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Management of Retained Deciduous Second Molars; with Congenitally Missing Second Premolars in Young Adults: A Case Report

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ABSTRACT

Objective: Congenitally missing teeth is a common dental anomaly, with the second premolars having a very high incidence after the third molars. Congenitally missing premolars may be associated with presence or absence of retained deciduous second molars. The objective of this case report is to describe the management of retained second deciduous molars with missing second premolars in a young adult patient.

Case Description: This article reports a case of a 20-year old female patient, an undergraduate in a Nigerian university, who presented to the dental clinic complaints of shocking sensation in one of her teeth in the maxillary right quadrant. Clinical examination revealed presence of retained deciduous second molars, bilaterally on the mandible and the maxillary right quadrant, with congenitally missing second premolars. There was a class II carious lesion on the maxillary deciduous second molar. The patient oblivious of the condition was bothered by the shocking sensation on the maxillary deciduous second molar. Amalgam was the restorative material used to treat the carious tooth.

Conclusion: It is imperative to maintain or restore the health (the anatomic and physiologic function) of the retained deciduous second molars in cases of congenitally missing second premolars.

Key words: Congenitally missing second premolar, retained deciduous second molar, Amalgam

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INTRODUCTION

Congenital absence, as known as tooth agenesis, of teeth may arise as a result of the effects of genetic and environmental factors.¹ However, heredity is considered the main etiologic factor of tooth agenesis.^{2,3}

The prevalence of congenitally missing teeth varies around the world with a reported wide range from 0.3%-17.1%.⁴ Onyeaso and Onyeaso (2006) reported a prevalence of 4.2% in Nigeria.⁵ Congenitally missing teeth could occur as an isolated trait or it could be syndromic with an underlying recognizable clinical syndrome.⁶ Oredugba in a study of congenitally missing teeth in a group of patients with Down syndrome recorded a high prevalence of 63%.⁷ It has been reported that there is a higher prevalence of hypodontia in the permanent dentition than in the primary dentition.⁸ Missing second premolars and

with the presence of retained second deciduous molars are more common in the mandible than the maxilla.⁹ Yemitan et al.¹⁰ reported no significant difference in distribution of congenitally missing teeth between sexes or localization in arches and quadrants.

Many studies reported that the second premolars have the highest incidence of congenital absence after the third molars¹¹⁻¹³, although a study has reported the maxillary lateral incisor to be the most commonly absent tooth, followed by the third molars and then the mandibular second premolars.¹⁰

A significant association between the congenital absence of the second premolars and infraocclusion of retained deciduous molars has been reported.¹⁴

With congenital absence of teeth occurring in the permanent dentition, the deciduous teeth often remain in place beyond the time they would otherwise be shed. Persisting deciduous teeth serve as space maintenance, prevent resorption of the alveolar bone and may function as a semi-permanent solution long into adulthood and postpone the need for prosthetic replacement.¹⁴

Retained deciduous molars can either be extracted, especially in cases of associated

pathology¹¹ or retained for as long as possible.¹³ In the case of tooth retention, the goal is to maintain the tooth with the alveolar bone for future implant and prosthetic reconstruction.

The objective of this case report is to describe the management of retained second deciduous molars with missing second premolars in a young adult patient.

CASE DESCRIPTION

A 20-year old young lady from Edo State, Nigeria, with no prior history of dental visit presented with a 1-week history of shocking sensation in the maxillary right quadrant. She is an undergraduate of the University of Benin. The shocking sensation occurs when she chews and with intake of cold fluids.

On clinical examination there were upper and lower midline diastemas. There were retained mandibular deciduous second molars bilaterally, which were free of caries and retained maxillary right deciduous second molar which had a class II carious lesion. There were no swelling, sinus and mobility. There was no submergence of the retained second deciduous molars on the maxilla and mandible respectively.

Panoramic view of the jaw revealed absence of



Figure 1: Clinical photograph of patient showing bilaterally retained mandibular second deciduous molars.



Figure 2: Clinical photograph of patient showing retained right maxillary second deciduous molar with a class II carious lesion.



Figure 3: Panoramic radiograph of patient showing absence of permanent second premolars, bilaterally on the mandible and on the maxillary right quadrant.

permanent second premolars, bilaterally on the mandible and on the maxillary right quadrant. The roots of each retained deciduous second molar did not show signs of resorption or periapical furcation associated rarefaction. Periapical radiograph of the carious deciduous molar on the right maxillary quadrant revealed no pulpal involvement. The treatment plan was made to preserve the deciduous molars and treat the carious deciduous molar.

