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CONSERVATIVE TREATMENT OF DENS IN DENTE IN A PEDIATRIC PATIENT: CASE REPORT

TRATAMENTO CONSERVADOR DE DENS IN DENTE EM PACIENTE PEDIÁTRICO: RELATO DE CASO

Bruna Vaz Gallego Lima Rover[1], Annelyze Podolan Kloster[2], Rafael Almeida Rocha[3], Luiz Evaristo Ricci Volpato[4]

[1]Specialist in Pediatric Dentistry from the Avantis University Center. Private practice. Cuiabá (MT), Brazil; [2]Master's degree in Pediatric Dentistry from the Bauru School of Dentistry, University of São Paulo, Professor of the Dentistry Course at the Várzea Grande University Center. Várzea Grande (MT), Brazil. [3]Master's degree in Clinical Dentistry from the Federal University of Juiz de Fora, Professor at the Anhanguera-Pitagoras School of Dentistry. Governador Valadares (MG), Brazil, [4]PhD in Dentistry, Area of concentration: Pediatric Dentistry, from the Bauru School of Dentistry, University of São Paulo, Professor of the Postgraduate Program in Integrated Dental Sciences at the University of Cuiabá. Cuiabá (MT), Brazil.

***Corresponding author**: Luiz Evaristo Ricci Volpato – *Email*: odontologiavolpato@uol.com.br

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ABSTRACT: Objective: To present the case of a pediatric patient with *dens in dente* and its conservative treatment. **Clinical case report:** A six-year-old female pediatric patient came for dental evaluation with morphological alteration in the upper left central incisor. After radiographic evaluation, the diagnosis of *dens in dente* was confirmed. Since the patient had a large accumulation of biofilm and *dens in dente* could lead to the development of a carious lesion with potential pulp involvement, we opted for conservative treatment with pit and fissure sealant. **Conclusion:** The patient's age and poor biofilm control were preponderant reasons for the indication of sealing the *dens in dente* with resin sealant. The patient should be kept under periodic monitoring.

KEYWORDS: Dens in Dente; Pit and Fissure Sealants; Tooth Abnormalities.

RESUMO: Objetivo: Apresentar o caso de uma paciente pediátrica com *dens in dente* e seu tratamento conservador. **Caso clínico:** Uma paciente pediátrica, do sexo feminino, seis anos de idade, compareceu para avaliação odontológica apresentando alteração morfológica no incisivo central superior esquerdo. Após avaliação radiográfica foi confirmado o diagnóstico *dens in dente*. Como a paciente apresentava grande acúmulo de biofilme e o *dens in dente* poderia levar ao desenvolvimento de uma lesão cariosa com potencial de envolvimento pulpar, optou-se pelo seu tratamento conservador com selante de fóssulas e fissuras. **Conclusão:** A idade da paciente e seu deficiente controle de biofilme foram preponderantes para a indicação de selamento do *dens in dente* com selante resinoso. A paciente deverá ser mantida em controle periódico.

PALAVRAS-CHAVE: Anormalidades Dentárias. Dens in Dente. Selantes de Fossas e Fissuras.

INTRODUCTION

Dental anomalies usually occur as a result of disturbances during tooth development that can alter the shape, number, size, and structure of teeth and tooth eruption patterns[1]. *Dens invaginatus* or *dens in dente* (DID) is a developmental dental anomaly involving the invagination of the enamel organ into the dental papilla before calcification is complete. Invagination begins in the crown and can extend to the root. These anomalies are clinically relevant, as bacteria from the oral cavity can contaminate and propagate within these malformations, leading to the development of carious lesions and possibly pulp necrosis[2].

In recent decades, several theories have been proposed to explain the etiology of dental coronal invaginations. The genetic factor has been considered the most preponderant cause[3]. Infection, trauma, and changes in the growth pattern of the dental arches during odontogenesis that may cause enamel folding, and the rapid proliferation of the inner enamel epithelium in the underlying dental papilla have also been suggested[2, 4, 5].

Clinically, DID may present in different ways. Affected teeth may have apparently normal coronal morphology or unusual characteristics, such as a larger buccolingual diameter or a peg-shaped, barrel-shaped, conical, or claw-shaped cusp. If these teeth have open root apices, they present the clinician with an additional challenge in controlling the apical extension of the root filling and restoring the apical portion of the tooth[4, 6, 7]. The classification system described by Oehlers in 1957 appears to be the most widely used to distinguish the types of invaginations, possibly due to its simple nomenclature and ease of application. The system categorizes invaginations into three classes according to their extension[8, 9] (Figure 1).

