

Management of two teeth unerupted due to an odontoma: two years follow-up

Gestão de dois dentes inclusos devido a um odontoma: dois anos de acompanhamento

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Abstract

Objective: The purpose of this case report was to describe the successful management of unerupted incisors due to an odontoma in two young girls with history of dental trauma in primary teeth. **Case report:** The radiographic examinations revealed odontoma-like malformations, which were surgically removed in both cases. In case 1 the crown of the permanent tooth was exposed and orthodontic traction performed and in case 2, a waiting period of at least 6 months for spontaneous eruption of permanent tooth was expected. After 8 months it was necessary the orthodontic traction because the tooth had not erupted. In both cases the correct alignment of the upper incisors was achieved, the final occlusion was satisfactory and periapical radiographs revealed no pathological signs. **Conclusion:** The satisfactory results confirmed the advantages of these approaches, which restored the esthetics and oral function of these two young patients.

Keywords: Tooth. Unerupted. Orthodontic Appliances.

Resumo

Objetivo: O objetivo deste relato de caso foi descrever a gestão bem sucedida de incisivos inclusos devido a um odontoma em duas jovens com história de trauma dental em dentes decíduos. **Relato do caso:** Os exames radiográficos revelaram malformações odontoma-like, os quais foram removidos cirurgicamente em ambos os casos. No caso 1, a coroa do dente permanente foi exposta e tração ortodôntica realizada e, no caso 2, era esperado um período de espera de pelo menos 6 meses para a erupção espontânea de dentes permanentes. Após 8 meses, foi necessário o tracionamento ortodôntico, pois o dente não tinha entrado em erupção. Em ambos os casos foi obtido o correto alinhamento dos incisivos superiores, a oclusão final foi satisfatória e radiografias periapicais não revelou sinais patológicos. **Conclusão:** Os resultados satisfatórios confirmaram as vantagens dessas abordagens, que restaurou a estética e a função oral desses dois pacientes jovens.

Palavras-chave: Dente. Erupcionado. Aparelhos ortodônticos.

INTRODUCTION

The absence of a maxillary central incisor is an important esthetic and functional concern for young patients. The frequency of maxillary central incisor impaction has been found in the range of 0.006% to 0.2% [1;2]. There are several causes commonly associated to an unerupted tooth such as supernumerary teeth, crown or root malformation, ectopic development of tooth germ or and odontoma cysts. [3]

Odontomas are usually asymptomatic, being diagnosed unintentionally in routine radiographs. [4] Their etiology is unknown, however, the pathogenesis is strongly associated with trauma during primary dentition, hereditary anomalies, odontoblastic hyperactivity or alterations of the components responsible for controlling dental development. [5-8] The treatment is usually surgical excision, and the prognosis, after the removal of these tumors is very favorable, with a scant tendency toward relapse. [9]

The aim of this case report was to describe the successful management of two cases of unerupted maxillary central incisor due to an odontoma in pediatric patients after a trauma to the primary predecessor. Both cases were

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diagnosed and treated by surgical exposure combined with orthodontic traction and the unerupted tooth was successfully moved into alignment, with pulpal vitality and periodontal health present 2 years following treatment.

CASE REPORT

Two caucasians girls, 9 and 10 years old were referred to the Pediatric Dentistry Clinic with similar complaints of an unerupted permanent maxillary central incisor and unfavorable aesthetics. The medical history was noncontributory other than a history of trauma to the primary incisors due to a fall before 1 year-old in both patients. No treatments were carried out until the parents brought the children to the clinic.

The clinical examinations showed prolonged retention of the primary upper right central incisor in case 1 and the same tooth on the opposite side in case 2. Both patients were in mixed dentition and adequate space for permanent incisor eruption was available (Figura 1A e 2A). Panoramic and periapical radiographs revealed the presence of a radiopaque mineralized mass with unspecific shapes similar to an odontoma in both cases (Figura 1B e 2B). The proposed treatments were similar, though with some peculiarities, due to tooth position and root development.

CASE 1

The treatment plan consisted of bonding standard edgewise brackets (MORELLI, BRASIL) on the upper anterior segment of the arch to maintain space and anchorage purposes. Subsequently, the patient underwent surgery to remove the primary tooth and the radiopaque masses. The impacted permanent central incisor crown was exposed for bonding a metal button with composite resin (TRANSBOND XT KIT 712-035-3M) for orthodontic traction (Figura 1D) and Compound Odontoma was later confirmed by histopathology (Figura 1C). Associated with orthodontic mechanical traction, standard edgewise brackets were bonded on the lower anterior segment of the arch, and the teeth were aligned and leveled.

