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Original article

Management of Compound Odontoma Associated with an Impacted Incisor in A Female Patient: A Case Report

Ahmed Abdesalam, Malek Alfurjani, Marwa Tamzini*

Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Zawia, Libya.
Corresponding email. *m.tamzini@zu.edu.ly*

Abstract
Odontomas are the most common odontogenic lesions, generally regarded as developmental anomalies (hamartomas) rather than true neoplasms. Although often asymptomatic, they can interfere with the eruption of permanent teeth, particularly in children. This case report describes a compound odontoma in a 10-year-old girl that obstructed the eruption of the maxillary left central incisor. Clinical examination revealed a retained primary tooth and absence of its permanent successor, while radiographic imaging showed a well-defined radiopaque mass in the eruption pathway. Surgical removal of the odontoma was performed under local anesthesia. Due to limited resources, the patient's mother declined orthodontic treatment, opting instead to wait for spontaneous eruption. However, after two years without eruption, a second surgical procedure was carried out to expose the tooth and initiate orthodontic traction. This case underscores the importance of early diagnosis, parental counseling, and interdisciplinary collaboration in managing odontoma-related eruption disturbances in the pediatric population.
Keywords: *Compound Odontoma; Impaction; Surgical Exposure; Orthodontic Traction.*

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Introduction

According to the 2005 World Health Organization, odontomas are classified as odontogenic benign tumors of young age [1]. They can be considered hamartomas or malformations rather than true neoplasms, due to their composition and behavior. Histologically, odontomas are made of different dental tissues, including enamel, dentin, cementum, and, in some cases, pulp tissue [2]. Based on radiographical features, the World Health Organization (WHO) describes two types of odontomas: compound and complex [3]. Compound odontomas contain numerous tooth-like structures known as denticles [1], while complex odontomas consist of unremarkable masses of dental tissues [3]. On radiographic examination, compound odontomas appear as well-demarcated lesions with a radiolucent halo containing radiodense areas, which represent small denticles separated by fibrous septa. In contrast, complex odontomas show radiopaque elements appearing as irregular and disorderly masses with no similarity to dental structures [1].

Epidemiologically, odontomas are the most common of all odontogenic tumors, and according to different sources in the literature, they account for 22–67% of all maxillary tumors [2]. They are most commonly seen in the first two decades of life, with peak incidence between the ages of 8 and 14 years, without sex predilection. However, some researchers suggest a higher prevalence in males (59%) compared to females (41%) [3].

The etiology of odontomas is unknown, but trauma and infection at the site of the lesion may create ideal conditions for their development [4]. In all cases, surgical removal represents the best choice of treatment, with a favorable prognosis and a very low incidence of recurrence [1]. Here, we report a case of a compound odontoma in a female patient. This case report aims to present a compound odontoma in the permanent dentition and to describe its surgical management and follow-up over three years.

Case report

A 10-year-old female patient was referred to Alrazi dental clinic by her general dentist for the extraction of an upper left primary central incisor and its associated odontoma, which was discovered during the investigation into the cause of tooth retention. The young female had no complaints of pain or previous infection, but she was concerned about the delayed exfoliation of the upper left deciduous incisor, while the adjacent teeth had already erupted as permanent. The mother reported that when the child was 3 years old, she fell and hit her mouth against a door.

Clinical examination revealed over retention of the upper left primary central incisor (Figure 1) and an increased volume of the alveolar ridge just palatal to the root of the upper left primary central incisor.

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Figure 1. Intraoral view showing overretention of the primary upper left central incisor

Intraoral radiographs revealed the presence of multiple small radiopaque tooth-like structures (odontoma-like lesion) in the palatal region of the primary incisor root. These structures caused over retention of the upper primary incisor and disrupted the eruption of the corresponding permanent incisor. As shown in Figure 2. The permanent incisor had a fully formed root and was tilted in a long axis, as seen in the radiograph, resulting in minimal spontaneous eruption potential. It was decided that an orthodontic device would need to be placed to guide the impacted tooth into its proper position. However, due to financial circumstances, the mother requested to postpone the orthodontic treatment for a later time.

Figure 2. Periapical radiograph showing the presence of a compound odontoma blocking the eruption of the permanent upper left central incisor

The medical history of the patient does not reveal any significant medical issues, and the patient was very cooperative during the examination. Therefore, the patient was treated under local anesthesia without any premedication. After the infiltration of local anesthesia (2% lignocaine, 1:80,000 adrenaline) in the area of the left maxillary central incisor, a palatal mucoperiosteal flap was raised (Figure 3).

