

Perimortem Injury in a Chinese American Cemetery: Two Cases of Occupational Hazard or Interpersonal Violence

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Citation

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Abstract

This study's aim is to elucidate questions of bioarchaeological importance by highlighting an ethnic group whom helped shape the modern American West. This investigation concerns traumatic injury sustained by two Chinese Americans who died during the late 19th or early 20th centuries in northern Nevada, U.S. There has been little attention given to the "Overseas" Chinese, in either historical or archaeological contexts. The designation "Overseas" is given to those individuals who emigrated from mainland China starting in the 1800s to places around the world. Here, two individuals are described in terms of traumatic, perimortem injury, and other findings of pathological interest. These two individuals would have died from their sustained injuries. Of central importance to this study is to first emphasize the dangerous occupation that many Chinese undertook, such as mining activity or railroad construction. Second, not knowing the exact nature surrounding their deaths, this study investigates possible inter-personal violence that often resulted from antagonistic factions between either the Chinese themselves, or between the Chinese and other immigrants competing for high risk, but lucrative jobs scattered throughout the western United States.

INTRODUCTION

The investigation of historical cemeteries enables direct assessment of biological variability, health and disease, and additional insight into ethnic groups that have gone unnoticed in North America. The documentation of historical non-American Indian human remains in the United States to reconstruct history has only recently gathered interest in the bioarchaeological community^{1,2,3}. The combination of historical and osteological analysis can provide valuable insight into various aspects of life, such as the relationship between social status and health, which because of the erratic nature of human documentation, could become distorted in annals of human record. Historical collections also make excellent samples for testing the assumptions used by bioarchaeologists when reconstructing the lives of prehistoric peoples, such as demographic reconstruction. In addition, shortcomings of osteological techniques and methodologies, such as age or sex bias, are enhanced through the comparison of historical documents⁴.

There has been relatively little attention paid to the "Overseas" Chinese, in either historical or archaeological contexts. The designation "overseas" is given to those individuals who emigrated from mainland China during the 1800s to places around the world⁵. Some of the research

conducted by archaeologists, cultural management firms and US government agencies has contributed to a growing interest surrounding urban "Chinatowns", rural mining camps, work camps for railroad laborers, salmon canneries, laundries, cook shacks, cemeteries and temples⁶. Much of this research has been done without the documentation of human remains⁷.

This study investigates a small historical Chinese cemetery located in northern Nevada. Most individuals of Chinese descent living in the town of Carlin, Nevada in the year 1868 worked on the trans-continental railroad. The completion of the transcontinental railroad opened other occupational opportunities for the Chinese. Most of these occupations were not only dangerous, but physically strenuous. The Chinese were often subject to indiscriminate violence from the Euro-American community. This study includes two individuals who died traumatic deaths to highlight either: 1) the difficult and dangerous occupations the Chinese undertook; or 2) the inter-personal violence that often resulted from antagonistic factions between either the Chinese themselves, or between the Chinese and other immigrants competing for high risk, but lucrative jobs, scattered throughout the western United States.

MATERIALS AND METHODS

The Carlin cemetery consists of 13 well preserved, male individuals located in northern Nevada (figure 1). The cemetery was in use from approximately 1890 – 1923. This paper will focus on two of those individuals, burials 8 and 10 due to their extensive traumatic injuries. Burial 8 is 30-39 years of age, male, and was approximately 150 cm in stature according to standardized recording procedures⁸. Burial 10 was 35-49 years of age, male, and 165 cm in stature. Trauma analysis included the characterization of ante, peri, and postmortem classifications^{9,10}.

Figure 1

Figure 1: Map of US and the location of Carlin, Nevada.



RESULTS

BURIAL 8

Burial 8 displays both ante- and perimortem trauma. Antemortem trauma is present to the right malar bone. There is a well-defined fracture line extending from the zygomaxillary suture superiorly and posteriorly to the frontomalar suture. This fracture measures 36 mm in length and terminates 12 mm inferior the frontomalar suture. There is also distinct concavity at the junction of the temporal process of the zygomatic and zygomatic process of the right temporal (figure 2).