CASE 2

The clinical examination of the patient showed, in addition to the prolonged retention of the left primary tooth, a unilateral crossbite and a triangular upper shape arch. Therefore, prior to the surgical procedure the malocclusion was corrected with a Porter appliance, which helped to increase space in the upper arch. Then, the treatment plan consisted of surgical extraction of the primary tooth and the removal of the radiopaque masses. No appliance for orthodontic traction was installed at this moment, as the apex of the impacted tooth was still open, which could lead to spontaneous eruption. The radiopaque mass was comparable to a compound odontoma, which was later confirmed by histopathology (Figura 2C e 2D).

Eight months after the surgery, the impacted tooth had not erupted and its apex was closed (Figura 3A e 3B).

Therefore, an appliance with standard edgewise brackets bonded on the upper anterior segment of the arch was installed and another surgery to expose the crown was performed (Figura 3C). An orthodontic metal button was bonded to aid the orthodontic traction (Figura 3D), as in case 1, were light orthodontic forces were applied for the traction of the impacted incisors into the extraction space.

The progression of orthodontic traction was similar for both patients. Orthodontic elastic chains were used to apply light traction forces (constantly change every 3 weeks). After 10 months, the tooth could be visualized in the oral cavity. After completion of the traction, the metal button was removed and replaced by an edgewise bracket to start the alignment and leveling of the tooth with a series of stainless steel wires (0.016," 0.017" × 0.025," 0.019" × 0.05" and 0.021" × 0.025") were ligated and final alignment and leveling accomplished. The case was completed in 2 years and the final results are shown in post treatment photographs. The gingival margin and the attached gingiva were acceptable and healthy, and the occlusion was satisfactory (Figura 1E e 3E). A periapical radiograph revealed no pathological signs in the area but exhibited a shorter root of the impacted tooth compared with the adjacent incisor (Figura 1F e 3F).

DISCUSSION

The impaction of the maxillary incisor is often clinically and radiographically diagnosed at an early age, because the lack of eruption of an anterior tooth causes parental concern during the early mixed dentition phase.^[2] The possible reasons for failure of eruption may be deficiency of space, malformation from early trauma, mechanical obstruction such as a supernumerary tooth, odontoma, other odontogenic tumors, cysts, or scar tissue due to early loss of primary tooth.^[7; 10] In the presented cases the main complaint of our patients was the non-eruption of the maxillary central incisor. The radiographic examination detected the presence of an odontoma in the region, creating a physical barrier which might have caused the ectopic position of the impacted teeth.

In both cases, during anamnesis, the parents reported a history of dental trauma in primary dentition, which can be one of the causal factors of an odontoma. Dental injury at an early age requires special attention, because the majority of traumatic injuries occur at 2 years of age, during the developmental stage of the permanent crown.^[11; 12] Depending on the severity of the trauma and on the stage of tooth morphogenesis, the alteration could result in specific malformations, such as enamel hypoplasia, root and crown dilacerations and odontoma.^[13; 14]

Early diagnosis of an odontoma followed by appropriate treatment can minimize possible losses when they involve aesthetic and functional anterior teeth.^[15; 16] Radiographic evaluation of the upper anterior region, while in the mixed dentition, allows the early diagnosis and removal of cysts, tumors or supernumerary teeth, which will favor the spontaneous eruption of maxillary central

incisors. ^[16] When even after the odontoma removal, the retained tooth does not erupt, orthodontic traction of the tooth from its intraosseous location until its proper position in the arch is recommended, ^[15; 16] as was done in our second case due to the stage of root formation. In

our first case, orthodontic traction of the tooth together with odontoma removal was indicated because there was complete rhizogenesis of the permanent tooth. Surgical exposure with orthodontic traction is a current success therapy. ^[17; 18]

