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Spontaneous re-eruption of a primary tooth with intrusive luxation-type trauma: follow-up of a case

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ABSTRACT

Trauma in the primary dentition often requires different management than in the permanent dentition. We present the case of an 18-month-old female patient, in apparent good general condition, with no medical history, who came to the pediatric dentistry service of the Teaching Dental Center of the Universidad Peruana Cayetano Heredia because “a tooth had become embedded when she fell”. After the extraoral examination, edema was observed in the lower lip and intraorally there was an apical displacement of tooth 61. Radiographically, it is observed that tooth 61 is rotated with apical displacement. Diagnosis: Intrusive dislocation of tooth 61 and contusion of the lower lip. Treatment: Washing with physiological saline solution, soft diet, and use of a soft bristle toothbrush; she was kept under observation. Controls: Follow-up was carried out for seven months, during which time spontaneous re-eruption of the affected tooth was observed. Therefore, spontaneous re-eruption is a treatment option in intruded primary teeth after trauma.

Keywords: dental intrusion, dental trauma, child.

INTRODUCTION

Dentoalveolar trauma treatments frequently occur in preschool age at an average of 22.7% in the world population (1). They are more prone in the first years of life because infants do not have much stability as they are learning to walk (2). Intrusion occurs when the tooth moves apically into the alveolar bone. Clinically, axial displacement is observed within the alveolus of the affected tooth and this one is immobile (3).

In this context, an important point is to know the sequelae that this injury can cause in the permanent dentition. Evidence mentions that there is a high probability of a defect in the development of the enamel of the permanent tooth affected by the intrusion (4), as well as root canal obliteration and pulp necrosis of the primary tooth (5).

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Against this backdrop, the question that always arises is: In what cases should we intervene or wait when this type of accident occurs? According to the 2020 International Association of Dental Traumatology (IADT) Guidelines, the only suggested treatment is to allow re-eruption without intervention (spontaneous repositioning) (6).

The objective of this case report is to determine the diagnosis and proper management of intrusive luxation in primary dentition.

CASE PRESENTATION

18-month-old female pediatric patient in apparent good general condition, with no medical history of importance. She and her mother went to the Pediatric Dentistry Service of the Teaching Dental Center of Universidad Peruana Cayetano Heredia on October 12, 2022. The mother said that her youngest daughter “had a tooth embedded when she fell”. The event occurred while the little girl was walking without the supervision of her caregiver, thus impacting against the bed platform. Due to her age, the patient was not very receptive, so, with the mother’s consent, the extraoral and intraoral examination was performed under active protective stabilization.

On the extraoral examination, edema was observed at the level of the lower lip; and on the intraoral examination, it was warned that tooth 61 was displaced apically and that there was an absence of mobility of the adjacent teeth (Figure 1).



Figure 1. Extraoral evaluation: edema of the left lower lip area is observed. Intraoral evaluation: apical displacement of tooth 61 is observed.

To complement the diagnosis, periapical radiography of the area was indicated, where gyroversion of tooth 61 with apical displacement was observed (Figure 2). The definitive diagnosis was intrusive dislocation of piece 61 and contusion of the lower lip.

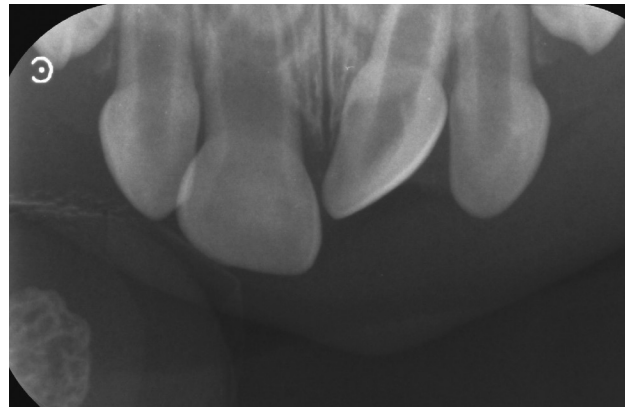


Figure 2. Periapical radiography: tooth 61 rotated with apical displacement.

The treatment followed the recommendations of the International Association of Dental Traumatology (IADT), which consist in observing and monitoring the affected tooth, allowing its spontaneous reposition, regardless of the displacement direction. The affected area was washed with physiological saline solution and the traumatized tooth was kept under observation. Analgesic medication was administered according to the patient’s age and pain condition. Instructions were given to the mother, which included a soft diet and cleaning with a soft bristle brush.

