

Upper lateral incisor agenesis in deciduous and permanent dentition: case study

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Abstract

Upper lateral incisor agenesis is characterized by the absence of dental elements and can be a challenge for professionals regarding treatment possibilities, especially in deciduous dentition where it occurs less frequently. The aim of this report was to describe a case about the agenesis of maxillary lateral incisors in deciduous and permanent dentition. A child of 02 years and 04 months old attended the dental office with his mother. During the evaluation, the mother's main complaint was the aesthetic compromise due to the appearance of her daughter's smile, the radiographic examination was observed in the absence of the deciduous dental elements and permanent germs. This article discusses which treatment alternatives offer better quality of life due to negative aesthetic impact, as well as related social, economic and psychological aspects.

KEYWORDS: Anodontia; Incisor; Tooth; Deciduous; Dental Abnormalities.



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Introduction

During dental care the professional is subject to find deviations from normality, such as dental anomalies. Agenesis is a type of number anomaly and is characterized by the absence of dental elements, which can be classified as hypodontia (the absence of up to 6 teeth), oligodontia (the absence of more than 7 teeth) or anodontia (the absence of all teeth)¹⁻⁴. An early diagnosis of anomalies is critical for treatment to be established in order to provide better quality in reference to function and aesthetics^{1,5-7}.

Studies show that agenesis mainly affects the third molars, upper lateral incisors, upper and lower premolars, and lower central incisors^{1,4,8}. Agenesis of the maxillary lateral incisors (ILS) is a congenital anomaly and is associated with genetic factors, so it is extremely important to evaluate family history^{1,8}. In addition, this change may be associated with environmental factors such as infections, trauma, and chemical exposures^{1,5}.

Regarding the diagnosis, aside from the clinical examination, the radiographic examination is essential as it helps in early diagnosis. ILS agenesis can affect deciduous and permanent dentition; however, there are few reports of this hypodontia in the first dentition, with a prevalence in only 0.4% to 2% of cases^{9,10,11}. In addition, they can occur unilaterally or bilaterally and, in most cases, in females^{2,10,11}.

The absence of ILS can cause aesthetic, phonetic and functional problems in patients, leading to social impacts^{6,12,13}. Asymmetry when smiling causes many patients to look for orthodontic and prosthetic treatments due to the negative aesthetic impact that the presence of diastemas causes^{13,14}. Therefore, professionals should be prepared to deal with this situation. Adequate knowledge of the possible treatments available is extremely important, and the treatment in most cases being multidisciplinary^{1,8}.

Clinical case

Patient M.F.P.B., female, 02 years and 04 months old, visited the private dental office, accompanied by her mother, for a general dental care consultation and for possible dental absences in the anterior maxilla. The child lives with the parents in their own home and with favorable social conditions and basic sanitation. In addition, the child was already attending school. During the anamnesis the main complaint was related to aesthetics. The mother expressed extreme concern about the social acceptance of her daughter due to appearance and smiling, and the fear of bullying that the child could suffer at school (Figure 1)¹⁵.

The mother reported that there are other cases in the family, being that she and her brother (the uncle of the patient) and niece, experienced dental absences. However, all family members presented agenesis only in the permanent dentition. In order to find out if the daughter also had the anomaly, the mother sought a professional, as she suspected the absence of the upper lateral incisors. The patient in question had no previous radiographic documentation, so radiographic examinations of the anterior maxilla were requested. Due to the patient's age, the modified occlusal or adapted periapical radiograph of the anterior maxilla was chosen (Figure 2).



FIGURE 1 - Photographs taken by the patient's mother. The upper lip brake with low insertion (**A**) and diastemas (**B**) is observed.



FIGURE 2 - Modified occlusal radiographic examination. It is possible to observe the agenesis of elements 52 and 62.

The modified occlusal technique is performed using an adult-sized digital radiography sensor (2) or conventional adult periapical film (1,2) positioned with a longer horizontal axis and the active face of the film facing the anterior teeth of the maxilla or mandible depending on of the radiographed area. For the maxilla, it has an incidence at the nasal apex ($+65^\circ$) and for the mandible, it has an incidence at the chin (-55°).

Periapical radiographic examinations were also performed, and the absence of the germs of teeth 52 and 62 and their permanent successors was observed in the region between teeth 51 and 53 and between teeth 61 and 63 (Figure 3).

Panoramic radiography was not performed due to the young age of the patient. Due to the radiation dose, it was decided to wait until 6 years of age to perform this technique.