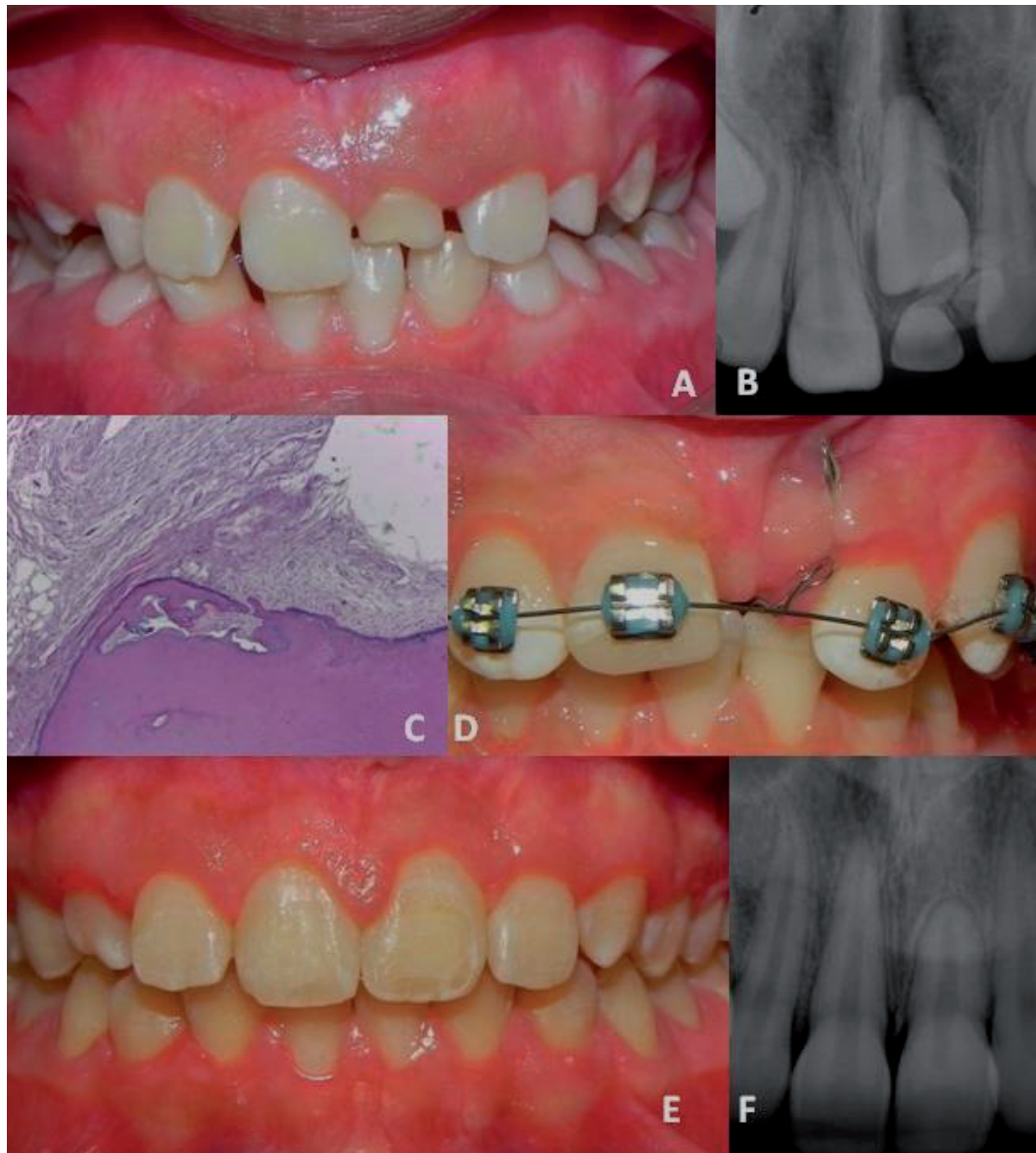


Figure 1 – A: Initial clinical image; B: Initial periapical radiograph showing a radiopaque mass in the region of 21, impacting its eruption; C: Histologic evaluation with revealed irregular arrangement of enamel matrix, dentin cementum, and pulp tissue; D: Start of orthodontic traction; E: Final clinical image after two years; F: Final periapical radiograph showing the permanent central incisor (21) without pathological alterations.

