CASE REPORT

Surgical Removal of Odontoma: A Case Report

Mridula Goswami[1], Smriti Johar[2]

Abstract

Odontomas are the most common type of odontogenic tumors. During tooth development stages, any defect in the maturation phase of morphodifferentiation leads to such anomalies. Odontomas are benign, slow-growing, and non-aggressive clinically asymptomatic. This paper describes the case of complex odontoma. A 7-year-old male child reported an asymptomatic hard growth in the right anterior region of the mandible associated with impacted deciduous canine. Radiograph revealed an amorphous mass of calcified material with a radiodensity similar to the tooth structure, with anatomically no resemblance to the tooth, surrounded by a thin radiolucent rim, suggestive of odontoma. Under local anesthesia, access to the lesion was achieved via intraoral approach and surgical excision to enable the eruption of retained permanent canine to establish harmony in the development of dental arch.

Keywords: Anomalies, Benign, Complex odontoma, Odontogenic tumor.

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Introduction

The term odontoma was coined by Paul Broca in 1867, for tumors formed by the overgrowth of complete or transient dental tissues.[1] Odontomas are considered to be developmental anomalies resulting from the growth of completely differentiated epithelial and mesenchymal cells that give rise to ameloblasts and odontoblasts. These tumors are mainly composed of enamel and dentin but cement and pulp tissue can also be present in variable amounts.[2] During the development of the tumor, if the enamel and dentin are deposited in such a pattern that the resulting structure is anatomically similar to normal teeth, in such cases, the lesion is classified as a compound odontoma. However, when the enamel and dentin form a simple irregular mass occurring and the resultant structure shows no anatomically no similarity, it is classified as a complex odontoma.[3] The World Health Organization, in 2005 categorized odontomas as calcified irregular mass not resembling teeth, as complex odontome and calcified mass bearing resemblance to the teeth, as compound odontome.[4] These odontogenic tumors can be found in both the dental arches, and accounts for 22% of all odontogenic tumors of the jaw. About 60% of complex odontomas occur in women. The compound odontomas are most commonly located in the anterior region of the maxilla, whereas the complex odontomas are most commonly located in the posterior areas, especially in the mandible.[5,6] Complex odontomas are painless, slow growing, and expanding lesion. Compound odontomas are painless, aggressive lesions, with a limited growth potential as compared to the complex odontoma. They are usually asymptomatic, slow growing, and rarely exceed the tooth size, but when large it can cause cortical bone expansion.[2,3] Odontomas are usually diagnosed during the first two decades of life.[7] According to a study conducted on 396 cases odontomas are usually diagnosed between 11 years and 15 years of age. However, this case is reported in a 7-year-old child, which is a rare prevalence. Odontomas are usually found in association with unerupted teeth.[8] The most frequent teeth impacted by odontomas are canines and upper central incisors followed by third molars. These malformations are generally intraosseous, but they rarely show eruption into the oral cavity.[9]

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Case Description

A 7-year-old male child reported to the Department of Pedodontics and Preventive Dentistry, MAIDS, New Delhi, with a complaint of swelling in the lower right anterior segment for 6 months. Intraoral examination revealed swelling on the alveolar ridge distal to the right mandibular lateral incisor (Fig. 1), associated with missing deciduous canine (Fig. 2). The mass was non-tender and hard in consistency on palpation with buccal cortical bone expansion. Radiographic examination using orthopantomogram revealed a well-demarcated radio-opaque lesion, with radiodensity as that of a tooth distal to the right mandibular lateral incisor and mesial to maxillary first deciduous molar, coronal to the impacted deciduous canine (Fig. 3). Based on the above finding, a provisional diagnosis of complex odontoma was made.

The lesion was surgically removed under local anesthesia, without any premedication. An incision was given extending from the midbuccal aspect of 41 to the midbuccal aspect of 84. After full-thickness mucoperiosteal flap was raised, bony protuberance was observed. Superficial bone was removed (Fig. 4) followed by the removal of mass of ill-formed calcified structure (Fig. 5) along with the impacted deciduous canine, with elevator without damage to adjacent teeth. The flap was approximated and sutured.

