CASE REPORT

Erupted compound odontome

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ABSTRACT
Odontomas are considered to be hamartomas rather than a true neoplasm. They consist chiefly of enamel and dentin, with variable amount of pulp and cementum when fully developed. They are generally asymptomatic and are included under the benign calcified odontogenic tumors. They are usually discovered on routine radiographic examination. Eruption of an odontoma in the oral cavity is rare. Peripheral compound odontomas arise extraosseously and have a tendency to exfoliate. In this article we are reporting a case of a 15-year-old girl with peripheral compound odontoma, with a single rudimentary tooth-like structure in the mandibular right second molar region, which is about to be exfoliated. Its eruption in the oral cavity and location in the mandibular posterior region is associated with aplasia of the mandibular right second molar, making it an interesting case for reporting.
Key words: Compound odontome, mandible, erupted

INTRODUCTION

Odontomas are hamartomas of aborted tooth formation,[1] which account for 22% of the odontogenic tumors.[2,3] Compound odontomas manifest as a regularly shaped, solitary or multiple small tooth-like denticles,[4] where all dental tissues are represented in a structural and more orderly pattern. A complex odontoma presents as an amorphous conglomeration of dental tissues consisting of enamel, dentin, cementum, pulp, and enamel organ. Peripheral compound odontomas are rare, arise extraosseously, and have the tendency to exfoliate.[5]

The majority of compound odontoma cases (74.3%), are diagnosed before the age of 20 years,[5] during routine radiographic examination, occurring commonly in the anterior maxillary region, without any gender bias.

CASE REPORT

A 15-year-old, apparently healthy female patient reported to the Department of Orthodontics, with the chief complaint of forwardly placed front teeth. Her medical history was not significant. During the intraoral examination, it was found that 47 was missing and in place of that a small tooth-like structure was present [Figure 1]. The lesion was asymptomatic, with no signs of infection or ulceration of the surrounding mucosa. It was slightly mobile on palpation.

Orthophantomogram revealed a missing 47 and a single small tooth-like radiopaque structure with a single root above the alveolar bone level in place of the missing second molar. A radiolucent zone was seen around the root-like structure [Figure 2, Figure 3].

This structure was extracted and it showed no morphological resemblance to any tooth of the normal series. This measured about 6 mm mesiodistally and 8 mm apicoincisally [Figure 4]. After extraction the specimen was sent for histopathological examination, which confirmed it as a compound odontoma having enamel, dentin, pulp chamber, and cementum in the same order of arrangement as that of a normal tooth [Figure 5].

DISCUSSION

The odontomas are benign tumors containing all the various component tissues of the teeth. They are the most common odontogenic tumors constituting 22% of all odontogenic tumors of the jaws.[2,3]

The World Health Organization defines odontomas as being of two types: complex odontomas, a malformation in which all dental tissues are present, but arranged in a more or less disorderly pattern; and compound odontomas, a malformation in which all the dental tissues are represented in a pattern that is more orderly than that of the complex type. Enamel, dentin cementum, and pulp are arranged as they would be in a normal tooth.[6]

Odontomas are classified as intraosseous and extraosseous odontomas. The intraosseous odontomas occur inside the bone and may erupt into the oral cavity (erupted odontoma). The extraosseous or peripheral odontomas are odontomas occurring in the soft tissue covering the tooth bearing portions