Amalgam, with Zinc Oxide Eugenol lining, was used to restore the carious tooth, under local anesthesia given via infiltration.

DISCUSSION

Congenitally missing teeth are the most common developmental abnormality in human.² Epidemiological studies report lower prevalence in individuals of African descent compared to Caucasoid and Asian. In general females are more affected than males.¹⁵

Many treatment modalities of congenitally missing second premolar have been reported. Where non extraction is being considered, interproximal reduction of the retained second deciduous molar tooth surface can be carried out to make the tooth width comparable to that of the absent second premolar. If there is minimal submergence of the deciduous molar a restorative composite build-up of the occlusal surface can be carried out to maintain the integrity of the interproximal contact and prevent supra eruption of the opposing teeth and the tendency for the adjacent teeth to tilt toward the primary tooth crown.⁹

Cardoso et al.¹⁶ extracted the retained maxillary molar in a 7 year old with agenesis of maxillary second premolar with retained maxillary deciduous second molar to allow spontaneous mesial migration of the first molar.

Hemisection of the retained deciduous second



Figure 4: Study model showing right maxillary retained second deciduous molar with absent right maxillary second premolar, presence of bilaterally retained mandibular second deciduous molars. There is no infraocclusion of the retained deciduous molars



Figure 5: Clinical photograph of patient showing retained right maxillary second deciduous molar with a class II amalgam filling

molar to allow the mesial drift of the first permanent molar has also been reported as a viable treatment for retained second primary molar. Once the first permanent molar has reached close approximation to the mesial half of the hemisected tooth, the mesial half is removed and orthodontic forces applied to complete space closure. This is reported to allow the permanent tooth to move through the buccolingual bone plate, which is maintained by the residual crown-root portion of the second primary molar, thus avoiding undesirable mesial rotation as well as avoiding the flattening of the facial fullness.¹⁷

Autotransplantation is considered a good treatment plan in young adults when a suitable donor tooth is available, with success rate of 70-94%.¹⁸ Autotransplantation reduces the severity of some orthodontic cases without compromising the dental status or interfering with conventional procedures in case of failure.¹⁷ Some complications of transplantations are ankylosis (usually "replacement ankylosis"), persistent external root

resorption (surface resorption and inflammatory resorption) and micro trauma to the periodontal membrane during removal of the donor tooth.^{18,19}

In this case report, the choice to maintain the anatomy of the retained second deciduous molars without altering the shape to resemble the missing second premolars was considered best for the patient, since there was no submergence of the deciduous molar and the patient was comfortable with the shape and inclination of her dentition. A simple restorative technique using Amalgam was used to treat the carious retained deciduous molar. The choice of Amalgam as restorative material in this case report, includes (a) Amalgam possesses high compressive strength and, therefore, able to withstand masticatory forces. (b) Its satisfactory marginal adaption. (c) The physical characteristics of amalgam are comparable to enamel and dentine (d) It has good wear resistance.²⁰ These characteristics are of utmost importance because they contribute to the long-term success of amalgam restorations. Since the retained deciduous molar is to be maintained for as long as possible, Amalgam was considered the best restorative material in this treatment. In a one week review of the patient, there was no more sensitivity initially experienced by the patient from intake of cold fluids.

The choice to retain the deciduous molar in this patient is in tandem with a previous study that highlights the need for retained second deciduous molar to be left *in situ*.²¹ Maintenance/Restoration of the tooth preserves the buccolingual ridge and prevents the formation of a lateral buccal bony depression that could jeopardize the success of implant placement in the future and the need for bone grafting.²²

The consideration to preserve retained deciduous second molar teeth in this patient with congenital absence of second premolars is in consonance with previous studies that reported good long term prognosis of retained healthy deciduous mandibular/maxillary second molar following early diagnosis and appropriate treatment.^{23,24}

CONCLUSION

In conclusion, cases with congenital absence of second premolars with the retained second deciduous molars lasting into adulthood have promising prognosis. Thorough clinical and radiographic evaluation should be carried out prior to any treatment.

Interdisciplinary treatment is relevant between the orthodontist, restorative dentist (and pediatric dentist for child patients) in achieving favorable aesthetic functional outcomes on the long term.

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