

# Minimal Intervention in A Baby after Severe Intrusive Luxation: A Case Report

Daline Oliveira Carneiro, Taynara Ferreira Costa, and Alessandra Castro Alves

## ABSTRACT

This report describes a case of a 20-month-old baby with severe intrusive luxation. Axial displacement of the teeth in the labial direction was found through the lateral radiograph of nose. Minimal intervention treatment was proposed by periodic follow-up. After 30 days, the teeth started to re-erupt spontaneously without the need for surgical or orthodontic assistance. At eight months, it had erupted completely, showing slight gyroversion of the left upper central incisor. The mother was alerted to monitor the permanent eruption. Conservative treatment in this case of severe dislocation in a baby showed a clinically satisfactory result.

**Keywords:** Case report, dental trauma, pediatric dentistry, primary tooth.

**Published Online:** December 23, 2022

**ISSN:** 2684-4443

**DOI :** 10.24018/ejdent.2022.3.5.208

**D. O. Carneiro**

Faculty of Dentistry, Federal University of Bahia, Salvador, Bahia, Brazil.

(e-mail: daline@ufba.br)

**T. F. Costa**

Dentist of Family Health Program, Bahia, Brazil.

(e-mail: taynaracosta94@hotmail.com)

**A. C. Alves\***

Cariology and Pediatric Dentistry at Federal University of Bahia (UFBA), Brazil.

Pediatric Dentistry at State University of Feira de Santana (UEFS), Brazil.

(e-mail: acaastroalves@hotmail.com)

*\*Corresponding Author*

## I. INTRODUCTION

Tooth injury is a lesion of variable extension, intensity, and severity, which may occur accidentally with a predominance the anterior teeth [1]. It occurs most frequently between one-to-three years of age due to falls from one's own height in the phase of motor development [2], [3]. The intrusive dislocation in primary dentition occurs due to the higher resilience of the alveolar bone in young children [4]. According to severity and sequels, the trauma can have a negative impact on children's quality of life [5].

Dental intrusion is the axial displacement of the tooth into the alveolus with severe consequences for the periodontal ligament, alveolar bone, and rupture of the neurovascular supply [6]. To establish the clinical management of the intrusive dislocation it is mainly important to consider the direction of displacement. When the impact displaces the tooth in a labial direction, away from the permanent germ, the deciduous tooth appears radiographically shortened [7]. In these cases, about 83% re-erupt spontaneously [8]. When the apex is displaced towards the germ of the permanent, the apical tip root is not seen and it appears to be elongated on the radiographic examination [3]. There is a worse prognosis with serious damage to the permanent successor and the primary tooth must be extracted [7].

This report presents a case of severe intrusive luxation in primary maxillary incisors of a baby, as a consequence of trauma, where the tooth was preserved after minimally invasive intervention.

## II. CASE REPORT

A 20-month-old male baby was seen seven days after dental trauma caused by a serious fall on the sidewalk. According to information provided by the guardian, the child was taken to a public emergency service where no procedure was performed.

During the evaluation at school of dentistry it was found oral lesions on soft and hard tissues. Regions were washed with saline solution and clinical/radiograph examination were nominated for diagnosis. The intraoral examination revealed mucosal edema and severe intrusive luxation of the upper central incisors as well as, moderate intrusive luxation of lateral (Fig. 1).

On radiograph using the lateral nose technique, the distance between the intruded teeth and the follicle of the permanent successors was observed. Primary central incisors apex were moved to the labial bone indicating a labial displacement direction (Fig. 2).



Fig. 1. Initial clinical photo. Severe intrusive dislocation of the primary maxillary incisors.