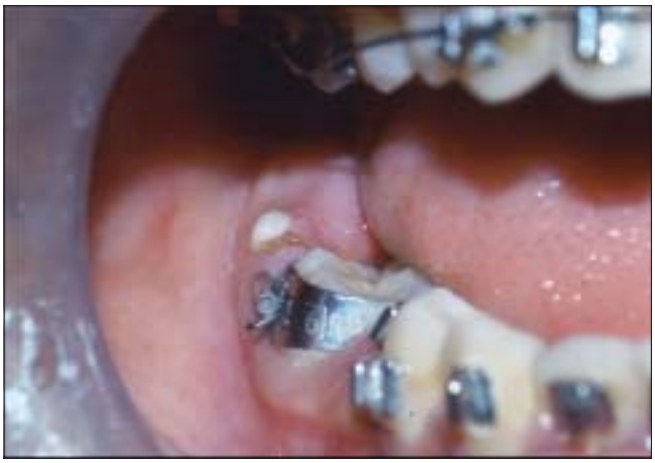

Figure 1: Erupted odontoma in the region of 47

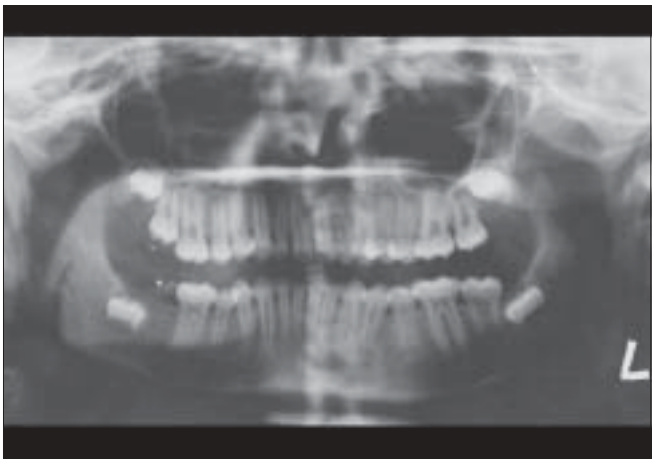

Figure 2: Orthophantomogram showing the odontome

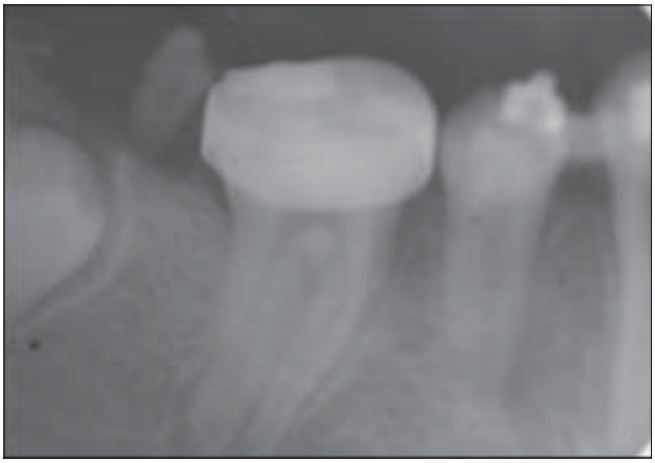

Figure 3: Erupted position of the odontoma seen after 18 months

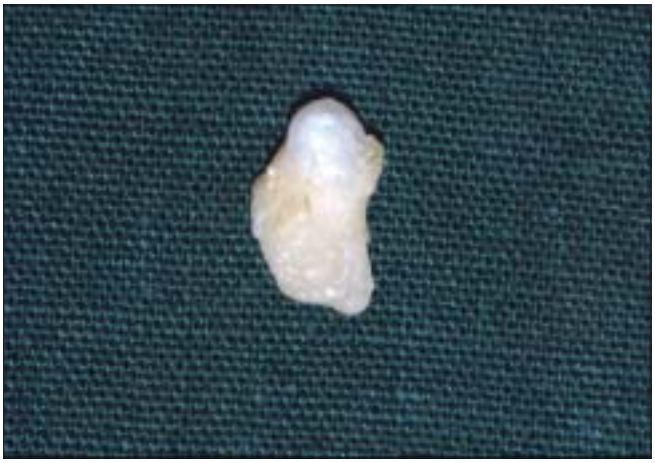

Figure 4: Odontoma after extraction

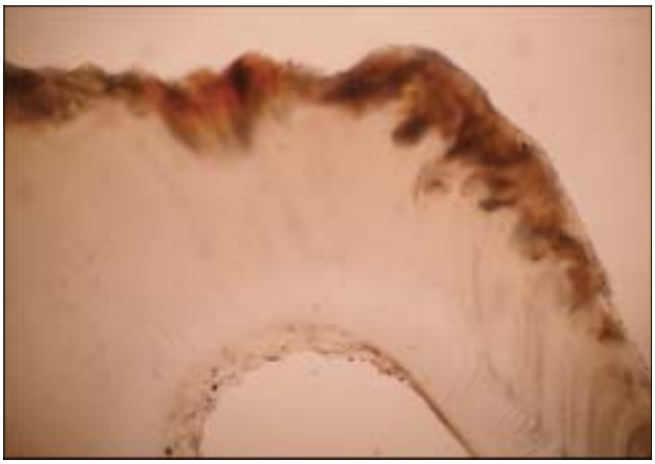

Figure 5: Ground section showing enamel, dentin, and pulp

of the jaws,[7] having a tendency to exfoliate.[5] The incidence of peripheral odontomas is rare. The review of literature reveals that 16 cases of erupted odontomas have been reported in which eight were compound odontomas.[6]

The etiology of odontomas has been attributed to various pathological conditions like local trauma, inflammatory and/or infectious process, hereditary anomalies (Gardners syndrome, Hermanns syndrome), odontoblastic hyperactivity, and alterations in the genetic component responsible for controlling dental development.[7] The persistence of a portion of lamina may be an important factor in the etiology of a compound or complex odontoma and either of this may occur instead of a tooth.[7]

