G38 The Advantages and Limitations of Various Dental Age Estimation Methods in Forensic Odontology: A Systematic Review

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Learning Overview: After attending this presentation, attendees will be informed about the utility and shortcomings of various age estimation methods used by forensic anthropologists.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by informing attendees about the use of different age estimation methods in different contexts and their usefulness and limitations.

Teeth, along with associated oral structures, play an important role in the identification of an individual as they are considered storehouses of invaluable information for biological, physical, chemical, and medical sciences and may provide vital information about the identity, provenance, migration history, dietary status, trauma, etc. Dental structures are the hardest and most well-protected structures of the human body and can resist decompositions, incinerations, and other degradations.

Age is an important aspect of the biological profile that is estimated from human skeletal remains retrieved from forensic scenarios, such as disasters, accidents, or crime scenes. Age is also an important factor in clinical practice, research endeavors and courts of law. In addition to some administrative and judicial reasons, forensic age estimations have become vital for checking illegal population migrations, fraudulent old-age pensions, and asylum seekers. The lifetime biological changes and events occurring in the human body are impregnated in the hard tissues (bones and teeth), which are directly related with the biological age of an individual. Statistically significant correlation exists between the chronological age and the growth and development status of an individual.

Forensic odontology is playing a very important role in the age estimation of an individual. Dental age estimates are considered more reliable than bone age estimates as dental tissues show less vulnerability to taphonomic destructions and remodeling events. Different morphological stages of dental mineralization status correlate with the different developmental phases of life. Various age estimation methods such as Demirjian, Nolla, Willems, Cameriere, Kvaal, and others have been proposed in dental anthropology to be used with appropriate modifications for individuals of different age groups in different populations. However, each such method has its own advantages and disadvantages to be considered differently in bioarchaeological and forensic age estimations. This presentation will highlight various aspects of morphological, biochemical, and radiological methods in forensic dental age estimations, as will their scopes, accuracy levels, and limitations.

Forensic Anthropology/Odontology, Various Age Estimation Methods, Advantages and Limitations