literature suggested that odontoma once enucleated usually does not recur but in young children a close monitoring is necessary. Early removal of the cause of eruption disturbances is important in the developing dental arch. In addition, a careful follow-up review of the case both clinically and radiographically to assess the eruption of the unerupted or impacted teeth is essential. Sometimes, an interdisciplinary approach may be necessary, if the root formation of the unerupted tooth completes before eruption as the eruptive power is greatly diminished once root formation is completed. As was demonstrated by this report, early diagnosis and treatment of odontoma ensures better prognosis.

The majority of unerupted teeth are seen in the permanent dentition and are relatively common in early mixed dentition. Unerupted primary teeth are uncommon and unerupted primary cuspid is very rare. A review of literature reveals that the incidence of unerupted primary molars is low and that unerupted primary anterior teeth are usually the maxillary incisors.

The reasons of impacted or unerupted primary incisors were malformed teeth, dense scar tissue covering the crown, compound odontoma and ankylosis. Odontomas associated with primary teeth are very rare and only five cases have been related to impacted primary teeth. Brunet et al reported an impaction of a primary maxillary cuspid and an incisor by an odontoma. Othman reported delayed eruption of maxillary primary cuspid associated with a compound odontoma.

Radiographic aspects of odontoma are characteristic. The complex odontoma appears as an irregular mass of calcified material surrounded by a thin radiolucent area with smooth periphery and the compound type shows calcified structures resembling teeth in the center of a well-defined radiolucent lesion. A periodontal and pericoronal space characteristic of unerupted teeth is seen around each tooth. A developing odontoma may be discovered by routine radiography, but sometimes may cause difficulty in identification due to lack of calcification.

The histological examination often shows the presence of enamel matrix, dentin, pulp tissue, and cementum hat
can, but need not exhibit normal relationship. Compound odontomas are formed by tooth like structures which resemble pulp tissue in the central portion surrounded by a dentin shell and partially covered by enamel. Connective tissue capsule surrounding an odontoma is similar to the follicle that covers a normal tooth.\(^5\)

A tooth like appearance of the radiopaque structures within a well-defined lesion leads to easy recognition of a compound odontoma. It differs from cement-ossifying fibromas by their tendency to associate with unerupted molar teeth and because they usually are more radiopaque than cement-ossifying fibromas. Periapical cemental dysplasia may resemble odontomas but lesions are usually multiple and centered on the periapical region of teeth. The periphery of cemental dysplasia usually has a wider uneven sclerotic border, whereas odontomas have a well-defined cortical border and usually the soft tissue capsule is more uniform and better defined with odontomas than in cemental dysplasia.\(^9\)

Ameloblastic fibro-odontomas and odontoameloblastomas show a great resemblance to common odontomas, especially in the radiographic examination. Several authors believe that ameloblastic fibro-odontomas are an immature form of complex odontoma.\(^5\) Therefore, it has been suggested that all specimens should be sent to an oral pathologist for microscopic examination. Besides, proper patient care should include careful clinical and radiographical follow-up.\(^4\)

Hisatomi et al reported that, the impacted tooth tended to erupt regardless of the degree of root formation after extirpation of the odontoma interfering with tooth eruption, although some teeth showed infraversion and/or crowding.\(^5\) The odontogenic lesions result from growth of epithelial and mesenchymal cells, exhibiting complete histogenic differentiation into functional ameloblasts and odontoblasts. The treatment for odontomas is surgical excision with osseous recontouring when required. Recurrences are uncommon. If detected at earlier stages, interceptive treatment can be provided effectively enhancing esthetics functions and structural balance in developing dentition.\(^2,5\) Literature suggested that odontoma once enucleated usually does not recur but in young children a close monitoring is necessary. Early removal of the cause of eruption disturbances is important in the developing dental arch. In addition, a careful follow-up review of the case both clinically and radiographically to assess the eruption of the unerupted or impacted teeth is essential.\(^4\)

**CONCLUSION**

Earlier detection and removal of a compound odontoma associated with an impacted tooth might have contributed to the favorable results for establishing acceptable occlusion.

**REFERENCES**


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