Peripheral odontogenic hamartoma's (POH) histogenetic source may arise from soft tissue remnants of dental lamina. Gingival rests of Serres, seem to retain the ability to pursue epithelial-mesenchymal interactions that could lead to odontoma formation.[8]

Since odontomas are seen in hereditary anomalies like Gardners syndrome and Hermanns syndrome, alteration of the genetic components might be responsible for odontoma formation. Hitchin suggested that the odontomas are inherited through a mutant gene or interference, possibly postnatal, with genetic control of tooth development.[7]

Papagerakis *et al*.[9] stated that the differentiation of normal and tumor odontogenic cells is accompanied by the expression of some common molecules. The gene products present in some mesenchymal cells were also seen in the odontogenic tumor epithelium. The data may be related to a tumor-specific overexpression of the corresponding genes transcribed at an undetectable level during normal development and / or to an epithelial-mesenchymal transition proposed to occur during normal root formation. A plausible explanation for the result is that odontogenic tumor epithelial cells are recapitulating genetic programs expressed during normal odontogenesis, but the tumor cells demonstrate abnormal expression patterns for these genes.[9]

In 70% of odontomas, pathological anomalies are observed in relation to the neighboring teeth such as devitalization, malformation, aplasia, malposition, and impacted teeth[10] (unerupted teeth), where, as in the present case, the odontoma was associated with aplasia of 47.

Radiographically, odontomas present as well-defined, radio-opacities situated in the bone, but with a density that is greater than bone and equal to or greater than that of a tooth. A radiolucent halo, typically surrounded by a thin sclerotic line, surrounds the radio-opacity. The radiolucent zone is the connective tissue capsule similar to that of the normal tooth follicle.[7] In this case it was seen radiographically as a dense radiopaque structure outside the jaw bone, with clear external margins, presenting normal organization of dental tissues (like enamel, dentin, pulp, and cementum). A radiolucent zone was noticed around the root. Histopathological examination showed the presence of enamel, dentin, cementum, as well as pulp chamber in the normal order. Both radiographic and histopathological findings confirmed the diagnosis as compound odontoma.

Commonly compound odontoma (intraosseous) is located between the apex of a primary tooth and the crown of a permanent tooth preventing the eruption of the latter.[5] However, in the present case, the odontoma was located outside the jaw bone, in the soft tissue covering the tooth bearing portion of the jaw. It presented an area of bone resorption from the periosteal surface, which looked like a concave radiolucent zone.[3] This odontome had the tendency to exfoliate as it had erupted into the oral cavity and was also mobile and about to be exfoliated.[5]

Although microscopic and radiographic examinations confirm the diagnosis of compound odontoma, this case needs to be differentiated from supplemental and supernumerary teeth.

Supplemental tooth is the one, which resembles a normal tooth both morphologically and histologically and is located adjacent to the normal tooth, whereas, a supernumerary tooth is a tooth-like structure of variable size and shape. However, histologically it represents the normal organization of the tooth structure, like enamel, dentin, pulp, and cementum, including the periodontal ligament.

In this case odontoma was associated with aplasia of 47, whereas, the supplemental tooth and the supernumerary tooth were seen along with the normal series of teeth.

The odontoma may arise from the remnants of dental lamina, gingival rest of serres. Immunocytochemical investigations have indicated that a pattern of cellular activity involving reduced dental epithelium is associated with tooth eruption.

This epithelial signaling could explain the remarkable consistency of eruption times, as it is likely that the dental epithelium is programmed as a part of its functional life cycle. However in the case of odontomas erupting into the oral cavity the mechanism behind the eruption times remains uncertain, as some odontomas erupt at a very young age and others at an older age.[7]

In the present case, after examining the two radiographs taken at an interval of 18 months [Figure 2, Figure 3]**,** it can be said that the erupting third molar beneath the odontoma might have been the cause of eruption and mobility of this odontoma.

TREATMENT

In the present case, since it was an erupted odontoma attached only to the soft tissue and being mobile on palpation, it was extracted. Since these odontomas are not adherent to the bone they can be easily enucleated and curetted. In cases of larger odontomas where there are multiple components, it is necessary to take intraoperative radiographs to ensure that all the calcified masses have been removed. The healing of these lesions may take 9–12 months in young patients.[1]

Since enucleation and curettage of odontomas are curative, chances of recurrence is less. If any portion of the lesion is left unexcised such residual odontomas may remain unchanged throughout. Very rarely the wound may get infected after an incomplete removal, since the avascular odontoma portion acts like foreign body.[1]

CONCLUSION

A rare case of erupted compound odontoma that was about to be exfoliated has been reported. The presence of a single tooth-like structure in the region of 47, associated with a congenitally missing 47 is reported. The important feature found in this case was that the eruption time of this odontoma was approximately the same as that of the mandibular right second molar, which could be related to the aborted tooth formation.

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