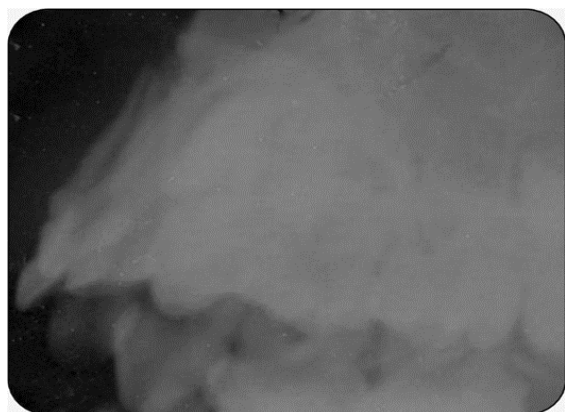


Fig. 2. Lateral radiograph of the nose showing the labial root apex.

The prescribed medications were analgesic for pain and amoxicillin suspension every 8 hours for 7 days. The guidance was given to the baby's mother regarding the food being pasty and cold for two weeks, interruption of the pacifier, and cleaning with 0.12% chlorhexidine solution twice a day with gauze. In addition, to brushing with a soft toothbrush and fluoride dentifrice. The consent inform was signed by the mother.

Follow-up was initially a week in which the responsible person reported relief from the patient's painful symptoms. Thirty days after the accident, the teeth had started the re-eruption. Clinical and radiograph assessments were made once a month after the first three months. The mucosa presented normal characteristics without any inflammation. (Fig. 3).



Fig. 3. Clinical characteristics after 2 months of follow-up.

Eight months after the trauma, radiograph showed a greater distance between the permanent germ and the primary teeth, since the re-eruption had already occurred entirely. Fractures of enamel edges can also be observed in both upper central incisors (Fig. 4).

After 20 months follow-up, the patient returned to dental clinic and the minimal intervention procedures showed clinically satisfactory results. The mother was alerted to monitor permanent eruption. (Fig. 5).



Fig. 4. Clinical characteristics after 8 months of follow-up.



Fig. 5. Primary maxillary incisors reerupted after 20 months of follow-up.

### III. DISCUSSION

In this reported case, a complete intrusion of the upper central incisors and a moderate intrusion of lateral incisors can be observed. The intrusive luxation is one of the most prevalent tooth injuries to primary teeth related to supporting tissues [5], [9], [10]. The child's cooperation are factors that can influence the treatment and, whenever possible, preserving the primary dentition should be the option of choice [7].

Intrusive luxation occurs more frequently in the upper central incisors, corresponding to 77–91% of cases [11], [12]. These teeth are the most affected due to their position previously in the arch [13]. The attendance occurred seven days after a traumatic accident, at the trauma center of the dental school. It is noteworthy that the shorter time elapsed between trauma and dental trauma care guarantees a better prognosis, preventing sequelae or even early loss of teeth [9]. In cases of dislocations, late care increases the risk of developing external resorption [14]. Periapical radiolucency is one of the most common sequelae after dental trauma [11] and pulp necrosis occurs in 70% of intrusion cases [8], [11], [12]. Usually, evidence of necrosis occurs in the first six months [8], [9]. Although, this risk decreases due to incomplete root development in children under two years of age [8], [15]. In the case reported, no clinical or radiographic signs were evident to pulp necrosis during the first twelve months of preservation.

Giving the high risk of pulp necrosis, preservation for a longer follow-up is necessary to assess late complications related to trauma [16], [17], since pulp sensitivity tests are not accurate on primary teeth, diagnosis becomes more difficult [7], [18]. Discoloration of the crown is a clinical feature that may indicate the diagnosis of pulp necrosis [19]. After 20 months follow-up, no discoloration of the crowns was observed, which may suggest pulp vitality. The pulp can survive after trauma, but according to the Association of Dental Traumatology guidelines, endodontic treatment may be recommended for severe intrusive luxation [17].

