



(CASE REPORT)



Management of compound odontoma associated with unerupted maxillary permanent incisors: A case report

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Abstract

Introduction: Odontomas, the most common odontogenic tumors, result from developmental abnormalities where epithelial and mesenchymal cells grow, forming functional ameloblasts and odontoblasts. Typically asymptomatic, they are often associated with unerupted or impacted teeth. Odontomas are categorized as complex or compound, based on their tissue composition and structure. The preferred treatment is conservative surgical excision, followed by histopathological analysis for confirmation.

Case History: A 13-year-old female patient came to the Pedodontic Clinic at RSGM Airlangga University with the chief complaint of unerupted upper front teeth. Intraoral examination revealed no facial asymmetry. Intraoral examination revealed the absence of maxillary right central and lateral incisors with an asymptomatic swelling and no inflammation of the overlying mucosa. The patient had no history of systemic diseases such as heart disease or blood disorders, and there were no known allergies to food or medications.

Discussion: Odontomas are generally asymptomatic and associated with unerupted or impacted teeth or retention of primary teeth. Removal of obstructions like odontome results in a spontaneous eruption of the impacted tooth. Another method currently being undertaken involves surgically exposing unerupted teeth and placing bonded attachment along with ligatures/e-chains for orthodontic traction so that it will speedup eruption process.

Conclusion: The odontoma must be removed so that it will not disrupt dental growth and development, especially tooth eruption.

Keywords: Unerupted maxillary incisors; Compound odontoma; Surgical removal; Odontogenic Tumor; Human and health

1. Introduction

Odontomas are the most common odontogenic tumors. Odontomas may form as a result of altered proliferation of the dental epithelial and mesenchymal cells, leading to the formation of functional ameloblasts and odontoblasts.¹ These tumors are basically formed of enamel and dentin but they can also have variables amounts of cement and pulp tissue. During the development, enamel and dentin can be deposited in such a way that the resulting structures show an anatomic similarity to normal teeth, in which case the lesion is classified as a compound odontoma. However, when the dental tissues form a simple irregular mass occurring in a disorderly pattern, it is described as a complex odontoma.²

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It is usually asymptomatic and generally associated with unerupted or impacted teeth or retention of primary teeth.³ In some cases, symptoms such as pain, infection, regional lymph node enlargement, expansion of the alveolar bone, and displacement of teeth may occur. The recommended treatment for an odontoma is conservative surgical excision, with care taken to remove the surrounding soft tissue, with a favorable prognosis post-treatment and minimal chance of recurrence.⁴ Removal of obstructions like odontome results in a spontaneous eruption of the impacted tooth.

These odontomas can be found anywhere in the dental arches. Compound odontomas are predominantly found in the anterior region of the maxilla, while complex odontomas are predominantly found in the posterior regions, particularly in the mandible.⁵ Several factors have been associated with the pathogenesis of odontomas. It may be caused by trauma to a child's primary dentition, odontoblast hyperactivity, and alterations in the genetic components responsible for controlling dental development. Odontomas can also be found in syndromes such as basal cell nevus syndrome, Gardner syndrome, familial colonic adenomatosis, Tangier disease, or Hermann syndrome.^{6,7}

2. Case history

A 13-year-old female patient came to the Pedodontic Clinic at RSGM Airlangga University with the chief complaint of unerupted upper front teeth. Intraoral examination revealed no facial asymmetry. Intraoral examination revealed the absence of maxillary right central and lateral incisors with an asymptomatic swelling and no inflammation of the overlying mucosa [Fig 1]. The patient had no history of systemic diseases such as heart disease or blood disorders, and there were no known allergies to food or medications.



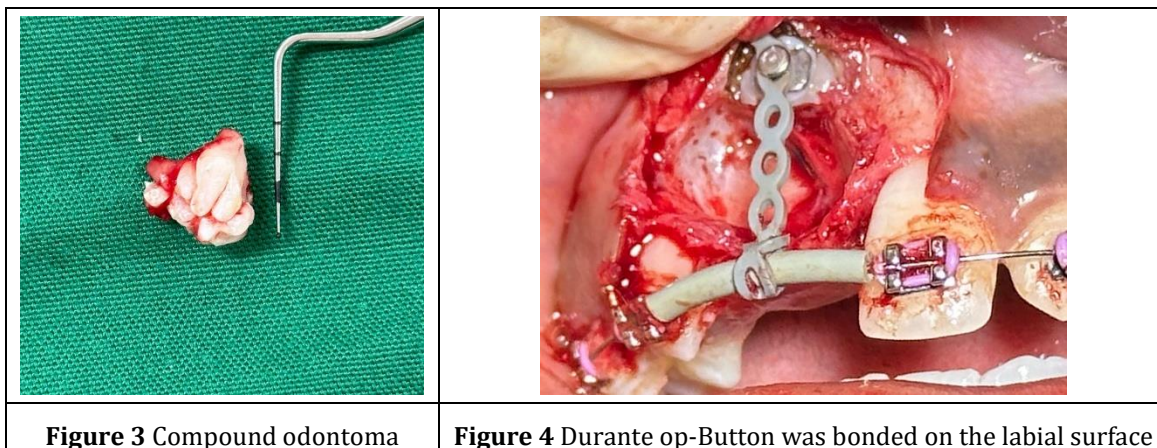
Figure 1 Clinical appearance



Figure 2 Panoramic radiograph

Panoramic radiograph was obtained, which revealed the presence of single radiopaque mass in the region of 11-12 [Fig 2]. Cone-beam computed tomography (CBCT) was recommended to obtain a more precise diagnosis. The CBCT examination revealed a corticated well-defined ovoid mixed radiolucent-radiopaque lesion on the coronal of tooth 11 with multiple radiopaque mass resembling denticles (small teeth) in the middle of the lesion. Excision of the odontoma under local anesthesia and orthodontic treatment for alignment of the impacted incisor was planned. Fixed orthodontic appliance was inserted one week before the surgery.

