A53 A Comparison of Historical and Present-Day Skeletal Analyses of Unidentified Remains Recovered From Europe During World War II

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After attending this presentation, attendees will be aware of accuracies and limitations of historical skeletal analyses of unidentified remains from World War II as they pertain to identification efforts, as well as the value of interdisciplinary collaboration between historians and anthropologists to interpret historical records.

This presentation will impact the forensic science community by identifying patterns in inaccuracies of historical skeletal inventories and biological profile estimations made using methods available in the 1940s.

The goal of this presentation is to compare historical documentation of remains recovery and analysis from World War II with current-day anthropological analyses of the same remains to determine possible sources of commingling and discrepancies in biological profile estimates, which may have originally rendered the remains as unidentifiable.

Defense POW/MIA Accounting Agency (DPAA) anthropologists and historians compared the historical records and current-day forensic anthropology reports of unidentified remains recovered in Europe during or shortly after World War II (*n*=34). Personnel from the American Graves Registration Command (AGRC) interred, disinterred, and processed the remains in the 1940s — sometimes multiple times — but could not establish identifications; the remains were subsequently buried as unknowns. Due to significant advances in DNA analysis and anthropological techniques, DPAA recently disinterred these unknowns for reanalysis in an attempt at identification. Variables examined in this study include degree of commingling and estimated biological profile.

Of the 34 cases examined, six involved some degree of commingling not documented in the historical record (18%). Commingling in these cases generally involved duplication in minor skeletal elements or fragments of elements. In some circumstances, these cases were buried in the same temporary cemetery or recovered in proximity to one another. Discrepancies between multiple historical dental and skeletal charts were also noted for four other cases (12%), suggesting possible commingling; however, upon accession at DPAA, anthropologists found no evidence of commingling with these cases.

DPAA anthropologists also compared historical biological profile estimates with modern reanalyses. AGRC technicians provided age estimates for 18 of the 34 sets of remains. Historical age estimates overlapped current estimates for 15 cases (83%), 10 of which indicated the method used for estimating age. For cases with discrepancies in age estimates, two of the three were historically overestimated while the other was underestimated. The two overestimations were made by the same analyst. For cases with historical stature estimates (*n*=28), 24 fell within current estimated stature ranges (86%). Stature was historically overestimated for individuals currently assessed to be of African ancestry and historically underestimated for shorter individuals. These variations arise from differences in formulas used to estimate stature, as historical skeletal measurements were similar to modern measurements. For remains with historical ancestry assessments (*n*=9), discrepancies occurred in three cases (33%) in which the current assessment was African or probable African, and the historical assessment was European.

Discrepancies between current and previous skeletal analyses may be due to limitations in facilities and personnel during the massive repatriation efforts of the late 1940s. During recovery operations in Europe, AGRC field teams frequently gathered and transported multiple sets of remains (sometimes dozens) from a battlefield at a time. These efforts taxed the capabilities of recovery teams, who often did not complete the necessary documentation of recoveries until days or weeks afterward. The first careful examination of the remains usually did not occur until delivery at a central identification point — some of which processed more than 2,000 sets of remains during the course of a year. Training and experience level for technicians performing the skeletal analyses also varied, as evidenced by two problematic historical age estimates made by the same technician.

Additionally, trends suggest limitations with anthropological methods used at the time. Stature equations used during the war appear problematic for shorter individuals, as well as non-European ancestry groups; however, historical stature estimates for Europeans of average height or taller were consistent with modern stature estimates. Further, historical age estimates that included a justification for the estimate were also consistent with modern age assessments. Although the identified discrepancies can complicate the use of historical analyses for identification and likely contributed to the initial inability to identify these remains, the identified patterns in consistencies and inconsistencies with current analyses can be used to aid in assessing possible candidates for identification for unidentified remains.

Historical Records, Commingling, Biological Profile

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