Figure 2

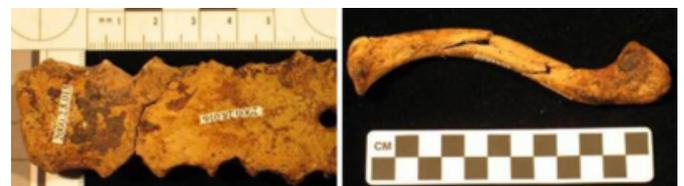
Figure 2: Antemortem trauma, Burial 8.



Perimortem fractures are evident at a number of skeletal elements including right and left ribs, clavicle, sternum, pelvis, sacrum, and 5 lumbar vertebra. The sternum displays a complete fracture beginning in the upper third and runs diagonally from the second facet on the right side, inferiorly to the third facet on the left side (figure 3, left). The left clavicle has separated into four distinct pieces: the medial third, the lateral third and two pieces that characterize the central third of the bone (figure 3, right). This trauma is the result of blunt-force directed anterior-posteriorly, i.e. it came from the front and extended towards the back.

Figure 3

Figure 3: Perimortem trauma of the sternum and left clavicle, Burial 8.



Left rib fractures are present on the first, second, third, fourth, ninth, and tenth. The first left rib has a complete jagged fracture located in the middle of the rib (figure 4, left). The left second rib has two separate fractures; an incomplete fracture located 54 mm from sternal end, and another that shows buckling and fracturing to the rib tubercle located 37 mm from the rib head. The sternal end fracture corresponds anatomically with the fractures seen in left ribs three and four. These fractures are the result of compressive forces to the sternal thirds of these ribs. Both left ribs nine and ten have perimortem fracturing of the posterior thirds and are located 77 mm and 74 mm from the heads, respectively (figure 4, right). The ninth rib has a complete fracture while the tenth rib fracture is incomplete with the fractures involving the entire visceral surface, but only minimally the external surface.

Figure 4

Figure 4: Perimortem trauma of left ribs 1-4 (left, middle), 9 and 10 (right), Burial 8.

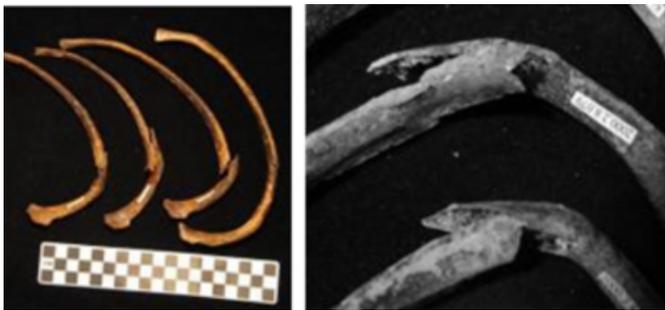


Nine right ribs displayed perimortem trauma, which 8 are complete. Affected ribs include one, four, five six, seven,

eight, nine, ten, and eleven. The right first rib has an irregular, complete fracture near the rib tubercle located 25 mm from the head. Ribs four, five and six have complete sternal end fractures near the costochondral junction. Ribs five and six have complete fractures along the midshaft of their bodies, represented as jagged and irregular that line up anatomically. Also present are complete fractures of right ribs 7-10 and an incomplete fracture of rib eleven that line up anatomically with one another (figure 5).

Figure 5

Figure 5: Right rib perimortem fractures, Burial 8, left: ribs 7-10; right: ribs 9 and 10.



Perimortem trauma is also associated with the lower thoracic region affecting bones of the os coxae, sacrum, and 5 [th] lumbar vertebra. A blow to the back is present in the fracturing of the transverse processes of the 5 [th] lumbar vertebra (figure 7, middle). The left transverse process has an incomplete fracture evident on the posterior surface, while the right transverse process has a complete fracture at the tip. Another affected area from blunt-force trauma to the back is evident in the fracturing of the retroauricular areas of both ilium (figure 6). The fracture of the right area is complete resulting in separation of the posterior iliac crest and postauricular area. The force of this also caused damage at the ventral margin of the sacrum along the sacroiliac joint (figure 7, right). The left ilium has an incomplete fracture similar to the right along the posterior iliac crest, however, this fracture displaced the postauricular area inward. Inward displacement would seem to suggest that the blow came from back to front.