The extra-oral radiographic examination is essential in determining the direction of the displacement to designate the best clinical approach. The severe intrusion reported to the deciduous upper central incisors used the imaging examination of the intruded teeth, showing the apex located in the vestibular region. The minimum intervention was made with the expectation of the re-eruption beginning in the first month, as reported in earlier studies [3], [6], [7], [13] about

periodic follow-ups. In this case, the conservative treatment was beneficial with approximately one month after the trauma, the teeth started to move again, being completely erupted after 8 months, spontaneously. In such cases, annual follow-up is recommended until the permanent incisors erupt [3], [7], [20], [21].

There is high probability of trauma in primary teeth causing disturbances to the development of the successor, depending on the type of trauma, direction, and severity of tooth displacement [13], [20]. The patient was less than two years old at the time of the accident, age at risk due to the little coronary formation of permanent intraosseous incisors, which can result in severe sequelae [11], [15].

The evolution was observed after 20 months follow-up. The teeth erupted according to the time determined by earlier studies [3], [5], [7], [18]. Minimal intervention with teeth preservation was the treatment chosen since the diagnosis of root intrusion into the labial bone was confirmed after the accident. Conservative conduct is prioritized whenever possible, although possible risks to the development of successors should be considered if infection occur [13], [16], [22], [23]. The treatment of the severe intrusive dislocation in primary teeth is most often to remove the tooth [3], [7], [23] and rehabilitation is not carried out, space loss, psychosocial, masticatory, and phonetic damage may occur.

#### IV. CONCLUSION

The direction and the absence of an alveolar bone fracture determined the treatment selection. As the intruded tooth was displaced away from the permanent tooth germ, spontaneous eruption was awaited, which took place after eight months. Short appointments, presence of the mother in the operator, and the modality of “tell, show, do,” was practiced to gain maximum cooperation from the child. Conservative treatment and preservation with positive results is important, as was seen in the case presented.

#### ACKNOWLEDGMENT

To the Center of Dental Trauma for children and adolescents at Federal University of Bahia (UFBA).

#### CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

#### REFERENCES

- [1] de Souza BDM, Dutra KL, Reyes-Carmona J, Bortoluzzi EA, Kuntze MM, Teixeira CS, et al. Incidence of root resorption after concussion, subluxation, lateral luxation, intrusion, and extrusion: a systematic review. *Clin Oral Investig*. 2020;24:1101-11.
- [2] Mendoza-Mendoza A, González-Mallea E, Iglesias-Linares A. Intrusive luxation in primary teeth: A case report. *J Clin Pediatr Dent*. 2015; 39:215-18.
- [3] Flores MT. Traumatic injuries in the primary dentition. *Dent Traumatol*. 2002;18: 287-98.
- [4] Costa LRR, Ribeiro RA, Correa FN, Correa MSNP. Trauma in primary dentition. *Pediatric dentistry in early Childhood*. 3rd ed. Correa MSNP, Ed. São Paulo: Santos; 2009. pp. 689-715. Portuguese.
- [5] Goswami M, Rahman B, Singh S. Outcomes of luxation injuries to primary teeth-a systematic review. *J Oral Biol Craniofacial Res*. 2020; 10: 227-32.
- [6] Andreasen FM, Andreasen JO. Dislocation trauma. In: *Textbook and Color Atlas of Traumatic Injuries to the Teeth*. 4th ed.;2007. p. 315-382.
- [7] Day PF, Therese Flores M, O AC, Abbott PV, Tsilingaridis G, Fouad A, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 3. Injuries in the primary dentition. *Dent Traumatol*. 2020; 36: 343-59.
- [8] Lauridsen E, Blanche P, Yousaf N, Andreasen JO. The risk of healing complications in primary teeth with intrusive luxation: A retrospective cohort study. *Dent Traumatol*. 2017; 33: 329-36.
- [9] Lin S, Pilosof N, Karawani M, Wigler R, Kaufman A, Teich S. Occurrence and timing of complications following traumatic dental injuries: A retrospective study in a dental trauma department. *J Clin Exp Dent*. 2016;8:e429-36.
- [10] Soares VRC, Silva LP, Salazar SL de A, Luiz RR, Risso PA, Maia LC. Profile of intrusive luxation and healing complications in deciduous and permanent teeth – a retrospective study. *Acta Odontol Scand*. 2018; 76: 567-71.
- [11] Costa VPP, Goettems ML, Baldissera EZ, Bertoldi AD, Torriani DD. Clinical and radiographic sequelae to primary teeth affected by dental trauma: a 9-year retrospective study. *Braz Oral Res*. 2016; 30: 1-9.
- [12] Gondim JO, Moreira Neto JJS. Evaluation of intruded primary incisors. *Dent Traumatol*. 2005; 21: 131-3.
- [13] Lima TFR, Da Silva EJNL, De Almeida Gomes BPF, Almeida JF, Zaia AA, Soares AJ. Relationship between initial attendance after dental trauma and development of external inflammatory root resorption. *Braz Dent J*. 2017;28:201-5.
- [14] Bardellini E, Amadori F, Pasini S, Majorana A. Dental anomalies in permanent teeth after trauma in primary dentition. *J Clin Pediatr Dent*. 2017; 41: 5-9.
- [15] Qassem A, Martins N da M, da Costa VPP, Torriani DD, Pappen FG. Long-term clinical and radiographic follow up of subluxated and intruded maxillary primary anterior teeth. *Dent Traumatol*. 2015; 31: 57-61.
- [16] Levin L, Day PF, Hicks L, O'Connell A, Fouad AF, Bourguignon C, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: General introduction. *Dent Traumatol*. 2020; 36: 309-13.
- [17] Bourguignon C, Cohenca N, Lauridsen E, Flores MT, O'Connell A, Day P, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 1. Fractures and luxations. *Dent Traumatol*. 2020; 36: 314-30.
- [18] Moura L de FA, Bezerra ACB, Amorim L de F de G, Moura MD, Toledo OA. Intrusive luxation of primary teeth. *Dent Traumatol*. 2007;24: 91-5.
- [19] Nam OH, Kim MS, Kim GT, Choi S. Atypical root resorption following root fractures in primary teeth. *Quintessence Int (Berl)*. 2017; 48: 793-7.
- [20] Vilela ABF, Soares PBF, de Oliveira FS, Garcia-Silva T, Estrela C, Versluis A et al. Dental trauma on primary teeth at different root resorption stages - A dynamic finite element impact analysis of the effect on the permanent tooth germ. *Dent Traumatol*. 2019;35: 101-8.
- [21] Liu X, Huang J, Bai Y, Wang X, Baker A, Chen F, et al. Conservation of root-fractured primary teeth-report of a case. *Dent Traumatol*. 2013; 29: 498-1.
- [22] de Amorim CS, Americano GCA, Moliterno LFM, Marsillac M, Andrade MR, Campos V. Frequency of crown and root dilaceration of permanent incisors after dental trauma to their predecessor teeth. *Dent Traumatol*. 2018; 34: 401-5.
- [23] Malmgren B, Andreasen JO, Flores MT, Robertson A, DiAngelis AJ, Andersson L, et al. Guidelines for the management of traumatic dental injuries: 3. Injuries in the primary dentition. *Dent Traumatol*. 2012; 28: 174-82.



**Dr. Daline Carneiro** is a Doctor of Dental medicine, specialist in orthodontic and Public Health. Currently, she is PhD student in Dentistry and Health, Faculty of Dentistry, Federal University of Bahia, Salvador, Bahia, Brazil.



**Dr. Taynara Costa** is a Doctor of Dental medicine. She has done updates in restorative dentistry and oral surgery. She worked before in public health and currently at a Community Center (SESC).



**Professor Alessandra Castro Alves** holds a Master's degree in Pediatric Dentistry and a PhD in Microbiology and Immunology. She is associate professor at the Federal University of Bahia and the State University of Feira de Santana (Brazil).