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CASE REPORT

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Complex Odontoma Associated with Impacted Teeth and Supernumerary Tooth

Vjosa Hamiti Krasniqi[1,2], Bylbyl Reçica[1*], Ferjall Perjuci[1,2], Jehon Ahmedi[1]

[1]*Department of Oral Surgery, Faculty of Medicine, University of Prishtina, Prishtina, Kosovo*
[2]*UBT - Higher Education Institution, Prishtina, Kosovo*

Abstract

This study aimed to present the case of supernumerary teeth and complex odontoma. It highlights the debate about odontomas, the most common benign tumors of odontogenic origin. Due to their hamartomatous characteristics, they are usually asymptomatic but can cause impaction of one or more teeth. Microscopically, they comprise all the tissue types found in a developed tooth. Here, we report a case of complex odontoma associated with impacted teeth and a supernumerary tooth, followed by bony expansion and failure of eruption in a 15-year-old boy.**(International Journal of Biomedicine. 2024;14(1):162-164.)**

Keywords: supernumerary tooth • odontoma • tooth retention

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Introduction

The term odontoma was first introduced by Paul Broca in 1867 to describe the odontogenic tumor formed by the overgrowth of transitory or complete dental tissues. Although WHO classifies odontomas as benign odontogenic tumors,[1] odontomas are clinically considered to be tumor-like formations (hamartomas of dental tissues) or developmental anomalies rather than true odontogenic neoplasms.[2] The etiology of odontomas is not known, but there are several theories, such as local trauma during the time of primary teeth, inflammatory and infectious processes, hereditary anomalies, and changes in the genetic components responsible for the roots of the teeth.

Two main types of odontoma have been described: (a) complex odontoma, an amorphous and disorderly pattern of calcified dental tissues, and (b) compound odontoma, multiple miniature or rudimentary teeth.[3-7] The compound odontoma has a predisposition toward the anterior maxilla (61%), whereas only 34% of complex odontomas occur in this area; the complex type shows a preference for the posterior jaws (59%) and lastly, the premolar area (7%). Both variants are made of all dental tissues, such as enamel, dentin, cementum, and pulp.[7,8] It is worth mentioning, and interesting, that both types of odontomas occur more often on the right side of the jaw than on the left.

The reported cases of odontoma are mainly during the second and third decades of life.[9-12] Sometimes, odontoma can cause disturbances in the eruption of teeth, such as impaction, delay in eruption, or retention of primary teeth. In general, odontomas appear more often in permanent dentition, and are rarely associated with primary teeth.[13,14]

At X-ray evaluation, compound odontomas appear as well-delimited lesions with a radiotransparent halo containing radiodense zones, representing small denticles separated by fibrous septae. In contrast, in the complex types, the radiodense elements appear as irregular and disorderly masses with no similarity to dental structures.[2,15] These lesions are often associated with impacted permanent teeth.[16,17] A complex odontoma may be confused radiographically with an osteoma or other highly calcified bone lesion.[18]

Conventional radiography cannot always demonstrate the details of difference. Histopathologic evaluation confirms the diagnosis, especially in cases of complex odontoma, which may be confused with an osteoma or another highly

***Corresponding author**: Bylbyl Reçica, Department of Oral Surgery, Faculty of Medicine, University of Prishtina, Prishtina, Kosovo. E-mail: bardhyli59@gmail.com*

calcified bone lesion on radiographs.[19,20] A differential diagnosis is usually made by comparing the degree of morpho-differentiation and histodifferentiation of the dental hard tissue. A complex odontoma is presented by all dental tissues in an organized form or disorderly pattern, by the formation of calcified enamel and dentin in an abnormal arrangement because of a lack of morphodifferentiation. In a compound odontoma, all dental tissues are represented in a more orderly pattern so that the lesion consists of many tooth-like structures or denticles, anomalous miniature teeth, composed of enamel, dentin, cementum, and pulp.

