H159 An Interesting and Timely Dental Identification in a Uniquely Posed Decomposed Female Using Premortem Computed Tomography (CT) Images and Postmortem Radiographs

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Learning Overview: After attending this presentation, attendees will appreciate an interesting case of dental identification performed at the Tarrant County Medical Examiner's Office (TCME).

Impact on the Forensic Science Community: This presentation will impact the forensic science community by educating medical examiners and forensic odontologists about the utility of postmortem dental radiograph comparison with premortem CT scan images and the importance of having a qualified forensic odontologist as part of an identification team to aid in the process of identification in difficult cases in which fingerprints cannot be obtained.

The Tarrant County Medical Examiner's Office in Fort Worth, TX, possesses a state-of-the-art Human Identification Laboratory whose director is a board-certified forensic odontologist who holds a diploma in Forensic Human Identification from the Faculty of Forensic and Legal Medicine of the Royal College of Physicians in London. The Human Identification team also consists of a board-certified forensic anthropologist and two fingerprint examiners. In 2016, the office identified approximately 89% of 751 unidentified decedents within 24 hours of arrival by fingerprint analysis. Approximately 2% of cases at TCME require dental analysis for identification.

On July 18, 2018, a decomposed female was found in an apartment residence. She had last been known to be alive in June 2018 by her mother who requested a welfare check when she was unable to contact her. The decedent was found standing at the kitchen sink with her upper body slumped into the sink. The interior of the apartment was extremely hot (104.9°F), though there was an air conditioner present. There were no illegal drugs, prescription medications, alcohol, or paraphernalia found in the apartment.

The decedent was known to be a 55-year-old White female with a history of schizophrenia, hypertension, mental retardation, and gastroesophageal reflux. She was non-compliant with her medications and had multiple psychiatric hospital admissions.

At the time of the postmortem examination, the body was cold following refrigeration. Rigor mortis was absent, having passed in the small and large muscles. Livor mortis was not readily discernible. The body was malodorous with near complete mummification and moist decomposition of the left upper extremity, sloughing of hair and scalp with exposure of portions of the skull, degloving of the left hand, exposure of the bones of the left third through fifth fingers, absence of the left ear, dessication of the eyes, and purge fluid present in the external nares, oral cavity, and anus. Maggots were present up to one-quarter inch in length as well as fly eggs and small millipede-like insects.

Record searches were conducted based on the tentative identity. Database searches included Tarrant County Sheriff's Office (TCSO) database and the Texas Crime Information Center/National Crime Information Center (TCIC/NCIC). Possible records were located with TCSO, the Texas Department of Public Safety (TXDPS), and the Federal Bureau of Information (FBI). However, postmortem fingerprints were unable to be obtained due to the state of decomposition.

Antemortem radiographs were requested from the treating hospital and a Compact Disc (CD) of images of her head was received on July 19, 2018. Comparisons were made using a transverse (axial) plane postmortem X-ray image of the skull and appropriate "slices" from the antemortem CT scan, and a definitive identification based on dental features was made the same day.

This case of dental identification illustrates the utility of comparing postmortem radiographs with premortem CT scans for identification purposes, as well as the importance of having a qualified forensic odontologist available for these unique cases in which fingerprints are unable to be used.

Dental Identification, CT Image and Radiograph Comparison, Forensic Odontology