

Case report:

A compound composite odontoma associated with unerupted permanent incisor

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Abstract

Odontomas are odontogenic benign tumors composed of dental tissue. Most of these lesions are asymptomatic and are often detected on routine radiographs. Morphologically odontomas can be classified as complex, when present as irregular masses containing different types of dental tissues, or as compound if there is superficial anatomic similarity to even rudimentary teeth – the denticles. A 16-year-old girl visited OMR department with complain of missing upper anterior tooth since 3-4 years. A panoramic radiograph showed impacted central incisor tooth with 6-7 well formed tooth like radiopacities having distinct radiodensity of enamel and dentin with radiolucent pulp surrounded by a radiolucent capsule. Superior displacement of the crown of impacted tooth with distally displaced Lateral incisor of the same side. The multiple tooth like structures were removed by surgery and patient was kept on a monthly follow up. Routine radiographic examination is important for early detection of silent lesions such as odontomas.

Key words : Odontogenic tumors, composite odontoma, compound composite odontome

Introduction

The term odontoma (or odontome) was originally used by Paul Broca in 1867^{1,2,3,4} who defined the term as “tumors formed by the overgrowth of transitory or complete dental tissues”.^{2,3,4} Presently this term is circumscribed to benign lesions of odontogenic origin and a mixed character composed of dental epithelial and mesenchymal cells in variable proportions and with different degrees of development and due to which they are regarded as composite odontomas.^{1,2,3} Due to their composition and behavior, odontomas can be regarded as hamartomas or malformations rather than true neoplasms.^{1,2,3,4} These malformations do not develop further once fully calcified but, like teeth, they may erupt into the mouth.^{1,3}

The etiology of odontoma is unknown, but it could be due to trauma (Levy³) during primary dentition, as well as to inflammatory and infectious processes, hereditary anomalies (Gardner’s syndrome, Hermann’s syndrome,) or due to a mutant gene (according to Hitchin³), odontoblastic hyperactivity, or alteration of the genetic components responsible for controlling dental development.^{1,2} According to the 2005 classification of the World Health Organization (WHO), two types of odontomas are acknowledged: (a) compound odontomas that usually are unilocular lesions containing multiple radiopaque, miniature tooth-like structures known as denticles; and (b) complex odontomas that consist of an irregular mass of hard and soft dental tissues. Compound odontomas are approximately

twice as common as complex Odontomas.^{1,2,3,4,5} Odontomas are usually asymptomatic, and they may be detected by chance on a routine radiograph (panoramic and/or intra-oral X-rays), or when they are large enough to cause a swelling of the jaw, often associated with delayed eruption or impaction of permanent teeth and retained primary teeth. In some occasional cases, pain, infection, regional adenopathies, alveolar bone expansion and tooth displacement may be present.^{1,2} Odontomas are mainly intraosseous lesions although location in gingival soft tissue has been reported. There are very few reports of odontomas associated with primary teeth in the literature. In general, odontomas occur more often in the permanent dentition. The lesions tend to be located between the roots of erupted teeth or between the deciduous and permanent teeth. Clinical signs suggestive of an odontoma include a retained deciduous tooth or an impacted permanent tooth. In general, odontomas are diagnosed in the second or third decades of life with no sex predilection. An increased prevalence of these tumors can be found in children and adolescents.^{1,2}

The complex odontomas are usually located in the premolar and molar region of both jaws, while compound odontomas commonly occur in the incisor canine region of the maxilla. Reports vary as to the frequency of odontoma in different population groups. In general, they constitute 22% of all odontogenic tumors of the jaws.^{1,3} Management usually consists of conservative surgical removal and the prognosis after treatment is favorable, with a very little possibility of recurrence.^{1,2,3} Care should be taken, however, not to harm adjacent teeth and permanent tooth germs, while follow-up is essential for evaluation of further development of the permanent dentition at the removal location.^{1,2,3} Ameloblastic fibroodontomas and ontoameloblastomas show a

great resemblance to common odontomas, especially in the radiographic examination. Therefore it has been suggested that all specimens be sent to an oral pathologist for microscopic examination.^{2,3} A case of compound composite odontome with impacted 11 was presented in 15 year old female patient.

Case report

A 16 years old female patient had come with chief complaint of missing upper anterior tooth since 3-4 years. She noticed that the upper front tooth did not erupt after the fall of milk tooth. No history of trauma associated. Past dental & medical history were insignificant. On intraoral examination 11 was missing whereas left central incisor had erupted in normal position palatal bulging was noted in 11 region. Size, shape, structure of teeth as well as occlusion is normal. No Attrition or mobility present. Buccal pit caries in 46 was seen. Plaque & calculus were present.

