# AVULSION OF DECIDUOUS TEETH: CONTRAINDICATIONS AND IMPACT ON THE DEVELOPMENT OF PERMANENT TEETH

Anne Caroline Ribeiro Lacerda<sup>2</sup> Amanda de Almeida Rodrigues<sup>3</sup> Ana Jessica Dos Santos Nascimento<sup>4</sup> Isabela Luzia Coelho Bezerra de Carvalho<sup>5</sup> Letícia Gama de Oliveira Muniz<sup>6</sup> Lívia Jordania Lino Figueredo<sup>7</sup> Jamilly Carvalho Rodrigues<sup>8</sup> Júlio Cesár Ferreira Gomes<sup>9</sup> Malvina de Souza Pereira<sup>10</sup>

Mariana Meira Soares<sup>1</sup>

5 Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.



<sup>1</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>2</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>3</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>4</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>6</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>7</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>8</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>9</sup> Undergraduate in dentistry at the Sovereign Faculty of Health of Petrolina, 56308-000, Petrolina – PE, Brazil.

<sup>10</sup> Master in Pediatric Dentistry from São Leopoldo Mandic- 13045-755, Campinas - SP, Brazil.

Abstract: Introduction: Dental avulsion is defined as the complete displacement of the tooth out of the alveolus, resulting in rupture of the periodontal ligament and, in some cases, fractures of the alveolar bone. Reimplantation of avulsed deciduous teeth is widely contraindicated. This is because this process can generate additional trauma to the permanent successor, especially due to the possibility of intrusion or direct injury to the germ. Objective: To analyze the clinical implications and contraindications of the reinsertion of avulsed deciduous teeth, highlighting the risks of complications for the permanent successor teeth and the impact on child dental development. Methodology: To develop this integrative literature review, the Pubmed, Scielo and BVS databases were used. Articles published between 2014 and 2024, covering the Portuguese, Spanish and English languages, were selected. Results: After a thorough review, the final set of studies included a total of 16 articles, indicating that the replacement of deciduous teeth is directly associated with several complications in those that will erupt later. Among the main consequences, damage to the permanent tooth germ stands out, resulting in changes in its growth, color and root curvature. Although there are few studies on the subject, it is clear that these factors can cause misalignment and delay in the eruption of permanent teeth, emphasizing the contraindication of reinsertion of the element. Conclusion: Tooth avulsion affects not only oral health, but also the aesthetics and quality of life of these patients. In these cases, the role of the dentist is essential, both to safely replant the tooth and to guide parents and guardians on the necessary care. Trauma to deciduous teeth can have a direct impact on the growth of permanent teeth, and specialized care, combined with prevention, helps to reduce the risk of sequelae that can affect the child throughout life.

Keywords: Tooth Replantation, Clinical Protocols and Tooth Injuries.

## INTRODUCTION

Dental avulsion corresponds to approximately 13% of the traumas that affect the deciduous dentition, and is characterized by the complete displacement of the tooth out of the alveolus, resulting in



the rupture of the periodontal ligament and, often, in the fracture of the alveolar bone. (Christophersen; Freund; Harild, 2005; Mctigue, 2013)

This type of injury can have serious consequences, especially for the development of permanent teeth, with enamel hypoplasia and ankylosis being some of the most common irreversible sequelae. (Sakai et al., 2008) Sequelae in permanent teeth resulting from trauma to deciduous teeth can occur in two ways: by the direct impact of the root of the deciduous tooth on the germ of the permanent tooth or as a result of a periapical infection originated after pulp necrosis of the avulsed tooth. (Da Silva Assunção et al., 2009)

Children in the primary dentition phase, especially between 0 and 6 years old, are more susceptible to dental trauma due to a lack of motor coordination, often resulting from falls and collisions. Between 7 and 15 years of age, traumatic injuries tend to occur in sports and recreational activities. (Goswami; Rahman; Singh, 2020)

Tooth replantation, a technique that consists of reinserting the avulsed tooth into its socket, is widely discussed in the scientific literature. Although it is a common practice for permanent teeth, its applicability in primary teeth is not recommended.

This study aims to analyze the clinical implications and contraindications of the reinsertion of avulsed deciduous teeth, emphasizing the importance of an in-depth debate on the feasibility of this approach in pediatric dentistry.

#### METHODOLOGY

Regarding the systematization of this integrative literature review, the most relevant scientific articles on the subject were initially selected from the following databases: National Center for Biotechnology Information, U.S. National Library of Medicine (Pubmed), Virtual Health Library (VHL) and Scientific Electronic Library Online (Scielo), in English, Spanish and Portuguese. For the inclusion criteria, studies from the period between 2014 and 2024 were used, with some other studies

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established in the literature that were related to the theme guided. The descriptors in Health Sciences (DeSC): "Dental Replantation", "Deciduous Teeth" and "Dental Trauma". Monographs, articles not accessible online, articles outside the period presupposed by the inclusion criterion, and indexed in other databases were excluded.

