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## TESTING LAMENDIN'S AND PRINCE & UBELAKER'S AGE ESTIMATION METHODS IN A MODERN GREEK SKELETAL POPULATION

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**Background:** Age-at-death is an essential biological parameter necessary for the identification of human remains. The most reliable methods for estimating age-at-death from adult skeletal remains are based on the identification of degenerative changes in bones and teeth throughout life. Current techniques are based on the study of morphological changes that occur in the pubic symphysis, the auricular surface of the ilium, and the sternal end of the fourth rib. However, in both forensic and archaeological settings it is not uncommon to recover the pelvis and the ribs in a fragmentary state. In this case, teeth can be used as an additional tool for age estimation as they are resistant to destruction and fragmentation in comparison to skeletal tissues. Lamendin et al. developed a method for age estimation from teeth based on root transparency and periodontosis. They developed an equation for determining age-at-death independently of ancestry or sex. However, Prince and Ubelaker evaluated this technique and suggested that sex and ancestry should be considered when estimating age-at-death based on root transparency and periodontosis. Hence, they created specific formulas for different sub-populations.

**Method:** The aim of this study was to test and compare the accuracy of the Lamendin and Prince and Ubelaker age estimation methods in a modern Greek skeletal population. The upper and lower canines of 73 individuals (43 males and 30 females) from the Athens Collection were examined. In the present study, the mean age was 46.02 (range: 24-96 years) and 48.30 (range: 20-85) for males and females respectively. Maximum root height, periodontosis and root transparency height were measured on the lingual surface of each upper and lower canine using a digital sliding caliper. An independent samples t-test for the comparison between right and left



*tooth measurements was performed. Pearson's rank correlation statistics were applied to identify relationships between each measured dimension of canines and documented ages. Bias and inaccuracy were calculated to test the reliability of the method.*

***Results:*** *No significant differences were observed in the measurements between right and left canines ( $P>0.05$ ). Only periodontosis and root transparency measurements presented statistically significant positive correlation with age ( $P<0.001$ ). Bias results for both methods showed that there was an underestimation for ages over 40 years and an overestimation for ages under 40 years for both upper and lower canines. The two methods appeared to correspond better with actual ages (small bias and inaccuracy) in the age range of 30-49 years, with the best results in ages between 30 to 39 years.*

***Conclusion:*** *Canines give accurate results for age estimation and they can be considered a useful tool for aging adults. The two methods examined in this study seem to be more accurate in ages between 30-49 years. The Lamendin method seems to be more accurate in ages under 40 years and the Prince and Ubelaker method in ages over 40 years. In general, both methods perform well and the differences between them are minimal.*

**KEYWORDS:** Forensic Odontology, Age estimation, Lamendin, Ubelaker.