Prominence of tooth can be palpated in edentulous region over 11. No tenderness on percussion of any tooth was present. The tooth was clinically considered to be impacted and radiographs were then taken to confirm it. Intra oral periapical radiograph revealed impacted central incisor tooth with 6-7 well formed tooth like radiopacities having distinct radiodensity of enamel and dentin with radiolucent pulp. This whole structure was surrounded by a radiolucent capsule. Superior displacement of the crown of impacted tooth is seen which was also tilted towards the midline making it almost horizontal. Lateral incisor of the same side is also displaced distally. No root resorption of any tooth seen. Maxillary cross-sectional occlusal view and Orthopantomograph showed similar findings which looked like bag full of pebbles appearance. This seems to be attached to distal aspect of impacted 11 which is impacted. On the basis of above findings a provisional diagnosis

of compound composite odontome with impacted 11 was made and Calcifying epithelial odontogenic cyst, adenomatoid odontogenic tumour, complex

composite odontome were considered in differential diagnosis. The multiple tooth like structures were removed by surgery. (Figure 1)

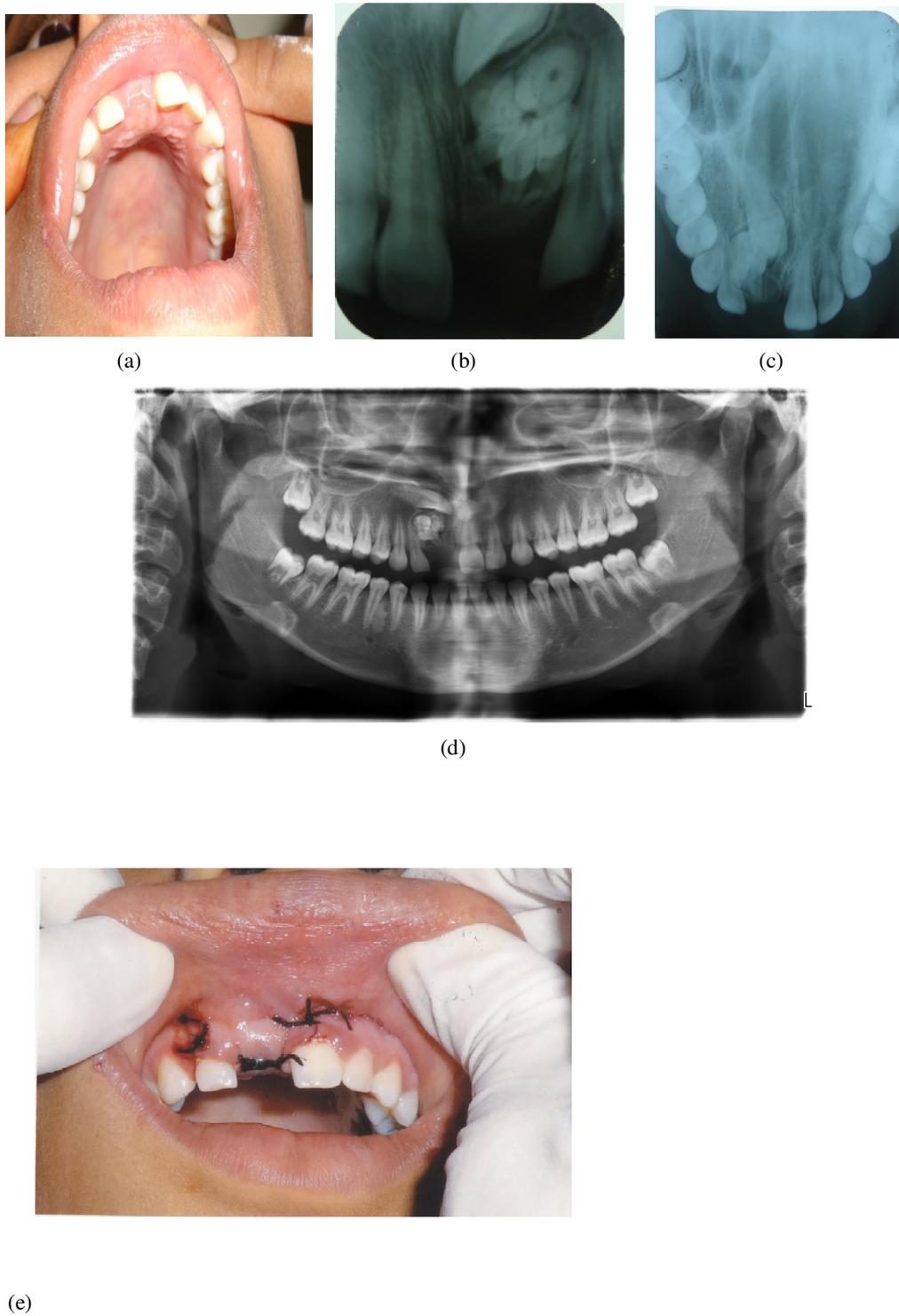


Figure 1 (a) Showing Intraoral photograph showing palatal swelling in relation to maxillary anterior region and missing maxillary right central incisor (b), (c), (d) show IOPA, occlusal and OPG showing multiple tooth like structures in relation to maxillary anterior region giving of bag full of pebbles appearance. (e) postoperative

Patient was then consulted for the orthodontic appliance placement for the guided eruption of impacted central incisor but since the tooth appeared to have ankylosed with the bone from its superior aspect a decision of a waiting period was made in order to ascertain whether the tooth can erupt on its own or not. Extraction of the tooth was not performed as patient was not willing. Patient was kept on a follow up of 1 year and for esthetic reasons prosthetic rehabilitation was done.

Discussion

Several case series have documented that the majority of all odontomas were diagnosed in the first two decades of life. Although they may be discovered at any age, less than 10% are found in patients over 40 years old. Some studies have reported a correlation between patient age and the type of odontoma involved – compound lesions being apparently more frequent in younger patients. Discovery often occurs due to radiographic investigation for the cause of a non-erupted permanent or retained primary tooth.¹ Our case was 16 year old female who reported with missing upper front tooth after exfoliation of milk tooth.

An impacted tooth is present in more than half of the cases. According to a study of 26 cases 80.7% had the impaction of permanent teeth associated. Most authors agree that these lesions effectively appear more often in the upper jaw, though some sources make no distinction between the two jaws.¹

In our case the odontoma was located in the upper jaw, which is in accordance with the first theory, also associated with an impacted permanent tooth

