F19 Reliability of Third Molar Development for Age in a North Texas Hispanic Population: A Comparison Study

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The goal of this presentation is to compare age estimation data from North Texas Hispanics of known age to earlier studies on Southeast Texas and South Texas Hispanic populations. This study, when combined with and compared to previous studies, explores the validity and reliability of using third molar development in age estimation for Hispanics.

This presentation will impact the forensic community and/or humanity by supporting the reliability and validity of utilizing third molar development for age estimation in persons of Hispanic origin in the age ranges studied.

Age estimation in living and deceased individuals using dental structures is an important function of the forensic odontologist. Using development of the dentition as a guide has been accurate in those ages from birth to early teens. After that age, the precision in which this can be done decreases dramatically. The experienced forensic dentist knows that with this kind of analysis the final result is "estimation" of age rather than determination. Examiners must be aware of the limitations of applying these principles and techniques and of their legal and moral responsibilities in estimating age.

In most jurisdictions in the United States, a juvenile is judged to be an adult at age eighteen. When reliable, verifiable documentation of age is unavailable, third molar development is often used to judge whether a person is statistically likely to have reached the eighteenth birthday.

The development of third molars is sometimes the only available means of estimating age in living individuals from the late teenage years to the early twenties. This technique has been helpful to medical examiners, law enforcement agencies and immigration service personnel to estimate chronological age when no other official documentation has been available to confirm an individual's actual age. By the age of 16, all permanent teeth have completed their root formation and show closed apices, except for the third molars. These teeth, if present offer the sole possibility for dental age estimation between 16 and 22 years of age.

The American Board of Forensic Odontology did an age estimation study in 1993 that evaluated the accuracy of estimating chronological age from developmental states of the third molars. The participants scored the development of the third molars using the grading technique developed by the published work of A. Demirjian in 1978. A limitation of the 1993 ABFO was that most of the subjects were Caucasian. It has been proposed that repeat studies on groups of different ancestry could supplement the mainly Caucasian sampling in the 1993 study done by Mincer, Harris and Berryman.

Recently, Solari and Rios completed separate studies on third molar development and dental age estimation in Hispanic populations in the state of Texas. Each group collected data and compared results from different geographic regions in Texas. Both suggest that Hispanics exhibit earlier dental maturation than the samples studied by Demirjian and by Mincer, Harris and Berryman.

The current study evaluates age estimation accuracy in a Dallas-Ft. Worth, Texas Hispanic population. A new empirical probabilities table was created based on results of the Rios et al. and Solari et al. studies. Results were then compared to the subject population. Findings of this study are similar to previous studies performed with other Texas Hispanic groups. This study supports the reliability and validity of utilizing third molar development for age estimation in persons of Hispanic origin in the age ranges studied.

Forensic Odontology, Age Estimation, Third Molar Development

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