H19 Reassociation of Skeletal Remains Recovered From Graves in Bosnia and Herzegovina

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The goal of this presentation is to familiarize the forensic community with the application of traditional forensic anthropology to the evaluation of commingled skeletal assemblages recovered from mass graves dating to the recent conflicts in Bosnia and Herzegovina. DNA testing is used to confirm the anthropological assessment of reassociation in several cases.

Three and half years of war in Bosnia and Herzegovina took the lives of about quarter of million people. Approximately 30,000 of them as still reported as missing. The main purpose of those exhumations was—and still is—the identification of the deceased and return of their remains to the grieving families for proper burial. Unfortunately, exhumed remains are often either incomplete or commingled. Therefore all exhumed remains should be first carefully checked, inventoried, refitted if broken, and then re-associated (if possible) before the final examination and identification process.

A wide variety of recovery sites are encountered in Bosnia and Herzegovina. Mortal remains may be buried in mass graves or clandestine isolated graves, dropped into caverns and wells, incinerated in houses, hidden in garbage dumps, or scattered through meadows, forests, or agricultural fields. Both primary and secondary graves are routinely exhumed, and the site formation processes and postdepositional disturbances (deliberate and otherwise) at both types of sites can lead to commingling or separation. The recovery process itself, as well as post-recovery examination, can introduce commingling or other disassociation if done hurriedly or by improperly trained workers.

Unfortunately, there are no widely accepted scientific standards that are uniformly applied to the evaluation of commingled and disassociated remains. Forensic anthropologists with considerable experience with skeletal assemblages rely heavily on visual inspection of morphological traits. These experts review general shape and size of bones; shape, size, and location of articulating surfaces; discoloration of bones; pattern of ligament attachment; size and location of nutrient foramina; pattern of osteoarthritic lipping; deformation and remodeling of neighboring bones; pattern of changes in vertebral bodies, and age estimation in cases of re-associated upper and lower parts of the skeleton or skulls.

Metric analysis has traditionally been limited to long bone length comparisons and comparisons of humeral and femoral head dimensions. More comprehensive osteometric analysis is being explored as a means of re-association, but this has yet to gain wide acceptance. However, rapid advances in DNA technology now make it more feasible and cost-effective to make bone-to-bone comparisons in the re-association effort.

In addition to presenting an overview of the usefulness of traditional morphological trait analysis in assessing a Bosnian skeletal population, this paper will present the results of a limited number of bone-to-bone DNA comparisons to independently verify the forensic scientists' expert opinions.

Forensic Anthropology, Commingling, Human Identification

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