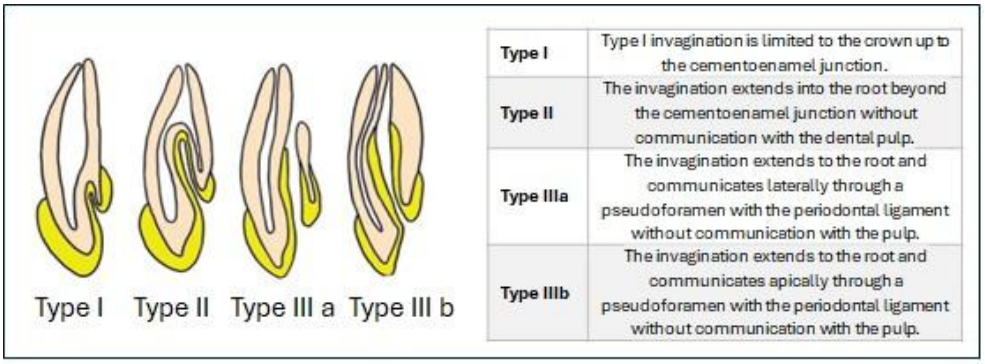

Figure 1. Dens invaginatus classification proposed by Oehlers (1957).

The treatment of DID poses a challenge for dentists. Complex shapes, such as altered crown-root anatomy and open apex, are difficult to manage. The choice of treatment should be based on the severity of the invagination and the presence of associated clinical and radiological signs[3, 4, 7, 10].

The objective of this study is to present the case of a pediatric patient with DID and its conservative treatment.

CASE REPORT

A six-year-old female sought care at the Pediatric Dentistry Specialization Course Clinic of EAPE Cursos, Cuiabá, Brazil, in 2021, accompanied by her mother. The patient history did not reveal any noteworthy information. The clinical examination revealed that the patient was in the mixed dentition

phase and had anterior open bite. A protuberance was observed on the palatal surface of Tooth 21 compatible with a cingulum (Figure 2).

Figure 2. Initial appearance of patient showing mixed dentition in A) maxillary occlusal view; B) frontal view; C) right side view; and D) left side view.

Panoramic and periapical radiographs of the upper incisors (Figure 3) showed Tooth 21 erupting with a large pulp chamber and an abnormality that resembled the classic “one tooth inside another” image of type III DID, when enamel invagination reaches the apical region of the tooth, forming more than one apical foramen.

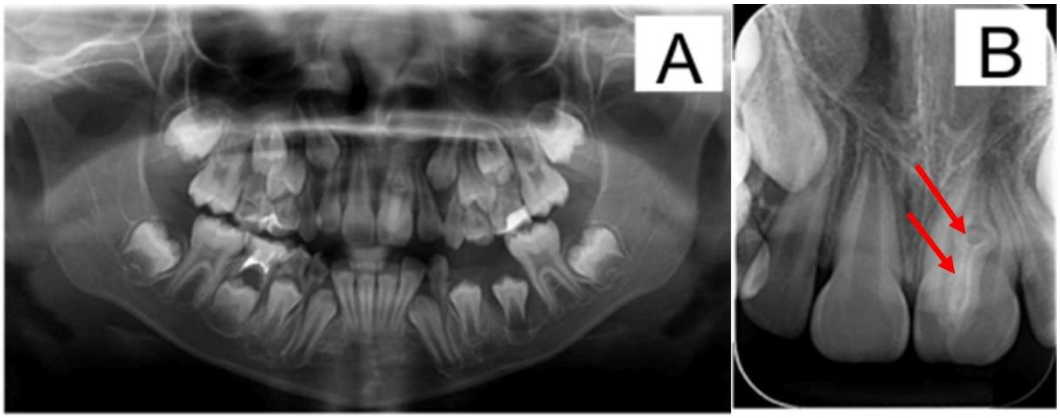

Figure 3. Radiographic images: A) panoramic radiograph showing patient in mixed dentition with deciduous and permanent teeth in different stages of formation; B) periapical radiograph showing Tooth 21 with large pulp chamber and abnormality similar to “one tooth inside another” image indicated by arrows.

After identifying the developmental abnormality in Tooth 21, the patient was monitored for two months until two-thirds of the crown were clinically visible. The patient had a high accumulation of biofilm, which became more evident after highlighting with plaque-disclosing solution (Eviplac Solução, Bioarte, São Carlos, Brazil). To avoid the accumulation of biofilm at the opening of the invagination and prevent the development of a carious lesion in the region, the decision was made to seal the invagination. For such, prophylaxis was first performed with pumice stone, followed by enamel conditioning with 35% phosphoric acid (Ultra Etch IndiSpense, Ultradent South Jordan, USA), rinsing with

abundant water, and sealing with resin sealant (Ionoseal, VOCO, Cuxhaven Germany) photoactivated for 30 seconds, following the manufacturer's instructions. The occlusion was then checked (Figure 4).

