MIRROR IMAGE: A RARE CASE OF PROLONGED TOOTH RETENTION IN TWINS

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Palavras-chaves: Caso Clínico. Dente. Decíduo. Gêmeos.

RESUMO

Introdução: Estudos feitos em gêmeos são importantes porque fatores ambientais e genéticos parecem estar relacionados às alterações fenotípicas. **Objetivo**: Este artigo apresenta um caso raro de gêmeos monozigóticos apresentando imagem em espelho de retenção prolongada de incisivos centrais decíduos superiores homólogos. **Relato do caso**: Os irmãos gêmeos, com 9 anos de idade, não apresentavam história de trauma orofacial ou doença comum da infância. Após exames clínicos e radiográficos foram identificados a retenção do dente 51 no gêmeo 1 e do dente 61 no gêmeo 2. Em ambos os pacientes, os dentes 11 e o 21 estavam em erupção. O tratamento proposto foi a exodontia dos dentes decíduos com anestesia local e acompanhamento. **Conclusão**: Gêmeos podem apresentar semelhança no padrão de anomalias dentárias devido à influência de fatores genéticos. Adicionalmente, em gêmeos monozigóticos, a localização das anomalias diagnosticadas pode se apresentar invertidas ou imagem em espelho. Esse fato deve estimular o profissional a examinar o par de gêmeos para diagnosticar qualquer anomalia dentária que possa estar presente. O diagnóstico precoce e tratamento adequados devem ser realizados para evitar danos funcionais e estéticos em pacientes com retenções dentárias.

Keywords: Case Reports. Dental Care for Children. Tooth. Deciduous. Twins.

ABSTRACT

Introduction: Studies of twins are important because environmental and genetic factors seem to be related to the phenotypic alterations. **Objective**: This paper presents a unique case of monozygotic twins with mirror image of a retained primary central incisor. **Case report**: Twin male brothers, 9-years-old, presented prolonged retention of the primary central upper incisor. The over-retained teeth in one twin were a mirror image of those in the other twin. The first twin presented a prolonged retention of the tooth 51 whereas the other twin presented a prolonged retention of tooth 61. After radiographic exams the over-retained teeth were extracted. **Conclusion**: Twins may show similarity in pattern of dental anomalies supporting the influence of genetic factors. In identical twins the location of diagnosed anomalies can be mirror imaged. This fact should lead the professional to examine the pair of twins in order to diagnose any dental anomaly that may be present.

INTRODUCTION

Mirror-image is a phenomenon in which a given characteristic is expressed in reverse sides when monozygotic siblings are compared to each other.[1] Even though there is a relatively strong genetic basis to missing or extra teeth, the number or position of affected teeth can be influenced by epigenetic factors. The mechanism of mirror imaging is unwell understood.[2] Different forms of division may occur in the monozygotic embryo. The first one occurs in an early developmental phase resulting from two zygotic cells. The second one, is the result from zygotic splitting during early blastocystic stage. One explanation for mirror-image is the division in a later

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embryonary stage.[3] Different forms of mirror-image anomalies in monozygotic twins were found in medical reports such as radial longitudinal hypoplasia and bifid spine,[1] myopia,[3] optic nerve hypoplasia[1], bone cysts,[5,6] arachnoid cysts[2] and carcinomas.[4] With respect to the mirror-image oral manifestations few different anomalies have been reported in the available literature (Table 1), but no case was found showing mirror image of over-retention of primary teeth. This paper presents a unique case of monozygotic twins aged 9 years, with mirror image retained primary central incisors.

***Table 1**: Mirror imaging dental findings in non-syndromic twins.*

Author (year)	Dental findings
Nik-Hussein and Salcedo, 1987[8]	Double teeth with hypodontia
Carton and Rees, 1987[9]	Conical supranumerary tooth
Beere, 1990[10]	Supranumerary tooth
Lauweryns et al, 1992[11]	Mesio lingual rotation tooth
Sperber et al, 1994[12]	Fused tooth
West, 1995[13]	Disto bucal rotation of the tooth / Deciduous tooth shed
Casseta et al, 2015[14]	Impacted teeth / Supernumerary teeth

CASE REPORT

The twin male patients, 9 years old, arrived for routine appointment at the Pediatric Dentistry Clinic of a Public School of Dentistry in Rio de Janeiro, Brazil, with chief complaint of non-exfoliation of primary teeth in both children. Their prenatal and natal histories were uneventful. No history of orofacial trauma or unusual childhood diseases was determined. The twins had identical features and their height and weight were within normal limits.

