

Age Estimation from Upper Anterior Teeth by Pulp/Tooth Ratio Using Peri-Apical X-Rays among Egyptians

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Abstract : Introduction: Age estimation of individuals is one of the crucial steps in forensic practice. Different traditional methods rely on the length of the diaphysis of long bones of limbs, epiphyseal-diaphyseal union, fusion of the primary ossification centers as well as dental eruption. However, there is a growing need for the development of precise and reliable methods to estimate age, especially in cases where dismembered corpses, burnt bodies, purified or fragmented parts are recovered. Teeth are the hardest and indestructible structure in the human body. In recent years, assessment of pulp/tooth area ratio, as an indirect quantification of secondary dentine deposition has received a considerable attention. However, scanty work has been done in Egypt in terms of applicability of pulp/tooth ratio for age estimation. Aim of the Work: The present work was designed to assess the Cameriere's method for age estimation from pulp/tooth ratio of maxillary canines, central and lateral incisors among a sample from Egyptian population. In addition, to formulate regression equations to be used as population-based standards for age determination. Material and Methods: The present study was conducted on 270 peri-apical X-rays of maxillary canines, central and lateral incisors (collected from 131 males and 139 females aged between 19 and 52 years). The pulp and tooth areas were measured using the Adobe Photoshop software program and the pulp/tooth area ratio was computed. Linear regression equations were determined separately for canines, central and lateral incisors. Results: A significant correlation was recorded between the pulp/tooth area ratio and the chronological age. The linear regression analysis revealed a coefficient of determination ($R^2 = 0.824$ for canine, 0.588 for central incisor and 0.737 for lateral incisor teeth). Three regression equations were derived. Conclusion: As a conclusion, the pulp/tooth ratio is a useful technique for estimating age among Egyptians. Additionally, the regression equation derived from canines gave better result than the incisors.

Keywords : age determination, canines, central incisors, Egypt, lateral incisors, pulp/tooth ratio

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