Perioral structures were prepared using betadine. Local anesthesia was administered. A trapezoid mucoperiosteal flap extending from right canine to left central incisor was reflected. After full thickness mucoperiosteal flap was raised, then a straight slow handpiece with a round tungsten carbide bur was used to create a window in the bone under normal saline irrigation. Superficial bone was removed followed by the removal of mass of calcified structure. The calcified mass was removed without disturbing the underlying tooth and sent for histopathological examination [Fig 3]. Due to the impacted permanent tooth displaying a fully developed root, minimal spontaneous eruption could be expected. Thus, the decision was made to place an orthodontic appliance to guide the proper positioning of the impacted tooth. During the surgical procedure, a button was bonded to the labial surface of the incisor and placed the power chain [Fig 4]. The flap was approximated and sutured. Periodontal dressing was used to protect the surgical site and reduce the discomfort.



After 1 week of follow-up, the periodontal dressing was removed and the healing of surgical site was uneventful. After 4 month follow up, through the clinical appearance and periapical x-ray, the tooth started eruption [Fig 5]. A periodic follow up was planned to assess the eruption and to examine the recurrence of the odontoma. The histological findings confirmed the diagnosis of a compound odontoma.

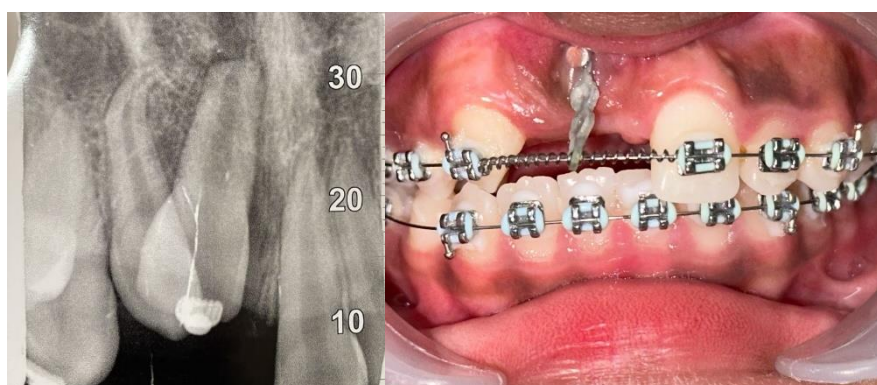


Figure 5 Periapical x-ray and clinical appearance after 4 month follow up

3. Discussion

Odontomas are relatively common odontogenic lesions, generally asymptomatic and it is usually diagnosed in young adults during regular radiological examination performed to assess the reason of missing or mispositioned tooth in permanent dentition. Odontomas may not always show significant clinical appearance, but they may disrupt tooth development, including the eruption of permanent teeth, as observed in this case.

In accordance with the World Health Organization (WHO) categorization from 2005, there are three categories for odontomes : Complex odontoma which tooth tissues that have been calcified and are simply grouped in an uneven mass without any morphological resemblance to primitive teeth. Compound odontoma consist of all odontogenic tissues arranged in an organized arrangement, producing numerous structures resembling teeth but differing morphologically from typical teeth. Ameloblastic fibro-odontome contains variable amounts of dental tissue that has been calcified and tissue that resembles dental papillae, similar to an ameloblastic fibroma. The ameloblastic fibro-odontome is regarded as a developing form of the complicated type odontoma At the clinical level, compound odontoma can often be associated with anterior teeth misalignment and tooth eruption disorders, with possible impaction and delayed tooth eruption.^{8,9}

Most studies have found that odontomas occur more often in the maxillary arch; however, some studies reported no differences between the two jaws¹⁰. In our case, the odontoma was located in the mandibular arch. Compound odontomas most commonly occur in the incisor-canine region⁵, which was also seen in this case. Odontomas are generally asymptomatic ³ as observed in this case. The differential diagnosis should include odontoameloblastoma, ameloblastic fibroma and ameloblastic fibroodontoma, which may occur in association with syndromes, such as

Gardner syndrome, Hermann syndrome, and basal cell nevus syndrome¹⁰. In this case, there was no history of trauma and associated syndrome to the patient.

The treatment of choice for a compound odontomas is surgical removal, followed by histopathological analysis to confirm the diagnosis¹¹. Removal of obstructions like odontome results in a spontaneous eruption of the impacted tooth. Another method currently being undertaken involves surgically exposing unerupted teeth and placing bonded attachment along with ligatures/e-chains for orthodontic traction so that it will speedup eruption process⁵, as done in this case Histopathological examination of the sample is valuable for confirming the precise diagnosis of an odontoma lesion. In this case, an oral pathologist confirmed the diagnosis as a compound odontoma.

4. Conclusion

The odontoma must be removed so that it will not disrupt dental growth and development, especially tooth eruption The treatment of choice for odontoma is surgical exposure and kept under observation to assess the eruption and to examine the recurrence of the odontoma.

Compliance with ethical standards

Acknowledgement

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this document.

Statement of informed consent

Informed consent was obtained from patients included in the study.

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