H60 Skeletal Evidence of Homicidal Compression

Alison Galloway, PhD, University of California, Social Science One FS, Santa Cruz, CA 95064; Lauren Zephro, MA, Monterey County Sheriff's Office, 1414 Natividad Road, Salinas, CA 93906-3102*

The goal of this presentation is to present the forensic anthropological community with examples of cranial and postcranial fractures due to the application of compressive force. This presentation will also provide a framework and protocols for the recognition and interpretation of compression damage to the skeleton.

This presentation will impact the forensic community and/or humanity by increasing awareness of compression injuries in the context of homicide.

Compression fractures occur when bone tissue is compacted to the point of failure. In forensic cases, such fractures are often seen in falls from height but may also be encountered in victims of homicide. Our experience with recent cases demonstrates evidence of homicidal cranial and postcranial compression skeletal injuries.

When coroners and medical examiners turn to the anthropologist for assistance, the remains are often decomposed to the point that evidence of soft tissue injury no longer exists. The remains may be partial due to taphonomic processes and postmortem damage may overlap the antemortem and perimortem defects. Careful examination and documentation is essential.

Compression injuries in instances of homicide usually involve the head or chest. This pattern is in contrast to compressive injuries encountered in motor vehicle accidents and falls, which typically involve compression of the long bones, spine or pelvic region. Homicidal injuries may be more difficult to detect as the fractures are often incomplete due to the lower forces imparted. Careful preparation of the skeleton combined with macro and microscopic examination of all bone surfaces is essential to recognize and interpret trauma.

In the cases presented in this poster, compression was applied to the body of the victim resulting in incomplete fractures. Four cases are included in this report:

Case 1: The remains of an adult female in her mid-fifties were found under a house. Minimal damage was evident on the left lateral portion of the anterior vault and some in the orbits. However, internal examination revealed extensive perimortem fracturing in the sphenoidal region suggesting compression of the skull.

Case 2: The remains of an adult female were found in a remote wooded area. The alleged perpetrator gave a detailed confession that could be matched to the skeletal defects. Included among the damage was an incomplete fracture of the internal surface of the sternum that matched his claim that he knelt on her chest in order to twist her neck.

Case 3: The decomposed remains of an adult male were discovered in a wooded area, located along side a road. The remains showed extensive perimortem trauma, including at least nine discrete blunt force injuries to the skull. The hyoid and thyroid cartilage displayed complete fractures. In addition, incomplete fractures were noted on the sternum, right rib six, left rib six, cervical vertebrae five and six, and right clavicle, suggesting excessive compressive force was applied to the anterior chest.

Case 4: Remains found in a dumpsite showed compression fractures of the rib cage, but were more consistent with the presence of a carnivore and were presumably inflicted after the death of the individual from other causes.

These cases demonstrate that subtle damage can be interpreted. Postmortem damage due to carnivores may be a compounding factor in skeletal trauma interpretation.

Trauma Analysis, Compression Injuries, Incomplete Fractures

 ** Presenting Author*