Commingling among disinterred remains of unknown U.S. service members from the Korean War

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Introduction

The goal of this project is to analyze and describe the impact of commingling on identification rates of disinterred Korean War era remains. In addition, this project assesses past and current disinterment policies as well as their potential impact on impending and anticipated exhumations.

Materials and Methods

We examined all Korean War disinterments from the National Memorial Cemetery of the Pacific (NMCP) between 1999-2014. During this period, a total of 91 caskets were disinterred, resulting in a total MNI of 108 individuals found through laboratory analyses. In all Korean War disinterments, no commingling was anticipated; meaning that at least in theory, each unknown was buried as a single individual and any possible commingling was resolved by analysts prior to the internment of the unknown remains. During the re-analysis after disinterment, commingling was noted as present or absent for each accession. Details of the commingling were also annotated. Identification rates for commingled vs non-commingled accessions were calculated in addition to other descriptive statistics.

Results

From 1999 to 2014, the DPAA CIL exhumed 91 caskets associated with Korean War losses that were previously designated “unidentifiable”, or unknown, from the NMCP. Of these 91 caskets, 16 (18%) exhibited commingling; most commonly the commingling resulted from the duplication of a small element (e.g., a pisiform, or pedal phalanx), or an element that did not articulate or was not consistent with the rest of the remains (e.g., non-articulating vertebra, patella, or cranium). Of the 91 total, 71caskets (78%) did not have commingling issues that were noted by the analyst. 4 caskets (4%) were un-analyzed at this time and it is unknown if they contained commingled remains.

Of the total 108 disinterred individuals (from the 91 caskets), 55 (51%) have been identified. The identification rate for commingled caskets (accessions) is much lower than non-commingled accessions (Figures 1 and 2). This is due to the fact that small-scale commingling introduces an additional individual where the avenues towards an identification are very limited. Two examplar cases are presented (See Figures 3 and 4).

Korea War Unknowns:
Commingled ID rate = 30%
Non-commingled ID rate = 63%

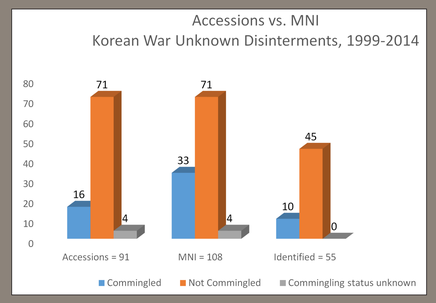

Figure 1. Frequency of commingling in Korean War disinterments.

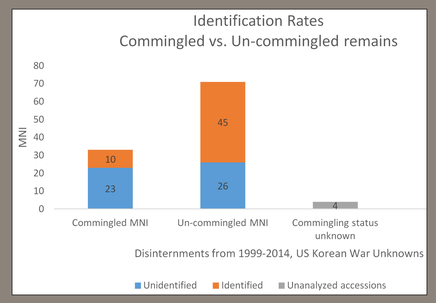

Figure 2. Identification rates between commingled and non-commingled disinterments.

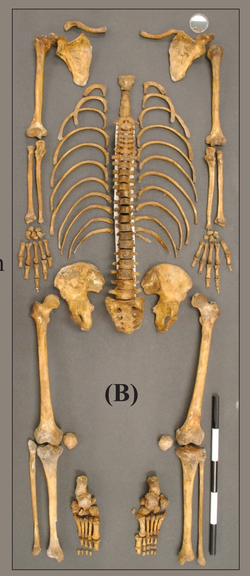

Figure 3. Skull (A) and Postcranial remains (B) of Korean War Unknown. Skeletal analysis determined the cranium and mandible (A) represented an additional individual.

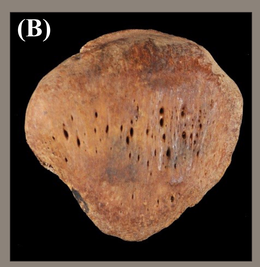

Figure 4. Example of small scale commingling of Korean War Unknown casket. Primary individual (A) with non-articulating left patella (B) representing an additional individual.

Discussion and Conclusions

Commingling in the Korean War Unknowns, despite appearing relatively ‘small scale’, has significant impacts to DoD disinterment policy, laboratory identification rates (an internal metric of analytical success), and the planned exhumations of WWII remains which unlike the Korean War Unknowns are known to be extensively commingled.

Korean War Unknowns from the NMCP are generally less commingled because they tend to represent isolated ground losses. Cases for disinterment are chosen after an extensive historical and anthropological assessment that produces candidates unlikely to be commingled in the first place, which generally have a high probability of identification (due to a narrow short-list of missing individuals fitting the circumstances and profile of the unknown remains). Planned (and ongoing) exhumations of WWII Unknowns (such as the USS Oklahoma, and Cabanatuan Cemetery) have been found to be highly commingled assemblages (Figure 5). Given the identification rates between accessions seen in Korean War Unknowns as a “best-case” scenario, it is crucial that in the future, disinterment policies and practices recognize the issues with commingling in historic military cemeteries.

Since the majority of interred unknowns are associated with WWII, the policy change may ultimately serve to raise disinterment rates, without a subsequent increase in identification rates.

The commingling and related identification issues of the Korean War Unknowns should inform our disinterment policies and practices, in contrast to escalating exhumations without considering these issues.

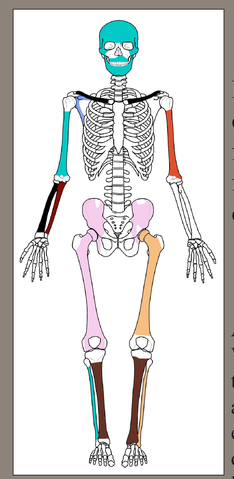

Figure 5. Typical example of the extensive commingling present in WWII remains. Remains are from a single unknown casket exhumed August 2014 from the Cabanatuan POW Cemetery, Philippines. Each color represents a distinct mtDNA sequence (MNI=7).

Acknowledgments:
We remember Ron Broward’s years of hard work and service to the identification efforts of unknown service members. We also thank Tom Holland and John Byrd for their support of this endeavor. Debra Prince-Zinni has worked long hours managing the disinterments from the Punchbowl. Exhumations require several levels of concentrated effort from interns, evidence coordinators, military personnel, analysts, and others at the CIL and we thank them all for their focus on the mission.

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