

Difference in Developmental Stage of Homologous Mandibular Second and Third Molars in Seven to 11 Year Olds Using Panoramic Radiography and Demirjian's Method

Original Article

Abstract

Background: Assessment of dental developmental stage is more valuable than tooth eruption because the duration of tooth eruption is short and is determined by the appearance of tooth in the oral cavity. Also, tooth eruption can be changed by local factors such as space shortage and systemic factors such as nutritional status. Several methods are used to determine the developmental stage of teeth. The Demirjian's method is extensively used for this purpose. This study aimed to assess the developmental stage of homologous mandibular second and third molars in 7 to 11 year olds using the Demirjian's method.

Materials and methods: This cross-sectional study was conducted on 187 panoramic radiographs of 7 to 11-year-old Iranians (91 females and 96 males) presenting to Pardis Dental School clinic. Two observers evaluated the developmental stage of homologous mandibular second and third molars using the Demirjian's method. The observers were first calibrated for use of the Demirjian's method and then the inter- and intra-examiner reliability and the respective kappa values were calculated after observing 187 panoramic radiographs. The Demirjian's method for tooth development includes eight developmental stages. Assessments were made twice with a one-month interval. Data were analyzed using SPSS version 22.

Results: No significant difference was noted in terms of developmental stage of the second molars in the right and left sides. However, in 44 cases, third molars in the right side were one stage ahead of those in the left side and this difference was statistically significant ($P < 0.05$). The difference in developmental stage of teeth was not significant between males and females ($P > 0.05$).

Conclusion: No significant difference was noted in mandibular second molars in higher developmental stages but the difference in mandibular third molars in earlier stages of development was statistically significant. Molar teeth in the right and left sides are significantly different in early stages of development but over time, this difference is minimized and no significant difference is seen between them in later stages of development.

Keywords: Mineralization, Homologous teeth, Demirjian's Method, Panoramic Radiography.

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