During the clinical examination, the presence of the low insertion of the upper lip brake was observed. This insertion may influence the diastema, causing a larger space between the central incisors. Because of this, it is extremely important to follow up with the case to assess the need for a frenectomy after the eruption of permanent canines, as well as the referral of orthodontic or prosthetic treatment. Furthermore, breastfed children may have a more apparent labial frenulum, however, it was reported that breastfeeding occurred until three months of age. The use of formula in the bottle happened from birth, and the child was breastfed until five years old (current age).

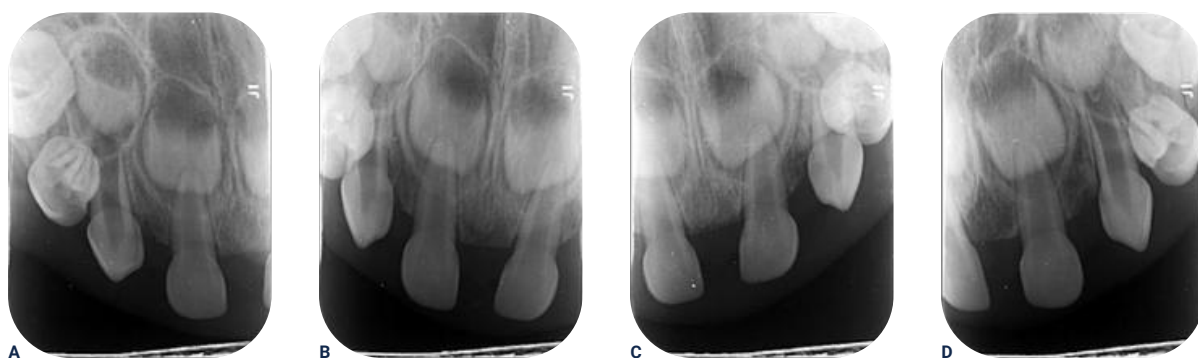


FIGURE 3 · Periapical radiographic examinations of elements 53 (A), 51 and 61 (B,C) and element 63 (D).

The patient underwent a dental consultation for prophylaxis and topical fluoride application, showing definitive positive (+ +) behavior on the Frankl scale. The necessary orientations regarding oral health (habits, diet and guidelines of cleaning and home hygiene of the teeth) were made. In addition, the absences of the deciduous teeth corresponding to the lateral incisors were shown to the parents since no germs were observed. Those responsible were advised about the possibility of the absence of permanent teeth corresponding to these deciduous teeth, which will be followed through subsequent radiographic examinations. It was explained to be an inherited (genetic) condition, probably inherited from the mother's family.

Since the esthetic complaint was exclusive to the mother, the family was instructed on the possibilities of treatment in the permanent dentition, such as space closure and subsequent restorative/prosthetic rehabilitation or maintenance of the space for implants. At the age of the patient in question, dialogue with the family was necessary to outline the treatment strategy in the future since the intervention would not be feasible in the primary dentition.

Discussion

Through evaluating the literature, it can be observed that in cases of congenital agenesis, 20% of the cases are agenesis of the upper lateral incisor. Regarding permanent dentition, these cases are more common when compared to deciduous dentition^{9,11,16-18}. In the first dentition, agenesis of the maxillary lateral incisors is rarely found, and, in the case reported, the prognosis becomes less favorable since the patient does not have the deciduous element. This affects the permanent dentition, because the formation of the permanent tooth occurs through the dental blade of the deciduous tooth^{9,11}.

In most cases, agenesis occurs bilaterally; however, in cases that occur unilaterally, the professional faces greater challenges to perform the treatment due to asymmetry^{10,11}.

ILS agenesis is associated with numerous genetic and environmental factors. In most of the reported cases, patients have a family history of dental anomalies^{1,5}. This anomaly may also be associated with genetic transcription factors such as MSX1, AXIN 2, and PAX9; syndromes such as Down Syndrome; ectodermal dysplasia; and hemifacial microsomia; as well as non-syndromic conditions such as palatine fissures; lip fissures; and cancer^{1,2,10,19}.

Some authors expose the relationship between agenesis and other anomalies that occur in the first dentition, such as cases of dental fusion that are associated with the congenital absence of the permanent successor^{4,11,16,20}. In addition, there are consequences that may occur in the permanent dentition due to ILS agenesis, such as canine ectopic eruption and Class III development due to maxillary hypoplasia^{9,11,16,21,22}. In the current report, there is a possibility of such complications due to the absence of deciduous and permanent ILS.