However, clinical examination showed that one of the twin (twin 1) presented a prolonged retention of the tooth 51, teeth 11 and 21 were erupting being that tooth 11 in a different position than its homolog (Figure 1). Regarding the twin 2, it was observed a prolonged retention of tooth 61 and presence of teeth 11 and 21 as well (Figure 2). In twin 1, both tooth 11 and 21 erupted in the correct position in the arch, unlike twin 2, where only tooth 21 erupted in the normal position. Dental caries and other oral pathologies were not observed in both brothers.

Periapical and panoramic radiographs confirmed the prolonged retention of deciduous teeth in both twins. The retention of deciduous contralateral teeth in these twins was diagnosed as a mirroring image phenomenon. No other alterations were observed in the radiographic exams.

The treatment plan included extraction of the retained teeth under local anesthesia (Figures 3 and 4). The procedure was performed following the mother's consent. Both patients were undergoing dental exchange and the incisors had an open apex, which did not recommend orthodontic movement at that time. Therefore, it was decided to refer patients for orthodontic evaluation.

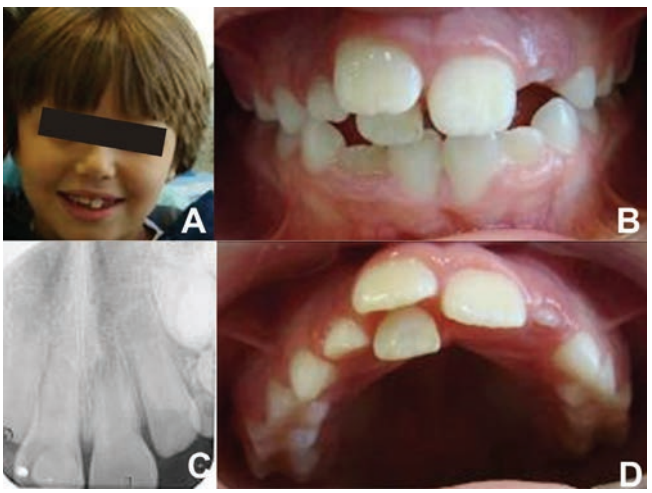

***Figure 1**: A) Frontal view of the patient's face - twin 01 B) Photography of frontal view of tooth 51. C) Periapical radiography of teeth 11, 21 and 51. D) Photography of oclusal view of teeth 51.*

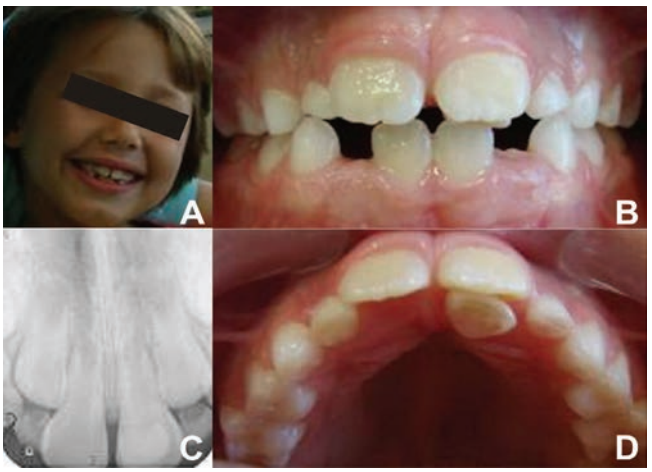

***Figure 2**: A) Frontal view of the patient's face - twin 02. B) Frontal view of tooth 61. C) Periapical radiography of teeth 11, 21 and 61. D) Oclusal view of teeth 61.*

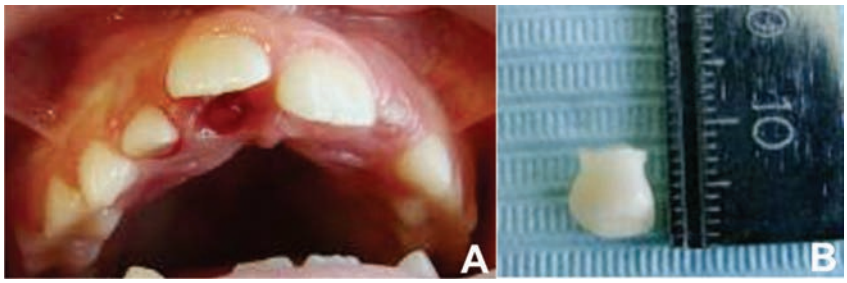

***Figure 3**: A) Photograpy of oclusal view of twin 1 after extraction of the teeth 51. B) Photograpy of the tooth 51 removed exhibiting physiological root resorption.*