Histopathological examination of the decalcified hard tissue mass revealed an ill-organized structure of enamel, dentin, cementum, and pulp tissue (Fig. 6), with larger quantities of dentin

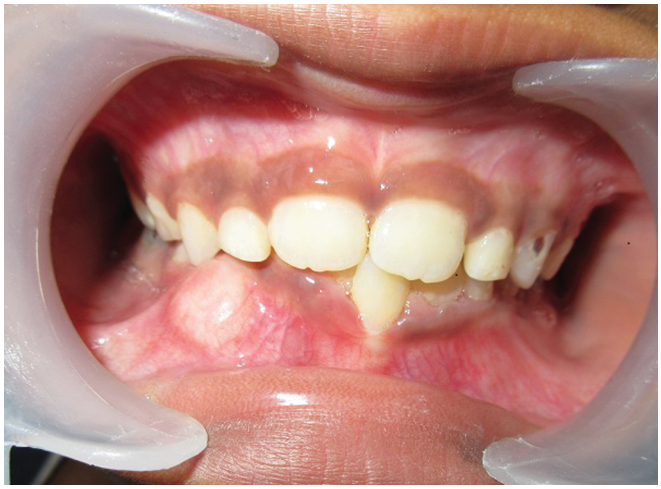

Fig. 1: Intraoral swelling in the lower right anterior segment

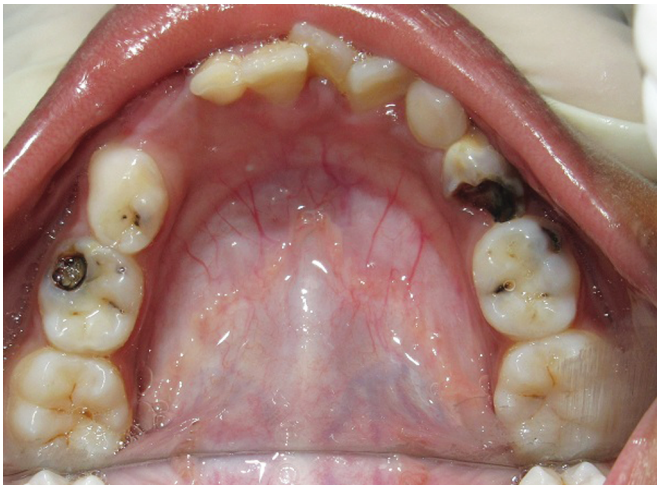

Fig. 2: Missing deciduous canine

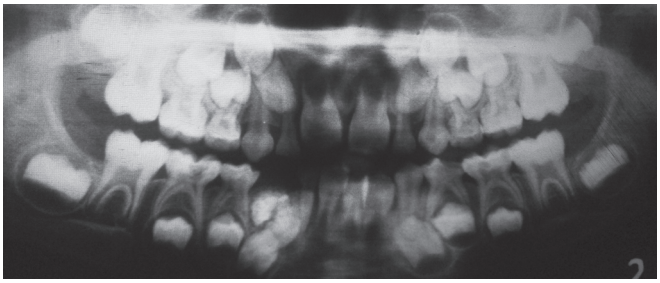

Fig. 3: Radiograph showing the calcified mass

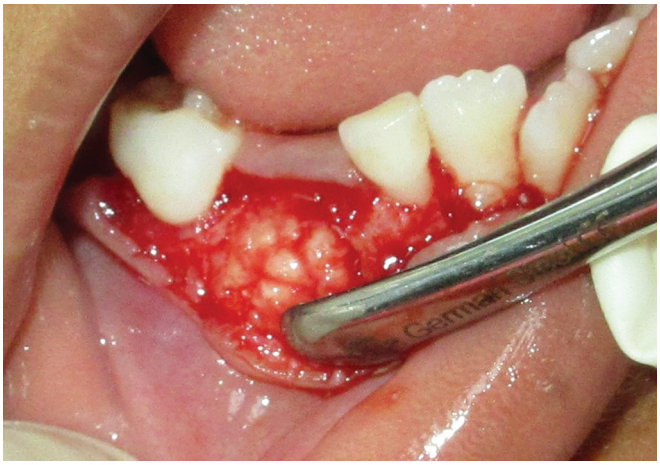

Fig. 4: Surgical exposure of the calcified mass

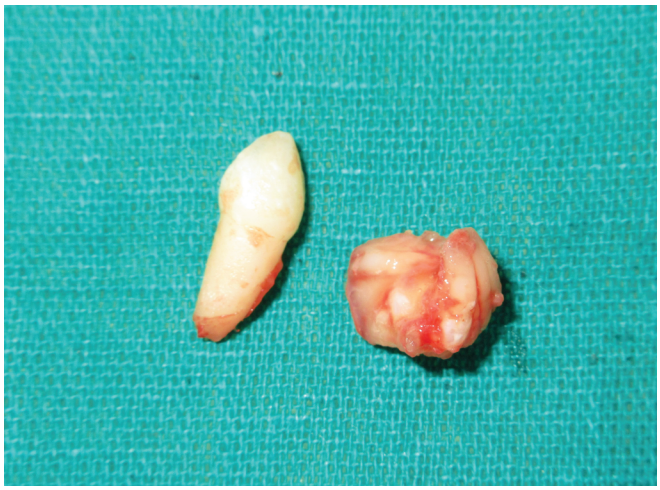

Fig. 5: Ill-defined calcified mass diagnosed as odontoma and impacted canine

and cementum, suggestive of complex odontoma. The ground section shows areas of cementum and dentin (Fig. 7). Based on the histopathological examination and the appearance of the gross specimen A diagnosis of complex odontoma was made which is a rare entity in a young child.

