



### **G39 Dental Identifications Without the Use of Dental Antemortem Radiographs**

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The goal of this presentation is to demonstrate how positive dental identification may be accomplished by means other than a comparison of dental radiographs.

This presentation will impact the forensic science community by illustrating how positive dental identifications may be accomplished via comparison by means other than dental radiographs.

Identification based on dental record comparison is a common method of postmortem identification when the condition of the decedent does not allow for more traditional methods, such as fingerprints or visuals. The common technique applied is the comparison of dental radiographs that have been obtained from the decedent's dentist to postmortem radiographs taken by the forensic odontologist. Reasons that the dental comparison is a good tool for the coroner include the accuracy of dental radiographic comparison and the availability of dental radiographs, which are greater in the general population than fingerprints especially among persons under the age of 18 years old. Unfortunately, antemortem dental radiographs are not always available for various reasons. The following abstract details four cases in which dental identifications were accomplished by means other than the use of antemortem dental radiographs.

The first case involved a decedent who was a 60-year-old White male residing in an apartment in San Diego, CA. The decedent was seen in the parking lot of a department store in San Diego pacing around his vehicle. Minutes later, witnesses noted his vehicle engulfed in flames with him sitting in the passenger seat. The autopsy confirmed the cause of death as inhalation of products of combustion and the manner of death as suicide. The investigator summoned the forensic odontologist to complete a dental identification. Only medical radiographs of the head and neck were available. These radiographs were a frontal and lateral skull series highlighting a medical implant on the cervical vertebra. The dentition was visible on both radiographs but, because of the radiographic orientation, the lateral film showed the lower teeth more clearly and with more detail. Postmortem dental radiographs were taken and the positive identification was completed based on the comparison of these dental restorations.

The second case involved a decedent who was a 60-year-old transient. A resident near Buena Creek called 911 after finding the decedent floating in the creek. The autopsy confirmed the cause of death as atherosclerotic coronary artery disease with contributing factors of drowning and chronic alcohol abuse and the manner of death was accidental. Only medical radiographs of the head and neck were available. These radiographs were frontal and lateral Computed Tomography (CT) scans and, even though the dentition was visible in both views, the lateral view displayed greater detail of the teeth. The positive dental identification was based on the comparison of the medical lateral CT scan and postmortem dental radiographs.

The third case involved a motor vehicle collision. A Sports Utility Vehicle (SUV) was stopped in traffic when it was rear-ended by the intoxicated driver of a full-size pickup truck who was driving home from an impromptu Christmas party with co-workers. The driver of the truck was able to exit his vehicle unscathed, but both occupants of the SUV were killed upon impact. The bodies of both decedents were charred to a level four-degree postmortem state. One of the victims had been undergoing orthodontic treatment in Tijuana, Mexico. The death investigator discovered that the Mexican orthodontist had not taken pre-orthodontic treatment radiographs of any type and the



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only pre-treatment records the orthodontist possessed were study models, which were obtained for comparison. The postmortem condition of the oral cavity was unaffected by the fire and was sound. The jaws were resected, alginate impressions were taken, and stone models were poured. Once the models were trimmed and finished, they were compared to the antemortem models. There were numerous consistencies in the patterns of the rugae and this identification was clearly to the level of positive.

The fourth case involved a male individual who committed suicide by driving his rented vehicle off a 300-foot ravine. The body was discovered two weeks after he had been reported missing. There were no antemortem dental radiographs available, but there were recent family photographs, some of which depicted the decedent's maxillary anterior dentition (6-11) clearly. The decedent's maxillary jaw was resected and photographic images were taken. With the use of Photoshop®, both antemortem and postmortem images were superimposed to complete a positive identification.

These four cases are examples of the manner in which positive dental identifications can be completed by means other than radiograph comparison.

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### **Dental Identification, Medical Radiographs, Photographic Superimposition**