Figure 6

Figure 6: Left os coxa perimortem fractures, Burial 8

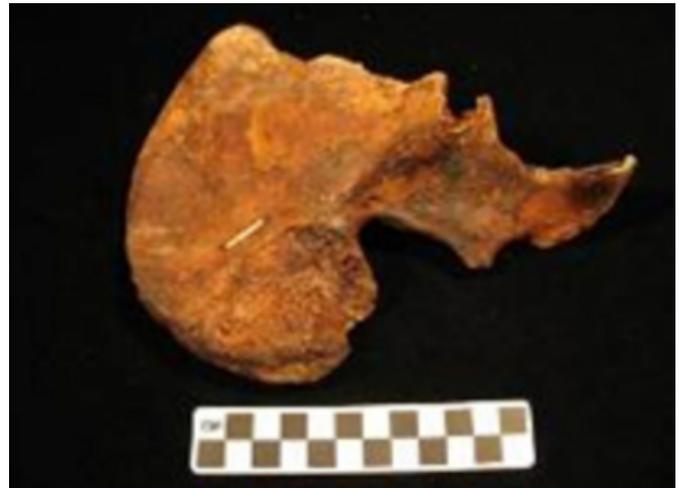
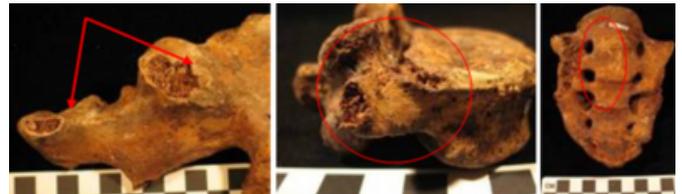


Figure 7

Figure 7: Burial 8 lower thoracic region perimortem fractures. From left: right os coxa, L-5 and sacrum perimortem fractures.



Both pubic bones have fracturing through the ischio-pubic and ilio-pubic rami (figure 7, left). These separations are located near both the ilium and ischium. The left pubic bone is present, but the right is missing postmortem. The left pubic bone is represented by two pieces: the detached ilio-pubic ramus and the detached ischio-pubic ramus. Approximately two-thirds of the symphysis is missing, but what is apparent is an evulsion tearing the ligaments connecting the two pubic bones on their ventral surfaces. The pattern and breakage of both the ilio-pubic rami and the left ischio-pubic ramus would suggest a fracture corresponding to a blow that forced the pubic symphyses ventrally. It would appear that this injury may not be secondary to the initial blows to the lower back and pelvis, and therefore would be classified as a distinct blow directed toward this individual's groin area.

BURIAL 10

Burial 10 displays multiple perimortem trauma of the cranium and postcranial elements, the sternal body and several ribs; arthritic degeneration of both joint surfaces and

vertebrae; and widespread periostitis on several long bones and ribs.

Two distinct blows were inflicted upon this individual. The skull exhibits what appears to be a blow to the cheek from a blunt force instrument (figure 8, upper left). The point of impact is not defined, however, the most likely point of contact is in the region of the temporal process of the zygomatic bone. Affected bones are: the left maxilla, malar, temporal, frontal, right maxilla and mandible. The single blow caused a complete fracture of the zygomatic process of the left temporal; however, the temporal bone remains intact. The zygomatic bone has a fracture occurring on the temporal process. This small, radiating fracture occurs on the inferior portion of the bone and travels 15 mm superiorly and diagonally toward the zygomatic foramina.

The frontal bone has consistent linear and radiating fractures along the frontomalar suture extending from the superior margin of the eye orbit superiorly 35 mm toward the region of the left frontal bossing (figure 8, lower left). This same fracture also runs inferiorly through the medial surface of the orbital plate, involving the lateral wall comprising the greater wing of the sphenoid (figure 8, upper right). The left maxilla has been completely separated along its lateral half 9 mm medial to the zygomaxillary suture. This caused a radiating fracture to extend inferiorly into the alveolar bone terminating above the second molar. Lastly, the frontal process of the left maxilla exhibits a linear fracture that transverses the bone from the inferior-medial edge of the left orbit to the left margin of the nasal cavity, which continues onto the right maxilla at the opposing right margin of the nasal cavity, and terminates at the infraorbital suture juncture (figure 8, lower right).