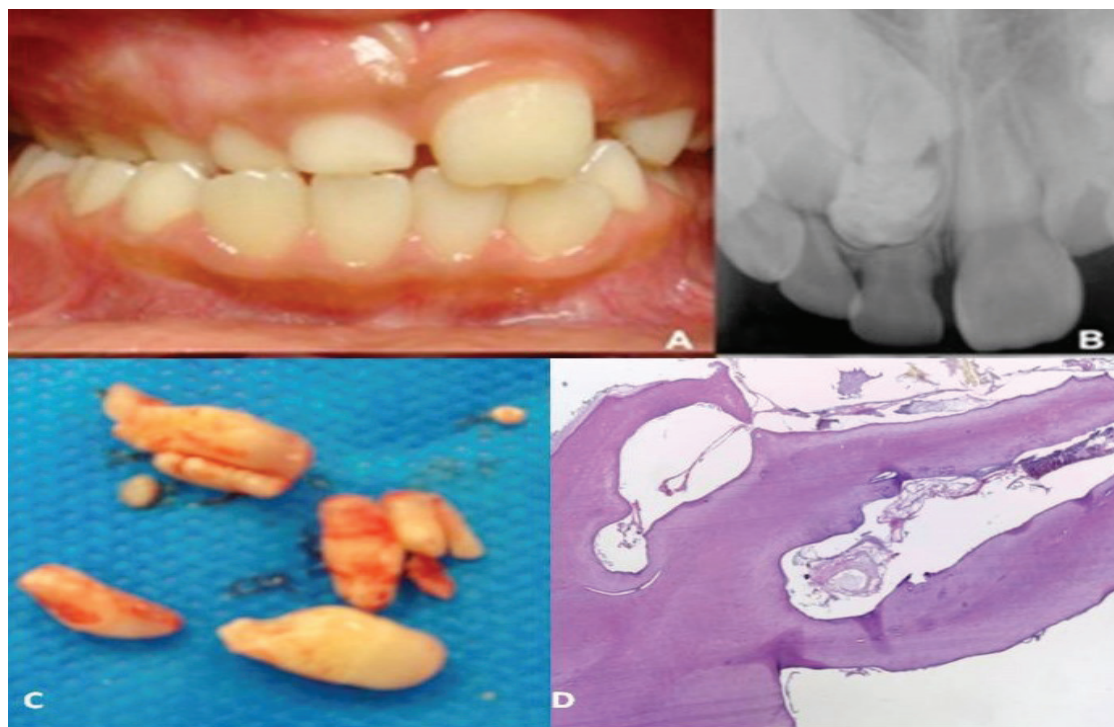


Figure 2 A – Initial clinical image; 2 B- Initial periapical radiograph showing odontoma impacting the eruption of ICSD (11); 2 C- Clinical image of compound odontoma; 2 D- Histologic evaluation confirming compound odontoma.

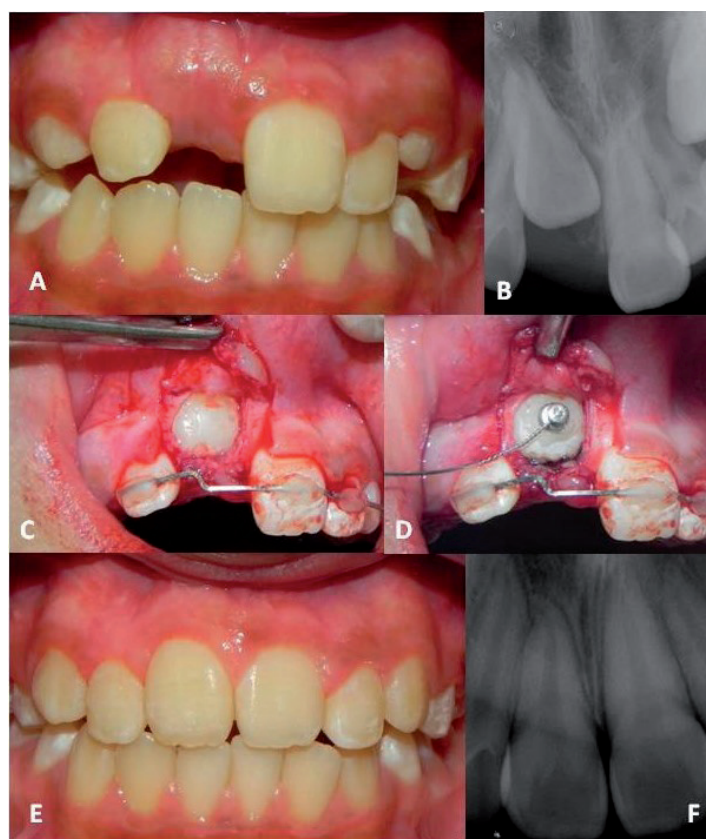


Figure 3 A – 8 months after removing the element 51 and odontoma, showing no permanent successor eruption; 3 B – Periapical radiograph 8 months after the removal of odontoma (root more than 2/3 of formation without the eruption of 11); 3 C – surgery to expose the crown of the central incisor(11); 3 D – Bonded button on incisor to start the traction; 3E – Final clinical image after 2 years; 3 F – Final periapical radiograph, showing the permanent central incisors (11) without pathological alterations.

The successful alignment of an impacted tooth depends on several factors, including position, direction, degree of root completion, degree of dilaceration, and availability of space^[19]. In both cases described, position and direction of tooth and complete root formation facilitated the alignment. Also, the periodontal status of the exposed incisors after orthodontic treatment revealed an acceptable gingival margin, eliminating the need for gingival re-contouring surgery, which corroborates with other authors,^[2; 17] since this is a common sequel related with orthodontic traction.

Accurate and early diagnosis, along with the multidisciplinary approach allowed the successfully orthodontic traction of an unerupted maxillary incisor into normal alignment and the maintenance of a healthy zone of attached gingival and ideal alveolar bone height. The satisfactory results, including the restored smile and facial esthetics of the two young girls demonstrated the benefits of this approach.

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