



F45 Challenging Odontological Identification of Severely Burned Remains

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After attending this presentation, attendees will illustrate the collaborative effort between forensic odontologist and death investigator to find the evidence that was needed to make a positive dental identification on a severely burned set of remains. Attendees should also learn some of the unique antemortem records available from an orthodontist, and how to clean cyanoacrylate cement off of teeth.

This presentation will impact the forensic science community by demonstrating how detective teamwork between the odontologist and death investigator can find the evidence needed to make an identification. It will demonstrate the use of orthodontic antemortem records in the identification process where there was insufficient postmortem material available to use common odontology techniques. The presentation will also demonstrate a technique on how to deal with cyanoacrylate residue on charred dental remains.

In a remote area in Southern Idaho, human remains were found burned beyond recognition in a vehicle fire. The coroner with primary jurisdiction in the case processed the remains and then transferred them to the Ada County Coroner's office in Boise, Idaho for a more in-depth work up by a forensic pathologist and forensic odontologist.

Coroner's office personnel collected and fixated dental structures with a cyanoacrylate product to help preserve those structures from further damage. Even with this effort, not all of the dental skeletal remains were recovered and only one intact tooth remained for odontological examination. This one tooth was an unrestored maxillary second molar and was difficult to examine and evaluate because it was covered with deposits of burned material sealed in place with cyanoacrylate.

Local law enforcement used the vehicle identification information to arrive at a likely identification of the victim who turned out to be a local resident. Detectives contacted the victim's family and they were able to provide information as to who the family's general dentist was. That general dentistry office was able to provide antemortem dental records, which local law enforcement then sent as "the dental record" to the forensic odontologist.

The antemortem dental record consisted of chart notes and two sets of bitewing radiographs. The postmortem dental evaluation included radiographic, photographic, alternate light, and visual examination. To be able to fully examine the sole surviving intact tooth, various materials were used in an attempt to clean the sealed burn material off of the tooth. In the end, standard hardware store acetone was the most effective solvent. An analytical comparison of antemortem and postmortem dental information showed that there were no significant inconsistencies between these records. Unfortunately, there was insufficient information available to be able to confirm the suspected identification of the victim.

The odontologist's review of the antemortem records discovered that third molars had been extracted at some point in time at another dental office, most probably by an oral maxillofacial surgeon. The odontologist contacted law enforcement with this information and they were able to identify the oral surgeon who had extracted the teeth, collect the surgeon's records, and send them on to the odontologist so that he would have "all of the victim's dental records." Within these records were copies of radiographs taken by a local orthodontist. Again, local area law enforcement was contacted, and the orthodontic written records, original radiographs, and plaster models were obtained for the odontologist. These orthodontic materials provided the record of a unique collection of intracranial anatomic structures and dental crown morphology by which a odontological identification was made.

Odontological Identification, Orthodontic Records, Cyanoacrylate