Figure 8

Figure 8: Perimortem fractures of the skull, Burial 10.



The mandible exhibits two, distinct complete fractures of the body, most likely the result of blunt-force trauma from an instrument such as a club (figure 9). The first has resulted in the separation of the left horizontal ramus from the mental eminence. The fracture extends from the left canine socket and travels inferior-posterior, terminating just anterior to the mental foramen. This blow would suggest an impact site in which the mandible was forced inward. The second fracture extends from the right canine socket, traveling inferiorly along the body. This blow seems to be secondary to the fracture along the left anterior body.

Figure 9

Figure 9: Perimortem fractures of the mandible, Burial 10



Only two-thirds of the sternal body is present. On both ends, there are irregular, transverse and complete breaks. The rib cage also displays fracturing that were the result of at least one blow to the upper chest (figure 10). Left ribs three through six have matching sternal end fractures. The impact caused compression fractures to all four ribs at the same time.

Figure 10

Figure 10: Burial 10 perimortem trauma: clockwise from top left: sternum; right ribs 1-4; left ribs 3-6 displaying.



DISCUSSION

The most significant pathological finding in this population is the prevalence of trauma, both antemortem and perimortem. In a sample of only 13 individuals, 62 percent exhibited trauma, and two of those individuals died as a result of their injuries. Recent studies have suggested that the frequencies and types of trauma can give important information regarding lifestyle and the presence of interpersonal violence^{11,12,13}. Although the exact cause and nature surrounding the circumstances of their deaths is not

precisely known, an account of their injuries give essential clues. Of the two individuals who died a traumatic death, burial 8 is an interesting case. This individual displays extensive postcranial trauma, however, with the exception of healed antemortem trauma of the zygomatic and temporal bones, there is no evidence of perimortem trauma to the skull. In most forensic and archaeological cases that involve blunt-force trauma, the craniofacial region is the most likely target¹⁴. Given this fact and the fact that there is no perimortem trauma to the skull of burial 8, a homicide is not entirely ruled out, but improbable, and instead may be the result of an occupational accident.

Using historical documentation and coroner's reports, Chung et al.¹⁵ believe burial 10 was that of Yee Hong Shing, a 62 year old worker for the Southern Pacific Railroad. This assessment conflicts with the skeletal age estimate of 35-49 years of age. This skeletal age assessment may be an underestimation, as bias and inaccuracy have been shown in a previous study of Asian males¹⁶. The coroner's inquest of 1916 indicated Yee died as a result of blows to the body and head. These findings are consistent with the paleopathological analysis. Although an occupational incident may not be entirely ruled out, the nature of the injuries are more indicative of an historical case of homicide.

These results suggest one of two possibilities. First, these injuries may have been sustained due to a dangerous work environment such as mining or railroad activity. On the other hand, the level of either intra- or interpersonal violence of the incipient Chinese population may be the result of the observed perimortem injuries. In 1882, the United States Congress, and President Chester A. Arthur signed into law the Chinese Exclusion Act. This ushered in what later became known to historians as the Exclusion Era (1882-1943). This legislative act marks the first time in American history that the United States barred a group of immigrants because of its race and class^{17,18,19}. The passage of this act led to numerous instances of violence directed toward the Chinese from the Euro-American community, however there is little to no evidence of documented in-group fighting among the Chinese themselves. The newspaper accounts that depict Chinese rivalry were not always reliable, and were often sensationalized¹⁵. Although these accounts may be a somewhat fictionalized, the fact cannot be discounted that the Chinese did form tongs, or relational and territorial groups that often came into interpersonal conflict with one another²⁰. These two

Chinese American individuals are probably not unique, though they unambiguously shed light on the history and struggles of those incipient immigrants who helped build the modern Western United States.

