



A3 The Relevance of a Multidisciplinary Approach in the Identification of Skeletal Remains: A Case Report

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The goal of this presentation is to introduce attendees to a multidisciplinary approach to the identification of human remains findings. Specifically, the presentation will focus on the enrichment of any aspect of information on any given case regarding time-since-death occurrence, records related to the involved subject, and, whenever available, information useful for the identification of the subject.

This presentation will impact the forensic science community by highlighting the relevance of a multidisciplinary approach to the management of cases of skeletal remains retrieval.

This study will address two major areas: (1) who the person was; and, (2) how long the remains were lying in the place where they were found. The rationale and background for this approach is based on the following assumptions: (1) postmortem interval estimations are generally based on the degree of soft tissue decomposition, identifiable stages of tissue alteration and loss that occurs in a predictable, sequential, and semi-continuous pattern at a rate that is dependent on both accumulated temperature over time (measured in Accumulated Degree Days (ADD)) and insect access; and, (2) the age of the subject could be estimated by looking at the stages of union for the epiphyses in the different bones and comparing this to the standard growth tables.

Case Presentation: An advanced decomposed leg was found in a field bordering the Arno River in Tuscany, Italy, after a flood had recently occurred. The findings consisted on a foreleg wearing a tennis shoe and included a tibia, a fibula with no soft tissue, and a femur with partial muscle flesh attached. Within seven meters of the leg, a soft tissue mass weighing about ten grams was also found. Every portion of the soft tissue was already saponified and the remains were overgrown with vegetation and mud.

Believing that diverse information gathered from different forensic approaches should assist in shedding light on any given case, it was thought that the victim was likely a young male between 18 and 25 years old. The case could not rely on DNA test matching or comparisons with any other samples collected for identification as none of these samples matched the description of a comparable male subject missing in that area within a reasonable period of time. Remarkably, botanical investigation highlighted the presence of different types of seeds related to a specimen distinctive to areas of fresh water which actually matched the place where the remains were retrieved, providing evidence suggesting they were found in that place before late winter. Also, a complete radiological investigation, including Computed Tomography (CT) and X-rays failed to show any evidence of degenerative articular disease or previous fractures. The X-ray of the femur epiphysis revealed a complete stage of union for the epiphyses, so it was possible to establish the above-mentioned age interval. The anthropological investigation enhanced the identification process. In fact, following a one-month stay in a fresh-water environment, the bones were clean and free of soft issue, which readily allowed the anthropological study. Additionally, measurement of the size of the skeletal remains suggested the age range of the subject and his lifestyle contributed to gender identification. The remains were estimated to be of a male subject with an average Body Mass Index (BMI), around 174cm tall, possibly involved in some physical activity such as squatting. Finally, the DNA analysis confirmed the gender of the subject as male although no confirmatory analysis based on samples collected from other suspect victims could be gathered so a firm conclusion on the actual identity of the subject remains unknown.

In conclusion, despite the inability to perform a DNA matching test, this study demonstrates the relevance of a multidisciplinary approach which significantly helped in gathering a variety of information for preliminary identification of the subject.

Remains, Multidisciplinary Approach, Forensic Anthropology