H5 Fractured Frontier: An Analysis of Fracture Patterns in a Historic Nevada Cemetery

Carrie A. Brown, BA, Nikki A. Willits, BA, Brenna K. Blanchard, BA, and Kristin L. Chelotti, BA, California State University, Department of Anthropology, 400 West First Street, Butte Hall 311, Chico, CA 95929*

This presentation will demonstrate the value of antemortem fracture analysis in the interpretation of life characteristics in unidentified skeletal remains. This poster presents evidence of antemortem fracture healing in a small historic burial sample.

This presentation will impact the forensic community by furthering the understanding of fracture patterns and bone remodeling processes as they relate to the construction of biological profiles.

In February 2000, an unmarked cemetery containing nine individuals was discovered in Palisade, Nevada, a deserted frontier railroad town. The remains were excavated by local law enforcement and transferred to the Human Identification Laboratory at California State University, Chico for analysis. Contextual information and grave items indicate that the individuals were interred in the late 19th to early 20th century. Of interest was the fact that these individuals were buried in a separate location from the marked town cemetery. The group consists of four males and five females, ranging in age from 25 to 59 years of age. Craniometric and non-metric analyses suggest that at least eight of the individuals were of Asian or African ancestry.

Of particular note is the high prevalence of traumatic injury present among seven of the nine individuals. These injuries consisted primarily of healed fractures, with no evidence of perimortem trauma. Several of the individuals also exhibit evidence of degenerative disease, especially of the spine and the lower limb. Individuals 2 and 7 have healed boxer's fractures on the right fifth metacarpal. Individual 5 has a similar healed fracture on the right second metacarpal, and also exhibits an unreduced healed fracture of the distal right ulna. In addition, the left nasal bone shows probable evidence of an unhealed fracture. Individual 3 has an unreduced fracture of the left tibia and fibula with major bone remodeling and severe lateral displacement of the distal end. These fractures resulted in a height loss of approximately 2 cm for both the tibia and the fibula when compared to the contralateral side. Individual 6 has an unreduced healed fracture of the right distal ulna and a possible partial fracture of the right distal radius. A pseudoarthrosis is present at the radio-ulnar joint, as well as an increased porosity of the carpals, which is likely related to the trauma sustained from the fracture of the lower arm. Individual 8 has a separated neural arch of the fifth lumbar vertebra, consistent with spondylolysis, a stress-fatigue fracture. This individual also has a bony spur on the lateral surface of the right femur, which may be asso- ciated with trauma to adjacent muscle tissue. Individual 9 has several healed fractures of the ribs: left ribs V and IX and right rib XII. This individual also exhibits an unhealed depressed fracture of the right tibial plateau.

Overall, boxer's fractures are the most prevalent in the sample, although several other fractures are remarkable in their severity. The evidence of severe, unreduced fractures in individuals 3, 5, and 6 provide evidence for a lack of medical treatment. Although the sample size is small, there is some evidence for a different patterning of injury between the sexes. While males exhibit a higher prevalence of lower limb trauma, there is a trend toward upper limb injuries among females with fractures. The differential fracture patterning observed in males and females indicates a likely difference in activity type between the sexes.

The high prevalence of fractures and marked degenerative conditions observed in several of the skeletons, in conjunction with other contextual evidence from the burial site, suggest that these individuals were of low socio-economic status. Furthermore, the severity of many of these injuries and the unreduced nature of some of the fractures suggest that these indi- viduals may have had limited access to medical care and likely led lives of strenuous and possibly dangerous activity.

Fractures, Antemortem Trauma, Biological Profile

 ** Presenting Author*