with history of over retained deciduous tooth. The reported tendency of odontomas to arise in the region of the incisors and canines is also confirmed in our case. Interestingly, both types of odontoma occurred more frequently on the right side of the jaw than on the left. Considerable controversy exists over gender distribution. While some studies consider odontomas to be more common in females than in males, others consider these lesions to be similarly distributed between both genders. On the contrary few authors found a male predilection.¹

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 alteration in the genetic components responsible for controlling dental development. In our case since family history, past history of trauma were negative and also patient was physically and mentally fit according to her age most likely possibility could be of odontoblastic hyperactivity leading to formation of multiple tooth like structures. In the absence of proven facts related to etiology, classification must be made on a morphological process concerned in the production of supernumerary tooth and a compound composite odontoma may be identical. But it is evident that there are three main types of compound composite odontomas according to Gravey et al.³

1. 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 tissue comparable to that found in a tooth.

2. 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.

3. Denticulo particulate type: Denticles and conglomerate masses or particles are present side by side.

In children, the impacted permanent teeth, depending on the age and on the tooth development, may be left to erupt spontaneously, or they may be guided to occlusion via orthodontic traction. In any case, follow-up is essential following odontoma excision. In our case Patient than underwent conservative surgery wherein the multiple tooth like structures were removed. Patient was then consulted for the orthodontic appliance placement for the guided eruption of impacted central incisor. The tooth appeared to have ankylosed with the bone from its superior aspect, thus a waiting period was given in order to ascertain whether the tooth can erupt on its own or not. Patient was kept on a follow up every month. For esthetic reasons prosthetic rehabilitation was done.

Here, the chances of eruption of the impacted tooth were minimal as tooth had completed the root formation, no lamina dura could be seen at the

superior aspect of the tooth raising the suspicion of ankylosis, and lastly the tooth due to displacement had become completely horizontal. Also considering the young age of the patient, reluctance of the patient for the same and far superior displacement of the tooth which made it in a close approximation with the nasal floor lend it unadvisable for extraction. Thus in our case the best possible treatment was to go for prosthetic rehabilitation of the tooth as well as to keep her on regular follow up to check for the development of a cyst or other pathology.

Conclusion

An odontome in relation to an impacted tooth at 2nd to 3rd decade is not uncommon and ideally when there are no hopes of eruption of tooth on its own it should be guided to occlusion via orthodontic traction. But the presented case was challenging since there were no chances of eruption of the tooth on its own and was possibly ankylosed to the bone thereby only conservative treatment was done leaving the impacted permanent incisor undisturbed and patient was followed up.

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