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Compound odontoma associated with an unerupted mandibular primary lateral and located tooth in appropriate place with force eruption: A case report

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Abstract

Odontomas are henign tumors of odontogenic origin characterized by their slow growth that rarely occur in the primary dentition, the Compound odontoma is a lesion that is anatomically similar to a real tooth completely.

In this paper, a case of unerupted left mandibular primary lateral in a 12 years old girl due to the presence of a compound odontoma is presented and in a 2 years treatment with force eruption presented is located the lateral tooth in right position in the mouth.

Keywords: compound odontoma, force eruption

Introduction

Odontoma was first characterized as amorphous masses of calcified tissues in 1866. It was then investigated and named by Paul Broca in 1974 [5]. According to the World Health Organization classification, odontoma is classified into compound and complex odontomas [1, 2, 5]. It is also classified into peripheral, central, and erupted odontomas [5]. In fact, odontoma is one of the most prevalent benign odontogenic tumors originating from the developmental dental tissues and involves 22% of all odontogenic tumors [4]. The exact etiology of odontoma is unknown, but infection, trauma, family history, and genetic mutation have been known as its predisposing factors [3, 6]. Owing to their asymmetric nature, they are often observed in an impacted tooth in radiographic examinations [1, 6].

This tumor generally results in odontoblastic hyperactivity along with trauma in the primary dentition and inflammatory and infectious tissues; therefore, the response of genetic components is in the dental development direction [2, 6]. This tumor has no pain and is asymptomatic in most cases [3]. However, it is observed with swelling, pain, malocclusion, eruption disorders, lymphadenopathy, pathologic anomalies, over-retention of primary and permanent dentitions, occasional malposition of the adjacent teeth, and rare tissue exposure in the oral cavity [1, 4, 5]. Odontoma is mostly intraosseous and leads to clinical expansion in the jaw bones in very rare cases [1, 2].

The prevalence of compound odontoma is 9-37% and that of complex odontoma is 3-50%, with no differentiation between genders and occurring in the second decade of life [4, 5]. Their radiographic view is depicted as a noticeable radiopaque mass with multiple small calcified structures in the form of small teeth within a radiolucent capsulated space [3]. Due to their capsulated and non-aggressive nature, they are easily removed from the adjacent bone tissues [2, 3]. These tissues are irregular in the complex odontoma and are consistent with multiple denticles and natural dental tissues, including enamel, dentin, cementum, and pulp [2, 4, 5, 6]. The compound type is mostly found in the maxilla and the complex type is seen in both maxillary and mandibular molars and premolars [3].

Early diagnosis and management and multidisciplinary treatments to reduce the possible side effects as well as orthodontic treatment are suggested for this lesion [1, 3]. Conservative surgery is a treatment of choice and tumor relapse is often rare unless odontoma removal is done in the early stages of its development [2, 3].

Case report

The patient was a 12-year-old girl who referred for examination complaining of a loose mandibular lateral incisor. Her family and medical history showed no specific problem. The intraoral examination showed all permanent teeth were normally present, but over-retention was observed in the mandibular left tooth B. The panoramic radiography demonstrated a mini tooth lesion in the apical region of mandibular tooth B and on the surface of permanent germ 2. For a better diagnosis, PA was used (Figures 1 and 2). This radiographic view included an uninformed opaque view as a mini tooth within an encapsulated lucent space.

Tooth B did not have root resorption, which led to over-retention in the oral cavity with an uninformed lateral root pattern. The lesion was completely intraosseous and nothing was observed from the external view of alveolar surface and vestibular bulge.

The adjacent permanent teeth had a proper eruptional direction. According to the clinical and radiographic findings, the initial diagnosis was compound odontoma. Considering the patient's age and appropriate cooperation, after extraction of tooth B, surgical excision with local anesthesia was performed to remove the odontoma. After performing full-thickness mucoperiosteal flap, the bone layer covering the labial surface was removed and the calcified mass was removed without damaging the adjacent permanent teeth (Figure 3).

From the morphologic view, the removed lesion was a mini tooth with a dental structure indicating the crown and root

with an open apex with an incompletely formed root having a root canal and completely defined enamel, dentin, and cementum (Figure 4).

Two months later, the patient underwent examination and radiography. The results showed no defined eruption and disposition in tooth 2, which was predictable given the closed mandibular left lateral apex. To apply orthodontic forces and force eruption, exposure of mandibular left lateral tooth and removal of about 4 mm of cortical bone were done by piezosurgery. Concurrently, the orthodontic arrangement of both mandibular and maxillary teeth and the opening of a proper space for tooth 2 in the oral cavity were carried out using orthodontic brackets and wires and coil spring to open a proper space between teeth 1 and 2 (Figures 5 and 6). Because the teeth were super-impacted, force eruption procedure was performed slowly using an elastic chain.

Finally, tooth 2 was exposed into the oral cavity after 6 months (Figure 7). In this stage, the coil spring was extracted and the tooth connected to the teeth 1 and 3 with elastic chains was treated with a 10-day follow-up. Then, the orthodontic wire and elastic chains were used for the eruption and placement in a proper position, the closing of the spacing created, and the modification of the mandibular anterior malposition (Figure 8). The orthodontic procedures were continued to complete the treatment and achieve a class I molar relationship. Fortunately, owing to the slow and conservative orthodontic treatment for force eruption, the gingival surface of tooth 2 was at the normal surface of the adjacent teeth. In the end, bracket removal, tooth surface polishing, and patient satisfaction were evaluated in terms of aesthetics, phonetics, and function (Figure 9).

Fig 1

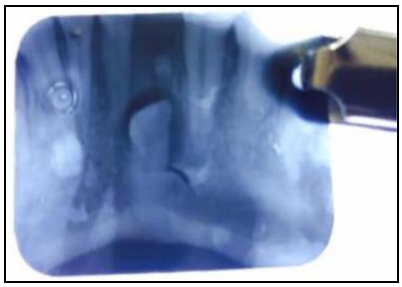

Fig 2

Fig 3

Fig 4

Fig 5

Fig 6

Fig 7

Fig 8

Fig 9

Discussion

Compound odontoma is an odontogenic tumor that is frequently found around the teeth and can lead to eruption disorders and dental malposition. Hence, its early diagnosis is very helpful for the design of a timely treatment plan and reduction and elimination of disorders. In this case report, odontoma was intraosseous with no clinical presentation, including bone swelling or exposure into the oral cavity, but led to permanent lateral impaction due to a slow and asymptomatic trend and required long-term orthodontic surgery and treatment to reposition it in the oral cavity.

Fortunately, no recurrence was observed after a two-year follow-up owing to complete removal of the lesion and the surrounding capsule and timely curettage of the surrounding areas. Finally, placement of the tooth in the proper position provided patient satisfaction with respect to aesthetics, phonetics, functional points, and malposition.

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