Unilateral Gemination of the Upper First Permanent Molar: A Rare Case Report

Ameera Kamal Khaleel, Ali Sultan AlRifai[1], Ramizu Bin Shaari[2], Mohamad Arif Awang Nawi[2]

Dentistry Department, Al Safwa University College, Karbala, Iraq, [1]Dentistry Department, Al-Amal University College for Specialized Medical Sciences, Karbala, Iraq, [2]School of Dental Sciences, Health Campus, Universiti Sains Malaysia, Kelantan, Malaysia

Abstract

Gemination or a double tooth is a rare condition experienced in dental clinics, in which usually the tooth shows one root and two intertwined crowns. It is an incomplete separation for one tooth. The etiology of gemination is multifactorial, such as environmental factors, trauma, and genetics. The study aimed to find the prevalence rate of gemination in Karbala city population. In the present article, an orthopantomogram of 550 patients visiting the oral and maxillofacial private radiology clinic in Al-Mina Dental Center, Iraq/Karbala City was examined for the presence of tooth gemination. The results revealed that only one case of unilateral gemination of the upper first maxillary permanent molar in a male patient 32 years old was reported. The study concludes that the low prevalence rate of gemination confirms the role of racial factors.

Keywords: Double teeth, fusion, gemination, molar

Introduction

Abnormalities associated with human dentition may be seen associated with various forms, such as abnormalities in the number, shape, size, or structure of teeth.[1] Gemination, which is a rare asymptomatic condition, is an attempt by a single tooth for division, and the tooth division is stopped before the development is completed,[2] and as a result, this leads to the appearance of one large tooth usually with two crowns, with a normal number of dentition or two divided teeth with a separate roots and crowns. However, fusion clinically appears similar to gemination, but it occurs as a result of the joining of two tooth buds during the period of tooth development.[3]

The etiology of gemination is still unclear. The causes may be a genetic, local, or systemic metabolic disturbance, or local trauma occurring during tooth germ development in the period of morphodifferentiation of the tooth. Gemination may lead to caries with pulp involvement with severe pain,[4] periodontal problems, and poor esthetics, especially if it involves the anterior teeth.[5] Therefore, it may need treatment for functional problems or sometimes orthodontic treatment.[6]

The deciduous teeth most commonly undergo gemination with a 0.5% prevalence rate. However, in permanent teeth, the rate of gemination was seen as 0.1%, and the anterior maxillary teeth are most commonly affected, with an equal incidence between both males and females. Gemination is extremely rare in the posterior teeth in the dental arch.[7] The study aimed to find the prevalence rate of gemination in Karbala city population.

Case Report

A cross-sectional retrospective study was conducted on digital orthopantomograms (OPGs) with a high quality of 550 patients visiting oral and maxillofacial private

Address for correspondence: Prof. Ameera Kamal Khaleel, Dentistry Department, Al Safwa University College, Karbala, Karbala 56001, Iraq.
E-mail: dr.ameera@alsafwa.edu.iq

Submission: 16-Mar-2024 **Accepted:** 18-May-2024 **Published:** 23-Dec-2024

How to cite this article: Khaleel AK, AlRifai AS, Bin Shaari R, Nawi MAA. Unilateral gemination of the upper first permanent molar: A rare case report. Med J Babylon 2024;21:1031-2.

Access this article online

Quick Response Code:

Website: https://journals.lww.com/mjby

DOI: 10.4103/MJBL.MJBL_25_24

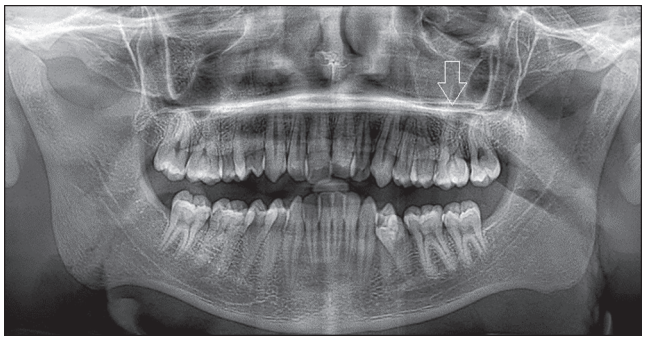

Figure 1: Panoramic radiograph showing gemination of the maxillary left first molar (arrow), which appears with double crowns