It is important to emphasize that early diagnosis helps in treatment possibilities. However, the professional should be aware, as some factors may prevent this diagnosis, such as the age of the patient^{5,6,23,24}. In the case reported, due to the age of the patient, radiography would show the formation of the crown of the permanent successor. Thus, radiographic follow-up is essential to assess the actual absence of the dental element, whether deciduous or permanent^{11,16}.

In addition, studies show that agenesias can cause asymmetries in the patient's smile, causing a negative aesthetic impact. Because they involve the anterior region, patients and their families feel uncomfortable with the diastemas and poorly positioned canines^{11,14,25}. This aesthetic impact can have psychological and social consequences for patients, especially in childhood. This was the mother's main concern in the case described.

Regarding the possibilities of treatment, as previously mentioned, in deciduous dentition the professional faces greater challenges to perform proper planning and perform the intervention, since there are few reported cases^{9,18}. Overall, treatment will involve several specialties acting together. Due to this, planning for the integral treatment of the child is essential.

According to the literature found, further studies on hypodontics in primary teeth are still necessary, but the dentist may choose not to perform intervention at this stage, giving only oral health guidelines and performing prophylaxis, postponing treatment to an ideal time²⁶. In cases where aesthetics and function are compromised, orthodontic and prosthetic treatment may be used, and, in young patients, a less invasive approach is critical. However, in some cases, aesthetic rehabilitations can be performed with removable prostheses or adhesive restorations, when it is feasible^{27,28}.

Orthodontic treatment can be used both to close and to open the space. If the first option is indicated, the professional should evaluate the occlusal conditions and stomatognathic balance^{12,22}. During the closure of the diastemas, the canine guide may be replaced by the group function, however, this approach needs further study, as it is not supported by scientific evidence, but presents positive results in the cited cases^{7,16}.

In most cases of ILS agenesis, treatment is multidisciplinary. There are many possibilities, which include orthodontics, removable prostheses, fixed bridges, canine reanatomization of the lateral incisor, implants, and ceramic facets, among others^{1,29}. However, systematic literature reviews have shown that fixed dentures on other dental elements may cause more periodontal consequences than orthodontic treatment and may not be desired by patients. When implants are evaluated, they have shown satisfactory results, but further prospective studies are needed^{1,7,9,20}. The canine reanatomization with ceramics has presented a functional and aesthetic result^{10,28,30}. In cases where

agenesis occurs only in the permanent dentition, the deciduous tooth can also be resuscitated, but the prognosis is unpredictable in the long run²⁰.

Studies have also evaluated the aesthetic limitations of implant prostheses, showing that orthodontic closure provided better aesthetic results for patients^{1,7,8}. According to Bar (2016), short implants had greater aesthetics. However, the practitioner should be aware that each case must be evaluated individually. Social, psychological and economic aspects may influence the choice of treatment. In addition, other factors such as bone density, patient age, gingival morphology, tooth size and aesthetic impairment should be taken into consideration^{13,24,29}.

In addition, the study by Kiliaridis (2016) pointed out that orthodontic treatment is more favorable to close the space in relation to prosthetic rehabilitation. According to Muhamad et al. (2016), opting for implant treatment is favorable, but the moment of orthodontic intervention must be carefully evaluated, and the patient must present the amount of bone in the region so that the treatment result is satisfactory. The literature reinforces the need for more follow-up studies of patients with dental agenesis treated with different strategies^{31,32}.

Conclusion

In conclusion, despite the factors presented, the case in question should still have long-term follow-up since the patient is young, a factor which may influence treatment. Further studies in the literature are still needed, especially in cases of deciduous dentition agenesis due to the low incidence of these cases.

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Agenesia de incisivo lateral superior nas dentições decídua e permanente: estudo de caso

Resumo

A agenesia de incisivo lateral superior se caracteriza pela ausência dos elementos dentários e pode ser um desafio para o profissional no que diz respeito às possibilidades de tratamento, principalmente na dentição decídua onde ocorre com menor frequência. O objetivo deste relato foi descrever um caso sobre a agenesia de incisivos laterais superiores na dentição decídua e na dentição permanente. Uma criança de 02 anos e 4 meses compareceu ao consultório odontológico com sua mãe. Durante a avaliação, a queixa principal da mãe foi o comprometimento estético devido à aparência do sorriso de sua filha, ao exame radiográfico foi observado a ausência dos elementos dentários decíduos e germes dos permanentes. Este artigo discute quais as alternativas de tratamento para oferecer melhor qualidade de vida devido ao impacto estético negativo, além dos aspectos sociais, econômicos e psicológicos relacionados.

PALAVRAS-CHAVE: Anodontia; Incisivo; Dente Decíduo; Anormalidades Dentárias.

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