F56 The Recovery and Identification of the Victims of the 2008 Trinity County Helicopter Crash

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After attending this presentation, attendees will understand some principles of forensic dental identification as they apply to a small mass fatality event involving victims with severely burned remains.

This presentation will impact the forensic science community by serving as an example of the value of forensic dental identification when

the remains are so severely charred that the resulting identification can only be accomplished via dental records.

On the evening of August 5, 2008 a Sikorsky-61N helicopter with 13 people on board crashed deep in the mountains of Trinity County California. The helicopter and its occupants had been participating in the containment of the Buckhorn fire. They had just refueled and were headed back to their U.S. Department of Forestry base in Oregon. Upon liftoff the helicopter lost power and altitude. It's blades struck a tree causing it to freefall and crash land on its port side. Miraculously, four people were ejected from the aircraft and survived but the remaining nine passengers died on impact. The helicopter immediately burst into flames and due to the inaccessibility of the crash site, the steep rugged terrain, and the ignition of the magnesium metal in the aircraft engines, the fire could not be extinguished. The fire was was allowed to burn itself out, which took three days.

Once the fire had extinguished itself coroner's investigators from both Trinity and Shasta counties participated in the recovery of the remains. The intensity and heat of the three day fire had resulted in a crash scene of melted, twisted metal along with nine sets of co-mingled, and cremated human remains. It took the investigators three additional days, working on their hands and knees, in one hundred plus degree temperatures, on the side of a mountain, to uncover, collect, catalogue and bag the remains. According to one of the investigators, they would uncover the spinal column remains and trace it up to the skull. Then they carefully collected the skull and dental remains and bagged them separately knowing that the dental remains were going to be key in identification.

Trinity County has a cooperative agreement with its neighbor county, Shasta, for use of its coroner's facilities and staff so all the remains, once collected, were transported to the Shasta County Coroner's office. It was at this time that the process of identification of the nine decedents by means of dental records began. In addition, the Governor's Office of Emergency Services (OES) was contacted for activation of the California Dental Identification Team (CalDIT). The OES arranged for transportation of team members to Northern California. Drs. Anthony R. Cardoza, Duane Spencer, and James Wood were asked to participate in the event. A portable digital radiograph unit was also procured.

On August 13, Wednesday afternoon, the process of identification of the nine decedents was started. Since antemortem dental records were initially slow in arriving it was decided to sort out and process the nine sets of postmortem dental remains first. Once the antemortem records arrived, then the antemortem to postmortem comparisons would proceed.

The maxillas and mandibles were mostly fragmented and all were calcined. The teeth were often missing postmortem and/or fractured with no coronal portion recovered. The procedure was to sort out and photograph the remains to determine which jawbone fragments corresponded. The corresponding fragments would be bonded together with cyanoacrylate. We then focused on piecing together the fragmented dental remains though most were root tips only. Lastly, it was determined which sockets the dental fragments corresponded with and this would be confirmed both visually and radiographically. If in fact the fragments fit then they were bonded with cyanoacrylate, if not, then the fragment was removed and the process was repeated in a different area or different fragment. It was during this step that the use of the digital radiography equipment greatly expedited the process. The ability to radiograph an area and see the picture in three seconds saved time and energy. By Thursday afternoon, the postmortem documentation for all nine decedents was complete.

Beginning on Wednesday August 13 and into the following month antemortem radiographs were delivered to the coroner's office. During that time eight of the nine victims were positively identified by dental records. Some identifications were accomplished by comparison of the porcelain/metal crowns or root canals which survived the fire mostly intact. Other comparisons were based on root morphology or the relationship of the roots to adjacent bony anatomy. Only one decedent did not have antemortem radiographs available and coincidentally this person was missing teeth eight and nine antemortem. Only one body recovered had closed and healed sockets in the position of eight and nine so because this was a limited population that decedent was signed off as identified.

In conclusion, this tragic event serves as an ideal example of the strength and value of dental identification. It was felt from the onset that because of the calcined remains, no other forensic evidence

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could be utilized to complete these identifications - so dental evidence ruled the day.
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