



G32 Third Molar Development in Caucasian and Chinese Populations and Its Implication in Dental Age Estimation

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Learning Overview: After attending this presentation, attendees will be able to appreciate the variations observed in the development of third molars between two distinct ethnic populations. This will be presented in the form of a research study that sought to compare each stage of development of third molars in a large sample of Caucasian and Chinese populations.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the importance of ethnic variations in the development of third molars. Attendees will learn how these variations could influence the accuracy of estimated age, particularly in the 18-year-old threshold.

Evaluation of dental development is useful in forensic dentistry to estimate the age of subjects without authentic birth documentation or those involved in falsified age claims. The 18-year-old threshold is important in forensic age estimation as in most countries, this age differentiates child from an adult. For this purpose, investigators rely on the development of third molars as they are the most reliable teeth for age estimation at this threshold. Variation in dental maturation has been shown in ethnically different populations.

This study aimed to evaluate the dental development of third molars in Caucasian and Chinese populations. Dental panoramic radiographs of 1,670 subjects constituting 898 females and 772 males aged 14 to 23 years were obtained from the archives of teaching hospitals in London and Hong Kong representing Caucasian and Chinese populations, respectively. The maxillary and mandibular right third molars were scored according to Demirjian's classification for the root development stages (E to H). The number (n), mean age (\bar{x}), and Standard Deviation (SD) of the mean age was derived for each tooth development stage for females and males separately in both populations. Statistical significance was set at $p < 0.05$ and an independent sample t -test was used to compare the mean age for each stage of development between the Caucasian and Chinese populations. In all the stages, the Caucasians were more dentally advanced than the Chinese. The mean age difference between Chinese and Caucasian females ranged from 1.18 years to 3.50 years, and in males it ranged from 0.63 years to 2.71 years ($p < 0.05$). It is concluded that the Caucasian subjects demonstrated significantly advanced dental maturation of both maxillary and mandibular third molars in both sexes compared to the Chinese subjects and this emphasises the utilization of appropriate population-specific data for age estimation.

Third Molar, Dental Maturity, Age Estimation