

CASE REPORT

Compound Odontoma impacting maxillary central incisors in a 9 year old patient

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Introduction

An Odontoma is a mixed-tissue benign lesion of odontogenic origin exhibiting complete dental tissue differentiation.¹ Constituting 22% of all odontogenic tumors, they lack proliferation potential. Rather than true neoplasms, odontomas are probably a hamartomatous malformation of functional ameloblasts and odontoblasts consisting of enamel, dentin, cementum, and pulp.¹ Paul Broca was the first person to use the term “odontoma” in 1867. He defined the term odontoma as “tumors formed by the overgrowth of transitory or complete dental tissues.”¹

The etiology of the odontoma is unknown. However, Hitchin suggested that odontomas are either inherited or are due to a mutant gene or interference, perhaps postnatal, with the genetic control of tooth development. Heredity is

A B S T R A C T

Normal timely eruption of the teeth is one of the factors which contribute to the development of a harmonious occlusion. Delayed eruption or mal-positioning of teeth can be due to many factors. Out of these, odontomas are one of the most frequently reported etiology causing delay in tooth eruption. This case report presents the case of a nine year old girl with complex composite odontoma hampering the eruption of the left maxillary incisors.

Key Words: *Compound Odontoma, Impacted tooth*

a possible factor, and persistent lamina could be the hidden inherited developmental anomaly.² On the other hand, Levy² has reported experimentally produced odontoma in rats by inflicting traumatic injury. According

to the latest classification of the World Health Organization (WHO,2005), two types of odontomas can be found: complex odontomas and compound odontomas – the latter being twice as common as the former. Complex odontomas are amorphous conglomerates of hard tissue, unrecognizable as dental tissues and having predilection for the posterior jaws (59%) and lastly the premolar area (7%), whereas compound odontomas still has three separate dental tissues (enamel, dentin and cementum) and are usually located in the anterior sector of the maxilla (61%), over the crowns of unerupted teeth, or between the roots of erupted teeth. Interestingly, both types of odontoma occurred more frequently on the right side of the jaw than on the left (compound 62%, complex 68%).^{3,4} Compound odontomas are usually unilocular and contain multiple radiopaque, miniature tooth-like structures known as denticles. There are three main types of compound odontoma. Denticular type - composed of two or more separate denticles, each having a crown and a root or Hertwig epithelial root sheath with a distribution of dental hard tissues comparable to that found in a tooth. Particulate type - constitute 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 - denticles and conglomerate masses or particles are present side by side.⁵ There is no gender predilection and an odontoma can occur at any age but most commonly occurs in the second decade of life.⁶

Most odontomas are asymptomatic, but their presence could be occasionally revealed by associated signs and symptoms. Hidalgo-Sánchez et al, in an extensive meta-analysis of a large sample of reported cases, observed the most frequent clinical manifestations observed were the retention of permanent teeth (55.4%) followed by swelling (14%), persistence of primary teeth in the mouth (12.7%, agenesis of permanent teeth (7.2%), pain (4%), infection or inflammation (3.3%), mal-positioned teeth (1.1%) and other unspecified manifestations (2.3%).⁷ These can potentially leading to an aesthetically unsatisfactory dental appearance with features of spacing, labial or palatal displacement of the permanent tooth.⁸ This could also be associated with functional impairment and emotional disturbance in the individual.⁹ This case report presents a case of impacted maxillary central incisors due to compound odontoma.

Case Report

A 9-year-old, healthy female patient reported to the Department of Pedodontics, MES Dental College, Perinthalmanna, Kerala, with the chief complaint of un-erupted upper right front tooth. Her medical history was not significant. No history of trauma to face or mouth was recalled. Extraoral examination was non-contributory. Intraoral examination revealed unerupted 11, 12 without any swelling or inflammation of the mucosa whereas the contra-lateral tooth had already erupted. Periapical radiographic evaluation of the upper anterior segment revealed the presence of multiple irregular masses of calcified tooth-

like structures juxtaposed between the root of the maxillary right primary lateral incisor and the crown of an un-erupted permanent maxillary right central and lateral incisor (Fig 1).