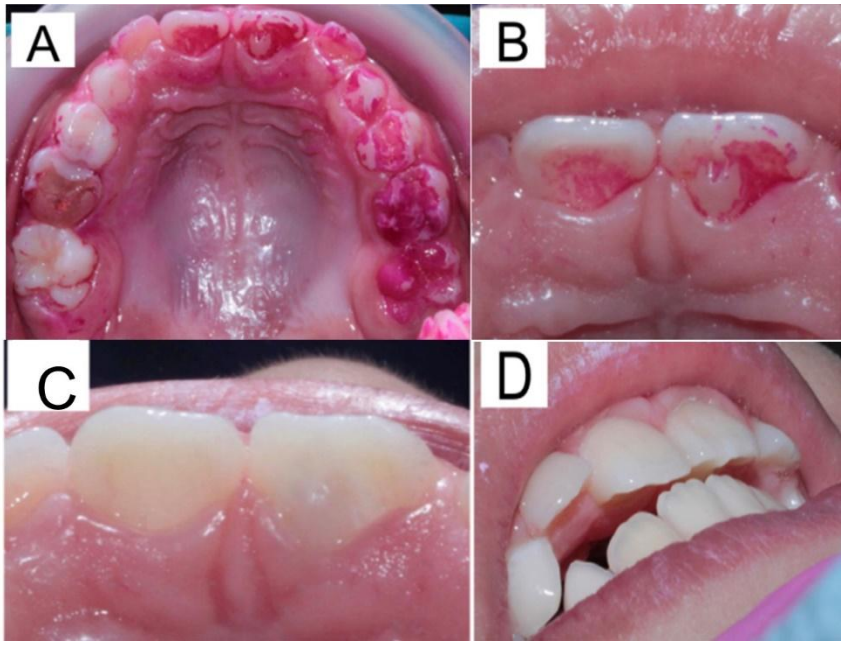

Figure 4. Clinical aspect A) after use of plaque-disclosing solution exposing patient's poor oral hygiene; B) clinical appearance after brushing by patient, demonstrating persistent retention of biofilm on lingual surface of maxillary incisors; C) application of resin sealant; D) occlusion check after application of sealant.

The patient is currently enrolled in a prevention program for monitoring the case. In the radiographic follow-up after 60 days, Tooth 21 can be seen with an open apex (Figure 5).

Figure 5. Radiographic follow-up 60 days after initial diagnosis, in which Tooth 21 can be seen with open apex.

DISCUSSION

This article reports the case of a patient in the mixed dentition phase in whom the presence of a type III enamel invagination in the maxillary left central incisor was identified early. Considering the patient's age and biofilm retention, the decision was made to seal the invagination opening to prevent the development of a carious lesion.

Like taurodontism, root dilaceration, pin-shaped teeth, claw cusp, shell teeth, and concrescence, DID is considered a shape abnormality[1, 9, 11]. Its prevalence in the world population ranges from 0.3 to 10% of diagnosed cases[2]. In the case presented, DID was found in a permanent tooth of a female patient. However, this anomaly is more common in males at a frequency of 2:1[1].

The management of DID is variable and depends on its clinical and radiographic diagnosis. When coronal invagination (class I to III) is detected and the pulp is not contaminated, sealing the invagination with resin sealant or fluid resins is indicated[2, 3, 7]. In the case presented, the radiographic exam was essential for the identification and correct classification of the DID as well as for the indication of conservative conduct. The preventive filling of the invagination performed in this case meets the recommendations for performing this procedure to avoid the development of carious lesions in healthy teeth[7] or to prevent pulp involvement in teeth that have carious lesions in an early stage[8]. This conservative conduct is technically simple, has a low cost, and preserves healthy dental structures. It is important for the patient to be aware of the need for good oral hygiene as well as regular clinical and radiological examinations to avoid any complications[2, 3, 7].

Encouraging oral hygiene to prevent the manifestation of carious lesions caused by microorganisms is the best way to contain the proliferation of this disease, in addition to being efficient for adequate oral health. Therefore, awareness of the importance of good oral health to good general health is extremely important[11, 12]. Prevention in this case indicates the success of the treatment and the importance of an early, correct diagnosis.

It is important to emphasize that teeth with DID are more prone to pulp complications and that endodontic treatment of the infected invagination requires careful management due to its complexity[13-15], underscoring the importance of a timely diagnosis of the anomaly and a preventive intervention, as performed in the case presented here.

Non-surgical treatment of teeth with DID of a complex anatomy was not considered viable until recently. Advances in the development of technologies, such as the advent of 3D images, have helped gain a better understanding of the complex anatomy, which facilitates treatment planning and predictability[1, 14].

However, when a tooth with DID develops pulp necrosis, especially if this occurs before root formation, treatment becomes more complex and requires a multidisciplinary approach. Teeth with DID types II and III may need to be extracted and replaced with a prosthesis[2].

The case presented here demonstrated how the early diagnosis of DID enables conservative intervention without involving dental wear. The approach used, combined with educational and health promotion strategies, should be considered by clinicians when faced with similar cases in their practice.

CONCLUSION

A routine radiographic exam enabled the early identification and classification of DID in the case presented. The patient's age and poor biofilm control were preponderant factors in the indication for sealing the developmental anomaly with resin sealant. The patient should be kept under periodic monitoring.

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