



Physical Anthropology Section - 2012

H2 A Test of the Mann Maxillary Suture Aging Method

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The goal of this presentation is to inform attendees about a test of the Mann et al. (1987; 1991) maxillary suture aging method performed on the Hamann-Todd Collection.^{1,2}

This presentation will impact the forensic science community by demonstrating the accuracy of the Mann maxillary suture aging method on a large sample of known remains.

Accurate estimation of age-at-death from the human skeleton can be especially difficult in cases of fragmentary or incomplete remains. When presented with an isolated cranium, estimating the age-at-death is often limited to dental development, cranial, or maxillary suture closure. A previous test of the Mann method by Gruspier and Mullen found the variation in age was too great for recommendation of widespread usage in forensic cases, while another test suggested the method was useful when combined with other age indicators.^{3,4} However, Gruspier and Mullen's sample was limited to White males predominantly over 40 years old, and the Ginter sample was heavily biased towards individuals above 60 years of age.^{3,4} The goal of this project is to test the Mann method on a large, diverse sample, and to present a recommendation for forensic applications.

The present sample consists of 200 male and female individuals of European and African American ancestry from the Hamann-Todd Collection, with ages ranging from 10-82 years. Efforts were made to avoid any individuals expressing bony pathologies of the cranium as well as to create a balanced sample.⁵ This large and diverse sample will allow for investigations into possible differences between sex and ancestry. Following Overbury et al, the side with greater fusion was scored as present when confronted by asymmetrical palatal fusion. Palatal suture closure was scored using the criteria described in Mann et al. and Meindl and Lovejoy for cranial suture closure in order to readily compare the two scoring systems and determine if one system performed better than the other for estimating age from palatal suture closure.^{2,6}

Preliminary results of this study support those findings of Gruspier and Mullen, although the findings of Ginter are not disputed.^{3,4} Other than the reliably early fusion of the incisive palatine suture and the delayed or minimal fusion of the anterior median palatine suture into adulthood, too much variation exists in the fusion of the other sutures to recommend widespread use of Mann et al. in forensic contexts.² That does not mean the method has no value, as it is best used in conjunction with other methods in a supporting role. In addition, the Meindl and Lovejoy and Mann scoring methods each resulted in Spearman's correlations of $r=0.377$ and $r=0.380$ with age (in years), respectively.^{6,1} While the Mann method has a larger correlation to age than Meindl and Lovejoy, this may not be significant in terms of scoring palatal fusion.^{1,6}

Based on results of this study, the Mann method is most useful in separating younger from older individuals. Smith and Tondury, and more recently Kroman and Thompsom, demonstrated that cranial suture closure appears to be more closely related to individual brain and connective tissue (dura) development and somatic dysfunction than advancing chronological age.^{7,8} In light of this finding, it is unclear if maxillary suture closure will follow this trend.

References:

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Mann Method, Age-At-Death Estimation, Palatal Suture Fusion