H16 Placement of the Human Eyeball and Canthi in Craniofacial Identification

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This paper will review the methods used for predicting/assessing eyeball and canthi position in craniofacial identification and it will quantify the anatomical relationships experimentally.

The results of this investigation will improve eyeball and canthi positioning in superimposition and facial approximation methods. These data will, therefore, have immediate applicability and will be useful to forensic anthropologists worldwide.

An accurate understanding of the spatial relationships of the deep and superficial anatomical structures of the head is essential for methods where faces must be assessed in relation to skulls (superimposition) or predicted from them (facial approximation). However, differences of opinion exist concerning: i) the position of the eyeball in planes other than the anteropos- terior plane; and ii) the canthi positions relative to the bony orbital margins. Currently, little empirical evidence exists to support many of the proposed guidelines and, therefore, uncertainty accompanies almost all. This study elucidates and quantifies the spatial relationships of the globe and the canthi to the bony orbit by dissection in 14 adult human cadavers. While complete results will be released at the presentation of this paper, a pilot analysis using four cadavers indicates that the eyeballs were not centrally positioned within the orbits as commonly reported in the literature. Rather, the eyeballs were positioned closer to the orbital roof and lateral orbital wall by 1-2mm in each case, indicating that interpupillary distance is underestimated by 3mm using current methods. These results appear to have ramifications for current cran- iofacial identification techniques, especially in facial approximation where recognition is widely known to heavily depend upon the delicacies of the orbital region.

Forensic Science, Facial Reconstruction, Video Superimposition

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