VOLUMETRIC ANALYSIS OF SEXUAL DIMORPHISM IN ANTERIOR TEETH

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Sex estimation is often a necessary step when constructing a biological profile from unidentified human remains. Teeth are among the most frequently recovered human tissues that remain after death as they are hard, long lasting, and resistance to post-mortem insults. The most commonly reported tooth measurements for sex estimation are the maximum mesiodistal and buccolingual crown measurements. These measurements, however, are difficult to obtain in worn teeth or crowns that are embedded in the jaw. To solve this issue, the present study investigated a new technique for sex estimation using volume of the tooth root. For this purpose, a total of 170 3D models of permanent maxillary and mandibular anterior teeth were used for sex estimation. The sample was composed of 41 individuals (23 males, 18 females) from two Iron Age populations in north-western Iran (Hasanlu and Dinkha Tepe). Tooth root volume measurements were analysed by discriminant analysis and methods using SPSS 23.0 software package. The accuracy of sex estimation ranged from 90.6-100% with single variables. In stepwise discriminant function analysis maxillary and mandibular canines were found to be the most discriminating variables providing an accuracy rate of 100%. This study shows that tooth root volume is highly sexually dimorphic and can be very useful for sex estimation, especially when the traditional dental measurements are not applicable.

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