References

1. Grauer A (editor). *Bodies of Evidence: Reconstructing History through Skeletal Analysis*. 1995. Wiley-Liss, New York.
2. Saunders SR, Herring A (editors). *Grave Reflections: Portraying the Past through Cemetery Studies*. 1995. Canadian Scholars' Press Inc., Toronto, Ontario.
3. Steckel RH, Rose JC (editors). *The Backbone of History: Health and Nutrition in the Western Hemisphere*. 2002. Cambridge University Press, Cambridge, United Kingdom.
4. Walker PL. Problems of Preservation and Sexism in Sexing: Some Lessons from Historical Collections for Paleodemographers. In: *Grave Reflections: Portraying the Past through Cemetery Studies*. Saunders S.R. and Herring A. (eds). 1995. Canadian Scholars Press, Toronto.
5. Chung SF, Wegars P. (editors). *Chinese American Death Rituals: Respecting the Ancestors*. 2005. Altamira Press, Oxford.
6. Wegars, P. (editor). *Hidden Heritage: Historical Archaeology of the Overseas Chinese*. 1993. Baywood Publishing Company, Amityville, New York.
7. Owsley DW, Bruwelheide K, Brundige J, Hunt D, Clark C, Redmond R. Preliminary Report: Osteology and Paleopathology of the Carlin Chinese Cemetery. 1997 (unpublished).
8. Buikstra JE, Ubelaker DH (editors). *Standards For Data Collection From Human Skeletal Remains*. Arkansas Archaeological Survey Research Series No. 44. 1994. Fayetteville, Arkansas.
9. Berryman HE, Haun SJ. Applying Forensic Techniques to Interpret Cranial Fracture Patterns in an Archaeological Specimen. 1996. *Int J Osteoarch* 6:2 – 9.
10. Sauer NJ. The timing of injuries and manner of death: distinguishing among antemortem, perimortem, and postmortem trauma. In: Reichs, K.J., ed. *Forensic Osteology: Advances in the identification of human remains*. 1998. Charles C. Thomas Publisher, LTD: Springfield.
11. Djuric MP, Roberts CA, Rakocevic ZB, Djonic DD, Lesic AR. Fractures in Late Medieval Skeletal Populations From Serbia. 2006. *Am J Phys Anthropol* 130:167-178.
12. Van der Merwe AE, M Steyn, L'Abbe EN. Trauma and Amputations in 19th Century Miners from Kimberley, South Africa. 2009. *Int J Osteoarch* (early view).
13. Steyn M, Iscan MY, De Kock M, Kranioti EF, Michalodimitrakis M, L'Abbe EN. Analysis of Ante Mortem Trauma in Three Modern Skeletal Populations. 2009. *Int J Osteoarch* (early view).
14. Walker PL. A Bioarchaeological Perspective on the History of Violence. *Ann Rev Anthropol* 2001 30:573-596.
15. Chung SF, Frampton FP, Murphy TW. Venerate These Bones: Chinese American Funerary and Burial Practices as Seen in Carlin, Elko County, Nevada. In: Chung and Wegars (ed). *Chinese American Death Rituals: Respecting the Ancestors*. 2005. Lanham: Altamira Press.
16. Schmitt A. Age-at-Death Assessment Using the Os Pubis and the Auricular Surface of the Illium: a Test on an Identified Asian Sample. *Int J Osteoarch* 2004 14:1-6.
17. Chan S (editor). *Entry Denied: Exclusion and the Chinese Community in America, 1882-1943*. 1991. Temple University Press, Philadelphia.
18. Lee E. *At America's Gates: Chinese Immigration During The Exclusion Era, 1882-1943*. 2003. University of North Carolina Press, Chapel Hill, North Carolina.
19. Salyer L. *Laws Harsh as Tigers: Chinese Immigrants and the Shaping of Modern Immigration Law*. 1995. University of North Carolina Press, Chapel Hill.
20. Dirlik A (editor). *Chinese on the American Frontier*. 2001. Rowan & Littlefield Publishers, Inc. Lanham, Maryland.

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