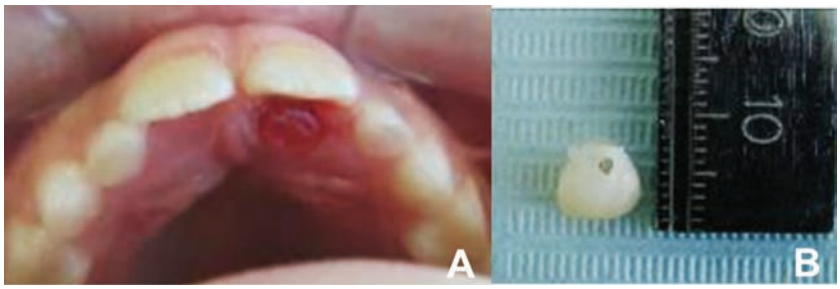

***Figure 4**: A) Photograpy of cclusal view of twin 2 after extraction of the tooth 61. B) Photograpy of the tooth 61 removed exhibiting physiological root resorption.*

DISCUSSION

The interesting aspect of the present case was the mirror image of the anomaly. In this pair of twins, the dental anomalies were identical but on contralateral sides. Mirror imaging has been demonstrated in the dental findings pertaining to normal twins, as well as those with facial dysmorphlogies such as cleft and/or palate.[11] Although, the supposition that monozygotic twins will always exhibit pathologies at homologue sides may not be entirely true, and for this reason the practitioner should pay attention to genetic and environmental factors[8,11,15,16] In addition, two or more concomitant developmental alterations are likely to be identified in monozygotic twins. Therefore, we ordered panoramic radiographs of each twin despite the normal clinical and developmental conditions, in order to diagnose any other anomaly that would be present.

The literature shows the prolonged retention of primary teeth in non-twin associated with trauma or endodontic treatment.[8,17,18] The percentage of prolonged retention of primary teeth with displacement of the permanent series is 4.2%.[19] Other dental situations associated with the mirror-image twins found were double teeth with hypodontia,[8] conical supernumerary tooth,[9] supernumerary tooth,10 rotating mesio lingual tooth[11] molten tooth. However, prolonged retention of primary teeth in mirror-twins has not been reported, making this report relevant.

In the present case, it was not possible to identify the exact cause of prolonged retention of deciduous teeth as no history of dental trauma[8,17] was reported during anamnesis. As few studies regarding mirror imaging in the oral cavity of monozygotic twins, this case can be considered an unusual condition in dentistry. There is no evidence in the literature that one side of one twin was more concordant with the opposite side of the co-twin.[12] It is possible that monozygotic twin pairs have exactly the same genotype, and that any phenotypic differences[8] between them must be caused by prenatal or postnatal environmental influences.[12] On the other hand, the present case suggests that when one twin presents an alteration of any kind, the other may also present the same alteration in a mirrored way, generating the need for more accurate exams. Panoramic radiographs were requested but no other alterations were observed.

Lingual development and eruption of the mandibular permanent incisors and the concomitant retention of mandibular primary teeth before 8 years old is considered physiological.[11] However, cases of prolonged retention of upper central incisors are seldom reported, since permanent teeth follow their precedent deciduous teeth through the roots.[8,9,12] These cases are considered relevant because the eruption of permanent teeth can be affected by such a delay in exfoliation. Despite the lack of tooth alignment, both patient and mother agreed on having the orthodontic correction postponed.

One limitation of the present case report could be a widely described fact, the memory bias, especially related to minor orofacial traumas that children can suffer at young age, causing a negative answer during anamnesis. In addition,

this case seems to be the first report of twins with prolonged retention of primary teeth, which could hinder other associations between cause and effect found in the literature. Thus, it can be concluded that in identical twins the location of diagnosed anomalies can be mirror imaged. This fact should lead the professional to examine the pair of twins in order to diagnose any dental anomaly that may be present. Acute diagnosis and proper treatment at the appropriate time should be instituted to avoid functional, esthetic, and also psychological consequences in patients with over-retained teeth.

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