In all cases, surgical removal represents the best therapeutic option, and the prognosis after treatment is very favorable, with very low incidence of recurrence.[21-24]

Case Presentation

This case report presents a 15-year-old male who came to the Oral Surgery Clinic in 2019 with an unerupted right maxillary canine and first maxillary premolar, followed by swelling in that region and persistent first primary premolar (Figure 1). His medical anamnesis was clear. There was no history of trauma to the orofacial region. There was no family history of unerupted teeth or hypodontia. Panoramic radiography of the upper canine region showed irregular radiopaque mass near the crown of an unerupted canine and supernumerary tooth (Figure.2). The first diagnostic hypothesis was a complex odontoma, and the patient was scheduled for surgical removal of the lesion.

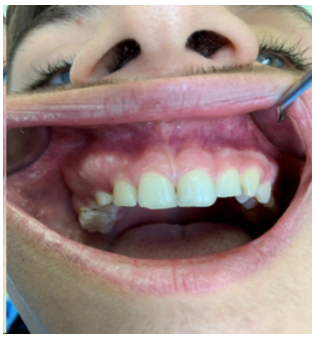

Fig. 1. *Intraoral examination: Frontal view.*

Fig. 2. *Panoramic X-ray.*

The operation was performed under local anesthesia. The buccal mucoperiosteal flap was raised in the upper canine region. The thin overlying bone was removed with a bur, and then the odontoma was removed, as well as a supernumerary tooth (Figures 3 and 4). The surgical wound was closed primarily with 3/0 Vicryl sutures (Figure 5). The right primary canine and first premolar were unerupted. The chance of re-eruption of the impacted primary canine was auspicious. The postoperative period was uneventful.

Fig. 3. *Mucoperiosteal flap reflection and bone removal.*

Fig. 4. *Surgical removal of complex odontoma a supernumerary tooth.*

Histologic sections revealed dental tissues, consisting of immature dentin, enamel, enamel matrix, and cementum, intermingled with pulp-like tissues in a few areas. These structures were haphazardly arranged. Histopathologic examination confirmed the diagnosis of complex odontoma.

The patient was followed up regularly to see the state of eruption. At the end of the 2-year follow-up visit, the canine primary tooth and first premolar were close to the dental arch (Figure 6).

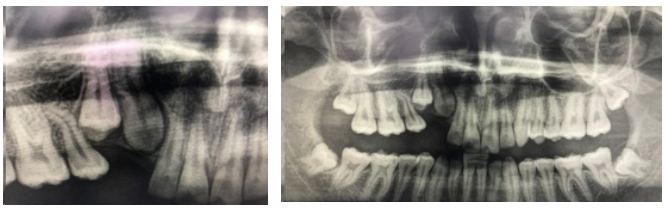

Fig. 6. *The canine primary tooth and first premolar are close to the dental arch.*

Discussion

Odontomas are considered relatively common odontogenic lesions. These lesions are asymptomatic and rarely diagnosed before the second decade of life. Their diagnosis is usually made during the routine check-up, where we notice the absence of a tooth in the dental arch, and radiographs reveal an odontoma with or without an impacted permanent tooth.[18] They frequently cause the impaction or lead to a delayed eruption of teeth. Some hereditary anomalies can also show odontomas, such as Gardner syndrome and Hermann's syndrome.[25] If a portion of dental lamina persists during the developmental stages, it results in the formation of a compound or complex odontoma.[25] If odontomas are removed at an early stage without damaging the underlying tooth germ, the eruption of impacted teeth can be expected spontaneously or after orthodontic traction.[11,23,24] In this case, the chance of eruption of the impacted primary canine was auspicious.

In conclusion, odontomas are treated with conservative surgical removal. Diagnosis of odontoma at an early age and its surgical excision can prevent eruption disorders and the formation of malocclusion.

Ethical Considerations

Publication of the report was approved by the Ethics Committee at the University of Prishtina. The patient's legal guardians gave informed consent for publishing the case report, including images and other clinical information, except individual details identifying the patient.

Competing Interests

The authors declare that they have no competing interests.

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