The first checkup was 2 months after the trauma. The patient was asymptomatic with clinical and radiographic evidence of partial re-eruption of tooth 61, with the presence of gyroversion (Figure 3). 5 months after the trauma, the patient was asymptomatic. Clinical examination showed no fistula and no change in the color of tooth 61 (Figure 4). After 7 months, the patient was asymptomatic, and complete re-eruption of tooth 61 was clinically observed with mesial gyroversion, slight color change and absence of fistula.



Figure 3. Checkup after 2 months of the trauma. Clinically, partial re-eruption of tooth 61 is observed. Radiographically, it shows an open apex of the compromised tooth.



Figure 4. Checkup after 5 months of the trauma. Clinically, hard and soft tissues with normal characteristics are observed.

Radiographically, complete root formation of tooth 61 with its gyroversion is observed (Figure 5). Finally, we will give an additional follow-up at 6 years of age to control the eruption of the permanent tooth, as well as a radiological checkup only in case of clinical findings that suggest pathology. Apart from that, we will inform parents to pay attention to any symptomatology or clinical change of the tooth (e.g. change in color, presence of pain, sinus tract, increased mobility, etc.). If this occurs, they should return to the hospital as soon as possible.



Figure 5. Checkup after 7 months of the trauma. Clinically, healthy hard and soft tissues are observed around tooth 61. Radiographically, complete root formation of the traumatized tooth is shown.

DISCUSSION

Dentoalveolar trauma in preschool children ranges from 6.2% to 41.6%. According to a recent systematic review by Patnana et al. (7), this prevalence is currently 24.2%.

Primary teeth are highly prone to luxation (displacement) injuries that constitute 21-81% of

all dentoalveolar trauma (5). This is probably due to the spongy nature of the alveolar bone, the large proportion of tooth length within the bone, shorter crowns and cuneiform shape that favors intrusion.

Goswami et al. (5), in a systematic review, find that the most common age group of children affected by dislocation injuries is 0 to 3 years, as described in one of the studies included in that review. On the other hand, three other studies, also reviewed by the cited authors, described the increased incidence of intrusive dislocation among the age range of 1 to 4 years, as presented in our case, with 18 months of age.

According to the literature, dental intrusions can be divided into three grades, determined according to the percentage of visualization of the clinical crown that remains in the arch: in grade I it is possible to observe more than 50% of the clinical crown; in grade II less than 50% is observed; and in grade III, as in our case, 100% of the crown is intruded (8). As different authors mentioned, treatment options for this type of luxation in the primary dentition were previously divided according to the degree of intrusion. Therefore, for grade I or mild and grade II or moderate, spontaneous re-eruption was expected. In the case of intrusion III or severe, exodontia was suggested, a measure supported until 2019 according to IADT guidelines (9).

However, according to the new IADT guidelines, extraction is no longer recommended for the following reasons: 1) evidence of spontaneous re-eruption of intruded primary teeth; 2) concern that further damage to the tooth germ may be inflicted during extraction; and 3) lack of evidence that immediate extraction minimizes further damage to the permanent tooth germ (6). In addition, immediate extraction of the intruded tooth at this age may cause significant occlusal asymmetries, as well as phonetic and swallowing complications (tongue thrusting), which can only be treated by the placement of removable appliances such as space maintainers (10). Therefore, conservative treatment consists in waiting and monitoring spontaneous re-eruption, regardless of the degree of intrusion of the tooth.

A report by Mérida et al. (9), with a conservative monitoring treatment in a 22-month-old patient, was successful after 13 months of follow-up, showing a complete re-eruption, located in the occlusion plane without symptoms and significant changes. However, in the last radiographic control there was an irregularity in the middle third of the root, compatible with possible root resorption and widening of the

periodontal ligament space. For this reason, regular clinical and radiographic checkups are important up to the time of tooth replacement. Defabianis et al. (2) mention that the age of the child at the time of tooth eruption is related to the degree of intrusion. Spontaneous eruption can occur within 5 months after trauma for partially intruded teeth, regardless of the age of the child, and for fully intruded teeth in children under 2 years of age. In older children, complete dental re-eruption should be expected at an interval of 5 to 11 months (2). In our case, partial re-eruption of the compromised specimen was observed at 2 months after follow-up and complete re-eruption at 7 months after follow-up.

CONCLUSIONS

Dental trauma is a fortuitous event, with potentially important permanent consequences. Therefore, decision making based on the best available scientific evidence will be decisive for the choice of the best treatment. Spontaneous re-eruption is a successful treatment option in intruded primary teeth in the absence of damage to the permanent tooth. Having a high prevalence and a high potential for alteration to developing germs, it is necessary to raise awareness of the true management of this type of traumatic injury. As we reported in this case, continuous follow-up planning up to the moment of tooth replacement is important, and we should inform parents of the possible sequelae in permanent teeth.

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