Figure* 3*. Palatal mucoperiosteal flap

After the extraction of tooth 61, surgical excision of the odontoma was performed without disturbing the unerupted tooth. Several calcified small structures resembling teeth of various sizes and shapes were removed along with the follicle, as anticipated from the occlusal radiograph (Figure 4).

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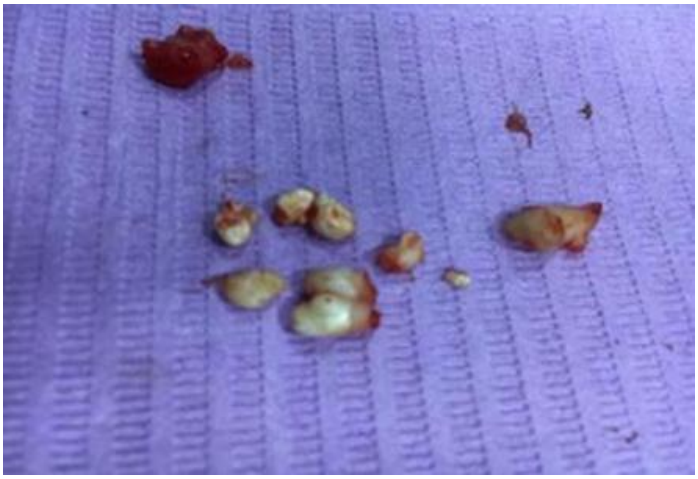

Figure 4. ***mineralized structures with a tooth-like appearance were removed from the lesion***

After thorough irrigation of the enucleated site, the flap was repositioned and sutured with 3-0 Vicryl. The patient's behavior during the procedure was good. Postoperative oral and written instructions were given to the patient's mother.

Figure 5. ***Periapical radiograph after 5 months***

The patient was referred to an orthodontist, and the second surgery was performed after 2 years. An oral surgeon, assisted by an orthodontist, carried out the surgery. After infiltration of local anesthesia (2% lidocaine, 1:80,000 adrenaline) in the area of the left maxillary central incisor, a buccal mucoperiosteal flap was raised to expose the bone. This was followed by careful bone removal to expose the labial surface of the tooth (Figure 8), after which a bracket was bonded to the labial surface of the crown (Figure 9). After healing of the soft tissues, traction of the unerupted maxillary left central incisor was initiated.

Figure 6. ***Intraoral view before orthodontic treatment***

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Figure 7. OPG before orthodontic treatment

Figure 8. Surgical exposure of impacted central incisor

Figure 9. Bracket bonded to the crown of the impacted tooth

Discussion

Most odontomas are asymptomatic; however, in some cases, pain, swelling, bony expansion, delayed eruption, displacement of teeth, and suppuration may be present. Regional lymphadenopathy has also been

reported in severe cases of infection [5]. In the current case, the patient had no complaints of pain or previous infection, but there was a deviation in the path of eruption and delayed eruption or impaction of the adjacent permanent tooth.

Odontomas are often discovered during radiographic investigations conducted to determine the cause of a non-erupted permanent or retained primary tooth. An impacted tooth is found in more than half of the cases. It was reported that 80.7% of odontomas in 26 cases were associated with impaction of permanent teeth [6]. In the present case, the lesion was associated with an impacted maxillary permanent incisor. When an intraoral radiograph was taken, multiple small radiopaque tooth-like structures could be seen in the palatal region of the primary incisor tooth.

Studies have shown that compound odontomas more frequently appear in the anterior part of the upper jaw [7], which is in agreement with our case. Most odontoma cases are diagnosed following the failure of eruption of permanent teeth or the retention of a primary tooth. Generally, treatment includes a combination of surgical and orthodontic approaches [8]. In this case, a surgical procedure was adopted, since intraoral examination revealed overretention of the upper left primary incisor and an increased volume of the alveolar ridge just palatal to the root of the upper left primary central incisor.

In children, impacted permanent teeth—depending on the age and stage of tooth development—may be left to erupt spontaneously, guided into position via orthodontic traction, or surgically extracted if neither of the first two options is feasible [6]. In our case, we initially opted for the first approach; however, the patient's mother requested to postpone the treatment due to financial reasons. Odontomas have a very high success rate following surgical removal, with a very low probability of recurrence [9]. After two years following the surgical removal of the odontoma, the impacted tooth failed to erupt. Therefore, surgical exposure of the impacted permanent tooth along with orthodontic traction was performed.

Conclusion

Compound odontomas occur in young children during the early stages of dental development and may cause disturbances in the eruption of permanent teeth. Therefore, in case of retention of one of the primary teeth, early diagnosis, thorough radiographic examination, and proper management are essential to prevent later complications and ensure a better prognosis.

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