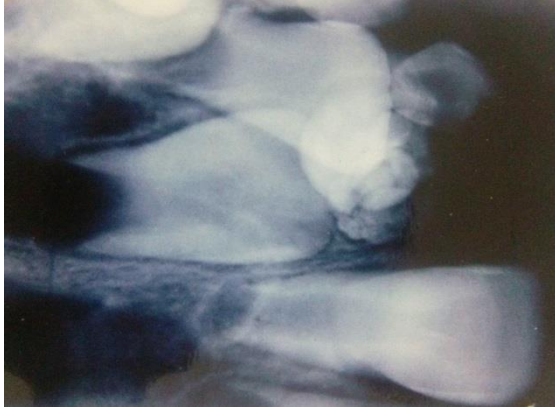


Fig1 . Pre-operative Radiograph

Based on these findings diagnosis of compound composite odontoma was made and surgical removal of odontoma with full thickness flap was planned. After surgical exposure, partial visibility of denticular masses (Fig2)



Fig 2 Post-operative Radiograph

was observed which were removed with partial osteotomy of overlying bone for visibility, accessibility and enhancement of future eruption of impacted tooth. After removal of denticular masses clinical visibility of central incisors was confirmed and sutures were

placed. As the possibility of spontaneous eruption of permanent incisors after removal of odontoma cannot be ruled out, after consulting parents it was decided to keep the patient under periodic observation for next 12 months, before any active orthodontic intervention.

Discussion

Diagnosis of odontoma is usually established on occasion of routine radiological studies (panoramic and/or intraoral X-rays), or on evaluating the cause of delayed tooth eruption. Clinically, three types of odontomas are recognized in the literature: intra-osseous (central), extra-osseous (peripheral) and erupted odontoma. The intra-osseous odontoma occurs inside the bone and may erupt into the oral cavity. The extra-osseous odontoma occurs in the soft tissue.¹⁰ The radiographic findings of odontomas depend upon their stage of development and degree of mineralization. The first stage is characterized by radiolucency due to lack of calcification. Partial calcification is observed in the intermediate stage, while in the third stage a fully formed odontoma appears as a radiopaque lesion, sometimes with a radiating structure; but in the developing stages it shows as a well-defined radiolucent lesion in which there is progressive deposition of radiopaque material, as calcification of the dental tissues proceeds. The mature lesion is surrounded by a narrow radiolucent zone analogous to the pericoronal space around unerupted teeth.^{11,12}

According to Kaugars, diagnosis of odontoma

is apparently associated with age, location and the percentage of odontomas in the molar region gradually increases with each successive decade of life. Those lesions from incisor locations are diagnosed and treated at an earlier age than those from the canine or third molar regions.¹³ Differential radiologic diagnoses such as cemento-blastoma, osteoid osteoma or cemento ossifying fibroma can be ruled out clinically because these are not associated with impacted teeth.¹⁴

There is no general agreement on the best management approach for impacted teeth associated to odontomas. The treatment options comprise surgical extraction, fenestration and posterior orthodontic traction, or simple observation with periodic clinical and radiological controls, to evaluate the course of these teeth.¹⁵ In the present case, we advocated a more conservative approach of removal of the odontoma and its fibrous capsule, de-roofing of the bone overlying the un-erupted incisor and replacement of the flap back in position, followed by periodic recall observation for minimum period of one year without the need for orthodontic traction.¹⁶ This approach was probably attributable to the preserved eruptive capacity of developing root apex of impacted teeth in young patients as in the present case. Morning, in a study of 42 odontomas associated to impacted teeth, found 44% of these teeth to erupt spontaneously after removal of the odontoma.¹⁷ In another study it was reported that such impacted teeth tend to erupt, regardless of the degree of root formation after extirpation of the odontoma

interfering with tooth eruption, although some teeth show infra-version and/or crowding.¹⁸ A less conservative approach is advocated by others, with exposure of the un-erupted tooth at the time of surgery and placement of bonded attachment and ligature/e-chain for orthodontic traction, to facilitate rapid eruption of un-erupted incisor. This approach, however, may result in a poor gingival margin, inadequate gingival tissue attachment and a discrepancy of the gingival level between the exposed tooth and its neighbouring teeth.¹⁹ Considering these observations and young age of patient with developing root apex of impacted tooth our conservative approach in the present case seems justified. Literature suggested that odontoma once enucleated usually does not recur but in young children a close monitoring is necessary. An exceptional circumstance is spontaneous eruption of an odontoma into the oral cavity, i.e., exposure of the tumour through the oral mucosa. This situation can cause pain, inflammation of the adjacent soft tissues or infection associated with suppuration.²⁰

Conclusion

Odontomas are infrequently observed and are quite amenable to conservative management when detected. The compound odontomas are frequently associated with impaction or delayed eruption of incisors in the anterior maxillary segment and should be suspected in cases of delayed eruption and non-eruption of teeth. The early detection of these will reduce the possibility of development of malocclusion and/or pathological changes in the region odontomas are located. In this case the

compound odontoma was asymptomatic, and attention was only drawn to the lesion as a result of the investigation of the concern about the non-eruption of a maxillary right central incisor. After surgical treatment the maxillary right central incisor was not subjected to orthodontic traction and was left to erupt naturally.

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