Discussion

Odontomas are common odontogenic lesions, which are usually asymptomatic, and are seldom diagnosed before the second decade of life. They frequently cause impaction or lead to a delayed eruption of teeth.[2,3] Possible etiology may be a mutant gene, odontoblastic hyperactivity, inflammatory and infectious processes, and trauma to the primary dentition. Some hereditary anomalies can also show odontomas such as Gardner's syndrome and Hermann's syndrome.[5] During the developmental stages, if a portion of dental lamina persists results formation of a compound or complex odontoma.[6]

In this pediatric case, the odontoma was found on the mandibular anterior region, which is the most common location according to many researchers.[5,6] The odontoma produced a small swelling of the cortical bone. Radiographically, the lesion appeared as a radiodense, irregular calcified mass surrounded by a narrow radiolucent area, with no resemblance to dental structures.[10]

Various differential diagnoses of odontoma are ossifying fibroma, cementoblastoma, and ameloblastic fibro-odontoma. The nature of radio-opacity of ossifying fibroma is a bit more mottled than odontomas and is typically not as radio-opaque.[11] Cementoblastomas are always fused to the roots of the associated teeth.[12] Ameloblastic fibro-odontoma exhibits a significant radiolucent component rather than the thin radiolucent halo observed in odontoma.[13]

Radiographically, the complex odontoma shows an irregular calcified mass surrounded by a narrow radiolucent halo, which

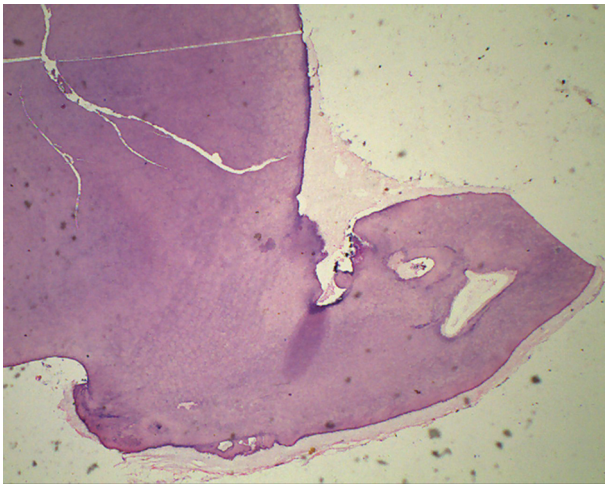

Fig. 6: Ill-organized structure of enamel, dentin, cementum, and pulp tissue with pulp stones

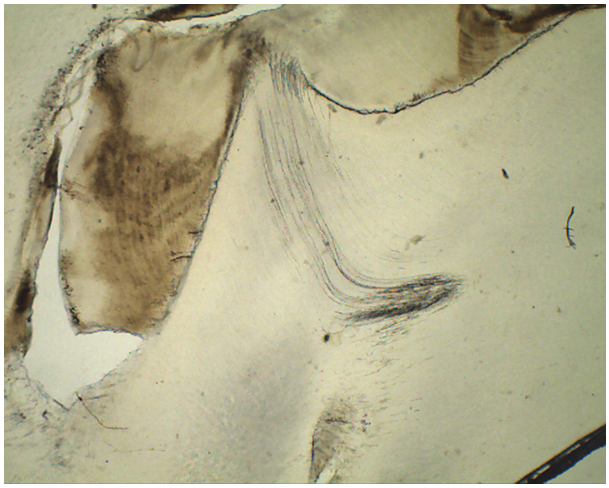

Fig. 7: Ground section showing areas of dentin and cementum

shows no resemblance to the dental structures.[6] Radiographic aspects of compound odontoma show a well-defined calcified structure that resembles the dental structures.[9]

Conclusion

Odontomas are treated by conservative surgical removal. The removal of an odontoma is a simple surgical procedure as it is a capsulated tumor, but special care may be taken for complex odontoma as it may show relapse.[14,15]

Diagnosis of odontoma at an early age and its surgical excision may prevent eruption disturbances. A careful follow-up of the case, implementing preventive and interceptive orthodontics, if necessary, prevents future malocclusion.

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