radiology clinic in Al-Mina Dental Center, Iraq/Karbala City, between March 2021 and April 2023. Medical records of the patients were obtained from the center. OPGs were captured by using a digital machine (Extra-oral imaging system, Kodak 9000, Carestream Health, Rochester, NY, United States), voltage, 73 kV; exposure time, 12.5 s; and current, 12 mA. Regarding gemination, the radiographic examination of all these OPGs revealed the presence of one case of unilateral gemination with a 0.18% prevalence, of the left maxillary first molar in a healthy male, 32 years old, visiting the dental clinic asking for orthodontic treatment of lower anterior teeth [Figure 1]. Dental caries or periodontal problems were not seen associated with this geminated tooth. The study design was approved by the Department of Dentistry, Al-Safwa University College, 2023.

Discussion

Clinically, the geminated tooth different from a minor notch seen in the crown to the appearance of two separate crowns, and occurs as a result of an unsuccessful separation of a single tooth to two teeth and thus emerges as a tooth with a bifid crown. This results in irregular large morphology of the crown with additional fissures.[8]

The crown grooves can create plaque accumulation that may cause difficulty in cleaning the crown.[9] If more than one tooth is involved in gemination, difficulty was seen in distinguishing between the gemination and the fusion clinically.[10]

In contrast to our case report, the previous researchers found that this disorder has been observed mostly in the primary teeth, the anterior region, and the lower jaw. In primary and permanent teeth, the prevalence of unilateral gemination was found 0.5% and 0.1%, respectively,[10] whereas the prevalence of bilateral gemination in primary and permanent dentition was (0.01%–0.04%) and (0.02%–0.05%), respectively.[11] These results were incompatible with our result, in which the prevalence of gemination was 0.18%, confirming the important role of the racial factors.

Conclusion

Even a different type of anomalies in the teeth are seen, but the present research showed that gemination prevalence in the present studied population is 0.18%. Even if it is a rare occurrence, it has a clinically important implication for most patients. Even though most of the geminated teeth appear asymptomatic, the early diagnosis of their presence can be very important to prevent the different types of complications which require extensive treatment.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Shrestha AM, Marla V, Shrestha S, Mahrjan I. Developmental anomalies affecting the morphology of teeth—A review. RSBO 2015;12:68-78.
2. Pandya-Sharpe A, James Puryer J. A geminated mandibular second molar—A Case report. Reports 2021;4:1-6.
3. Goutham B, Bhuyan L, Chinnannavar SN, Kundu M, Jha K, Behura SS. Prevalence of dental anomalies in Odisha population: A panoramic radiographic study. J Contemp Dent Pract 2017;18:549-53.
4. Ramezani M, Asgari S, Adel M. Endodontic management of a rare case of the geminated maxillary second molar tooth using CBCT. Clin Case Rep 2021;9:e04496.
5. Ben Salem M, Chouchene F, Masmoudi F, Baaziz A, Maatouk F, Ghedira H. Fusion or gemination? Diagnosis and management in primary teeth: A report of two cases. Case Rep Dent 2021;2021:6661776.
6. Einy S Avezov K, Aizenbud D. Geminated maxillary incisors: The success of an orthodontic conservative approach: 15 Years follow-up study. Appl Sci 2022;12:1389.
7. Palma VC, Leite I, Rocha LL, Bueno MR. Rare case of gemination and fusion involving supernumerary teeth and second mandibular molar - Case report. J Clin Exp Dent 2024;16:e236-239.
8. Tafti F, Jawdekar A. Pulpectomy in a primary tooth with gemination: A case report. IJMPCR 2021;14:6-14.
9. Alyahya A, Karkoutly H, Milly H. Management of a rare case of geminated and fused central incisors in the same axillary dental arch. Case Rep Dent 2021;2021:1-4.
10. Dang HQ, Constantine S, Anderson PJ. The prevalence of dental anomalies in an Australian population. Aust Dent J 2017;62:161-4.
11. Gurbuz O, Ersen A, Dikmen B, Gumustas B, Gundogar M. The prevalence and distribution of the dental anomalies in the Turkish population. J Anat Soc India 2019;68:46-51.