



A8 Positive Human Identification of a Cold Case: Multidisciplinary Approach of Forensic Experts in Pathology, Anthropology, Odontology, and Genetics

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After attending this presentation, attendees will have an understanding of issues arising from Italian legislation on exhumation of unidentified bodies and how the collaboration of forensic experts can greatly speed up the identification process.

This presentation will impact the forensic science community by assisting in improving the cooperation of experts in pathology, anthropology, Odontology, and genetics.

In Italy, the Presidential Decree 285/90 stipulates that bodies must be buried enclosed in wooden coffins and ultimately exhumed after a period of 10 years and the remains transferred into zinc boxes. In some regions of Southern Italy it is common for close relatives to be present during this procedure. This presentation concerns a case of an eighty-six year old male whose remains were exhumed without the authorization of the family along with several other exhumations. The cemetery operators placed the skeletonized and disjointed remains in galvanized containers and stacked them with a multitude of similar containers. Since a clear identification system was not in place, relatives were not able to recognize the specific box containing the remains of their kinsman.

The judicial authority launched an investigation, its primary objective being to establish the integrity and completeness of the remains and also the correspondence of the morphological and morphometric skeletal remains. Thereafter, it commissioned DNA profiles which were compared to those of samples of believed living relatives. The approach taken was similar to the one used to identify corpses after a mass disaster (Disaster Victim Identification - DVI). An interview was conducted with family members to collect antemortem detail. This provided vital information, namely that the deceased had an upper and lower mobile dental prosthesis and had surgical implants in the femur following a fracture two months prior to his death.

A preliminary survey of the various zinc containers was carried out in order to narrow down the number of potential possibilities. In only one of these were artifacts found which corresponded with the antemortem data of the subject, namely a mobile dental prosthesis and a titanium intramedullary implant associated with a comminuted fracture of the femoral neck and proximal diaphysis. These findings were combined with other data, such as an intact skull which clearly indicated a male of advanced years. The dental and anthropological assessment allowed the exclusion of the presence of remains from different burials — except for one clavicle — and confirmed that the bones belonged to a single Caucasian male subject whose age and osteobiographic characteristics were totally compatible with the antemortem data collected.

After the generic identification based on morphometric traits, a genetic analysis was carried out by comparing the DNA profile obtained from a femur fragment of the deceased with those obtained from close relatives. The genetic analysis confirmed the relationship.

This case represents an example of the practical application of multidisciplinary teamwork that follows the DVI procedures for the identification of commingled human remains. The close collaboration between different disciplines such as anthropology, odontology, and genetics confirms that these individual areas of expertise should all be involved for the purpose of human identification following Interpol recommendations. More specifically, osteological and odontological assessment may assist the genetic analysis by narrowing the range of subjects for molecular comparison. This teamwork approach actively reduces both the time and costs of the investigation and raises the evidential value of the data obtained.

Forensic Science, Human Identification, Genetic Profile