F10 Color of Dentine as an Age Indicator for Hispanic Populations in Southwest Texas

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After attending this presentation, attendees will become familiar with a new technique utilizing portable color measurement scanner technology to quantify color of dental tissues; the use of the color measurement scanner to determine if dentine shade measurably changes with age in individuals of Hispanic ancestry, and future applications of this technique utilizing other dental and skeletal tissues (i.e., enamel and cementum) for age estimation in forensic anthropological and odontological settings.

This presentation will impact the forensic science community by evaluating a non-subjective method for measuring tooth tissue color, in an effort to identify trends in shading that may provide an estimation of age-at-death in individuals of Hispanic ancestry. The focus on Hispanics is significant due to the fact that they are the largest minority population in the United States. Additionally, age estimation techniques for

Hispanic populations in Southwest Texas is of particular importance to forensic anthropology practitioners in the United States, especially those tasked with providing positive identifications of deceased individuals from border crossing locales.

Although this is not the first study where dentine has been used as an age estimation indicator, it may be the first time that this specific technological appliance has been applied towards assessing and quantifying its shade. Previous research examining dental tissue color includes studies by Martin-da la Heras and colleagues (2003), who analyzed the color of dentine using spectroradiometry and concluded that their technique is a potentially useful and objective method to estimate age in adults. Similarly, tooth root color has been digitally recorded by Laskarin and colleagues (2006), with their resulting data showing that there is a correlation between the obtained RGB (red, green, blue) color values and age. For this project, dentine shade was evaluated in a known, documented sample of molars from 72 modern Hispanic adult individuals from San Antonio, Texas in an effort to determine if dentine coloration differences existed, and whether these differences could be used as an age estimation indicator. Using Hunter Lab's Mini Scan XE Plus© color measurement scanner, a yellowness index was formulated from the shades obtained by the scanner and an average of the yellowness index was calculated for each of the age decades represented by individuals in the study. The results yielded no evident positive correlation between the shade of dentine and the age of the individual. The findings of this pilot study do not support the hypothesis that dentine shade quantifiably changes with age, but there are potentially confounding factors that may require further investigation. First and foremost, the majority of molars in the sample were third molars. Due to the fact that these molars display the greatest variability in size, shape, and eruption rates even within single individuals, their reliability may not be as accurate as other tooth types. The second factor may be that this is not an ideal randomized dental sample, due to the limitations imposed by the requirements of the color scanner. Lastly, a larger sample size would have provided for a wider picture and clearer trends to be observed. A detailed description of the technique will be presented, a review of the color measurement instrumentation, and future directions and suggestions will be provided for utilizing this technique to additionally evaluate the color of enamel and cementum as possible age estimation markers.

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