G23 Dental Identification Using Facial Reconstruction on a Train Collision Victim's Mangled Body

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The goal of this presentation is to inform attendees that the use of a positioning device can make dental identification easier, faster, and safer, as well as improving the quality of the postmortem records.

This presentation will impact the forensic science community by illustrating the advantages of dental comparison even in "extreme" cases of identification.

In Bari, southern Italy, in February of 2014, an extremely fragmented body was found scattered along the railway connecting Bari to Lecce. The body pieces were collected along 100m of train tracks in both directions, allegedly after being hit by several trains. The skull was extensively fractured with some portions of the base still present; the trunk skeleton was massively fractured, lacking its anatomical profile; and the superior and inferior limbs were reduced to several pieces. No documents or personal belongings were collected from the body; therefore, the police assumed the body was a clandestine immigrant.

The first medicolegal investigation revealed the corpse belonged to an unknown 20-to-25-year-old Caucasian man. After several days, a report was presented to the police station by people claiming a relative of theirs had disappeared several months earlier. Generic information revealed he was a 22-year-old young man affected by leukoderma, who had previously attempted suicide. The report was presented by his distant relatives with whom the man had lived several years before and with whom he was occasionally in touch.

No DNA analysis was possible for identification and no reconstruction of the soft tissue of the face or facial skull superimposition could be performed. Given that the investigator had to proceed with personal identification procedures, the police were asked to visit the relative's house and search for evidence of the victim's DNA or some of his old medical files. Luckily, a five-year-old Ortopantomography (OPT) was found; however, it was not possible to compare it with Postmortem (PM) data due to the extensiveness of the mandible and maxilla fractures. In fact, there were numerous missing structures and only a few pieces of the facial skull were still present.

It was decided that the facial skull fragments would be placed in correct anatomic position on a polystyrene head model. The model obtained was X-rayed, and the Antemortem (AM) and PM data were compared. Neither the OPT nor the X-rays showed any restored teeth. The PM radiograph of maxillary left fragment (with teeth 26-27-28) was compared to the AM panoramic X-ray. The comparison revealed a morphological compatibility between the particular radicular shape of the third molar and also of the pulpal chamber of the second molar. Moreover, there was evident compatibility of the bone profile.

In this case, it was possible to reach a positive identification through the comparison of images taken from similar angles with the positioning of the fragments on the polystyrene head model. This positioning device allowed performing a more precise morphological comparison. A better PM radiograph leads to a better AM/PM comparison.

Mangled Body, Identification, Skull Face Fragments