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Evidence handling of burned human remains from forensic odontology perspective

Rabi'ah Rahmat

The University of Adelaide, Australia

Deaths related to fire tragedies occur across the world. This can happen due to motor-vehicle accidents, domestic incidents, criminal acts, manmade or natural disasters. Identification of severely burned remains can be daunting. In this case, facial recognition is unreliable. Three recognized methods of identification are dental identification, fingerprint examination and DNA analysis. My research focuses on the standardization of evidence handling in burned human remains and the optimization of DNA recovery from the teeth. The main idea in conducting the experiment of this research was to simulate real fire scenarios. Pigs were used because of the similarities of teeth and DNA structures to human. The major burn experiment was conducted with collaboration with the South Australia Police, Country Fire Service and Metropolitan Fire Service. The burned specimens were documented photographically and the facial and dental structure was assessed thoroughly. Specific characteristics were carefully observed and recorded such as the tooth position, shades of the crown, tooth and bone fracture and number of roots retrieved. In this experiment, teeth and jaw bones of the pigs survived the heat of 700-800 °C although the other body parts were badly charred. We learned that mutual understanding between stakeholders is the key to optimal recovery of forensic evidence. In the next stage in this experiment, DNA analyses will be performed to quantify the DNA availability and evaluate their quality. A successful completion of this research certainly can help to improve the efficiency of the identification process of burned remains and fill the gaps in forensic sciences.

rabiah.rahmat@adelaide.edu.au