



Physical Anthropology Section – 2009

H58 Forensic Pathology and Anthropology: A Collaborative Effort

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After attending this presentation, attendees will understand the diverse roles served by the Harris County Medical Examiner's Office Forensic Anthropology Division and the spectrum of trauma casework the division receives.

This presentation will impact the forensic community by introducing students and academically based forensic anthropologists to the roles served by forensic anthropologists working within the medical examiner's office and the versatility of forensic anthropology to assist medical examiners in the determination of cause and manner of death.

The Harris County Medical Examiner's Office Forensic Anthropology Division (FAD) is a relatively new division, established in November of 2006. Since the division's inception, the FAD has developed into a three-pronged service: Skeletal Recovery Team (SRT), Identification Unit (ID Unit), and Forensic Anthropology Services (FAS). As the SRT, anthropologists attend crime scenes requiring specialized skills for processing such as scenes of skeletal, burned, dismembered, commingled and buried remains. As the ID Unit, anthropologists create and disseminate unidentified decedent descriptions; facilitate identification on difficult cases through skeletal radiograph comparison, interpretation of DNA kinship indices, and collection and review of circumstantial evidence; and track and refer decedents for county burial. Through the FAS, the anthropologists serve as consultants on medicolegal cases by developing skeletal profiles, interpreting bone trauma, and assessing bone pathology. Although the skills required to serve in all three roles are based in the fundamentals of physical anthropology, each role requires flexibility and adaptability. The purpose of this presentation is to demonstrate the diverse role taken by forensic anthropologists at the Harris County Medical Examiner's Office (HCMEO) through an overview of trauma cases received by the FAS.

Prior to the development of the FAD, the HCMEO outsourced skeletal remains for analysis to academically based forensic anthropologists. Previous to outsourcing, skeletal remains were analyzed by forensic pathologists and either released for burial or archived in the morgue. Consultation was not typically sought for bone trauma analysis. When the FAS was established, the first task was to reexamine skeletal remains archived at the HCMEO. These remains represented unidentified decedents and required skeletal profile development and trauma analysis. In addition to the archived remains, the FAD received 154 cases in 2007, the first complete year the division was in operation. Of these incoming cases, only nine required the development of a skeletal profile. One hundred and forty-eight cases required trauma analysis and/or skeletal radiograph comparison. The breakdown of these cases is as follows: 6 non-human or non-forensic, 30 skeletal radiograph comparisons, 11 bone pathology, 42 blunt force trauma, 16 child abuse, 33 sharp force trauma (impression evidence analysis), 9 ballistic trauma, and 1 combined sharp and blunt force trauma. Nine of the 154 cases involved thermal trauma.

Analysis of trauma and bone pathology occurs either *in situ* or by removing and processing elements for more detailed analysis. Determination of the necessity of an anthropologic consultation takes place in the autopsy suite. Joint discussion regarding the case and the finding(s) in question between the anthropologist and the pathologist determine whether a complete anthropologic consultation with removal of skeletal elements is warranted. This joint determination has proved invaluable on numerous occasions. Techniques utilized for the analysis include gross documentation and inspection, examination under a dissecting microscope, and when necessary, casting for tool mark interpretation.

The interpretation of trauma often contributes to the reconstruction of events surrounding death, classification of manner of death, and ultimately, the adjudication of the case. For example, differentiating between a simple fracture pattern associated with a fall and a complex fracture pattern associated with multiple impacts may add pivotal support for case classification: homicide vs. accident. With child abuse cases, recognizing remote and acute injury, interpreting fracture distribution and aging fractures can reveal a pattern of abuse as well as a timeline of traumatic episodes, all critical elements in the prosecution of the case. Evaluation of rib fractures has been invaluable in the documentation of a new artifact of resuscitation related to the use of an automated chest compression device. Interpreting impression evidence can provide a description of a weapon's cutting edge, enabling exclusion or inclusion of a possible suspect weapon.

Cases that require anthropologic consultation range from the obvious, such as skeletal remains or abused children to the innocuous, such as an alcoholic homeless man found dead near his makeshift residence. The make-up of the casework received by the FAS exemplifies the knowledge base a forensic anthropologist must have to operate in a medical examiner's office. A strong working knowledge of bone biomechanics, impression evidence interpretation, and bone pathology and healing is as important as aptitude in standard methods to estimate age, ancestry, sex, and stature of skeletal remains. Fiscal restraints may inhibit medical examiner's offices from securing a full-time anthropology position; however, the variety of skills an anthropologist possesses to assist with the entire death investigation process should justify the



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expenditure.

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