A total of 1270 articles were obtained from the databases. Of which 432 articles, being excluded where they did not meet the inclusion criteria, as they were Theses, Monographs, articles that did not meet the theme, full text not available. They resulted in 838 articles, after a complete reading, 16 articles were selected, thus composing the flowchart presented below:



Source: Prepared by the authors.



#### DISCUSSION

Although the literature presents several studies on dental trauma in several countries and Brazilian states, there is still a lack of specific studies that address detailed data on dental trauma in the deciduous dentition and how they impact successors. In view of this gap, the present study aims to fill this deficiency of knowledge about the problem. Some professionals may question the fact that avulsion is a trauma with the potential to damage the germ of the permanent tooth. This is because, unlike an extraction, the tooth does not come directly out of the socket, as it is not removed in a similar way to extraction, since the root can be forced into the socket, changing its position before coming out, which can lead to sequelae in the teeth that will succeed it. (Martioli et al., 2024; Wanderley et al., 2014)

At the stage when all deciduous teeth are present, the permanent teeth are already partially or completely developing, with an intimate relationship between their anatomical structures. The younger the child, the greater the chance of sequelae, which tend to be more severe. (Guedes-Pinto; Mello-Moura, 2016; Goswami; Rahman; Singh, 2020)

In this scenario, a minimally interventional approach and adequate training of health professionals are essential, especially with regard to the management of traumatic injuries and the guidance of caregivers, who may be emotionally affected by the situation. Lesions in deciduous teeth are often underestimated by parents, who ignore the current situation because they believe that they will soon be resolved with the birth of the permanent tooth, however the impacts on the development of these successor dental elements should not be ignored, as they can result in dysfunctions, aesthetic compromise, as well as emotional and social effects for both the child and his family. (Day et al., 2020; Richards, 2018; Aldrigui et al., 2011)

Among the therapeutic strategies for tooth avulsion is replantation, a procedure that replaces the tooth in the cavity from which it was expelled. Poluha et al argue that one of the advantages of replacing the tooth in the socket would be the resumption of the function of maintaining the space in the dental arch, preventing the delay in the eruption of the successor permanent tooth and possible misalignments



after its eruption. However, Flores et al report that this technique, preferable to permanent teeth, is no longer recommended for primary teeth, since there are few reports on its efficacy and many risks involved, such as damage to the permanent germ. (Sakai et al., 2008; Goswami; Rahman; Singh, 2020)

One of the main acts harmful to the permanent tooth is the act of repositioning the deciduous in the socket, this happens because the movement performed in this maneuver ends up compelling the clot that is in the socket, pressing in some way on the underlying germ, causing some injury and promoting necrosis of the pulp associated with inflammation that will also cause a new risk to the permanent element. Therefore, due to the anatomical proximity between the root apex of the deciduous element and the germ of the permanent successor, at the time of replantation, it may end up negatively affecting the development of the permanent successor tooth, thus interfering with the mineralization of the enamel, resulting in the appearance of white spots due to the loss of mineral or brown-yellow spots due to the diffusion of substances that are present in the blood where the enamel is formed. (Lenzi et al., 2011)

Many of the reimplanted primary teeth end up being extracted in a short period due to complications such as abscesses, mobility, and extensive root resorption. Deciduous teeth are important to maintain the space necessary for the correct development of occlusion in both dentitions. Thus, it is essential that they remain in the mouth until the transition to permanent teeth occurs properly. If there is tooth loss, maintenance of the edentulous space should be carried out immediately to avoid damage to the permanent dentition, such as reducing the length of the arch and tilting adjacent teeth. (Friedlander; Chandler; Drummond, 2012; Santos et al., 2013; Silva; Saroza, 2008)

#### FINAL CONSIDERATIONS

Deciduous teeth avulsion not only affects oral health but also impacts the aesthetics and quality of life of patients. This study reinforces that the replantation of avulsed deciduous teeth is contraindicated, mainly due to the risks of injury to the germ of the permanent tooth, such as changes



in enamel formation, delay in eruption, and deviations in the root anatomy.

In these cases, the role of the dental surgeon is essential, not only to reimplant the tooth safely, but also to guide parents and guardians on the necessary care. The presence of trauma to the primary teeth can directly interfere with the development of permanent teeth. Therefore, specialized care, combined with preventive actions, is essential to reduce the risk of sequelae that can affect the child throughout his or her life. Although studies on the subject are still scarce, the available data confirm the need to avoid replantation and prioritize preventive strategies that help preserve children's oral health and avoid future complications.

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