

## Chapter 4 Case Study (4.3, 4.3.12): Violence-Related Trauma in Scandinavia

Tracy K. Betsinger

Skeletal trauma provides some of the most direct evidence of violence in the past, especially when coupled with cultural, archaeological, and, if applicable, historical data. While the presence of weapons archaeologically may reflect interpersonal violence, there may be other interpretations of their presence, such as ceremonial or religious purposes. Assessments of interpersonal violence and warfare benefit from a population-level, regional approach in which inferences regarding wider impacts of violence may be assessed, including demographic, economic, and sociocultural changes (Fibiger et al., 2013). Linda Fibiger and colleagues (2013) utilized such an approach in their study of violent cranial trauma in Neolithic Scandinavia (3900–1700 BC). Prior to their study, Scandinavia had been often excluded from or only minimally included in discussions of and investigations into Neolithic violence. The researchers sought to provide a population-level, cross-regional assessment of violent cranial trauma, and they tested the hypothesis that Neolithic violence was male-dominated.

The European Neolithic is characterized by substantial social and economic shifts, resulting in the establishment of mostly settled farming-based communities. However, these changes were not the same throughout Europe. In Scandinavia, the transition to farming occurred much later than in Central Europe. Incoming migrant populations and the resulting population pressure may have had great impact on local communities, as did the social and economic shifts resulting from the adoption of agriculture. These changes likely caused shifts in competition, and intra- and intergroup conflict. Substantial evidence exists that demonstrates ‘armed’ violence occurred during the period, likely in conjunction with fist-fighting and the use of stones and rocks as weapons.

Previous studies have demonstrated that cranial fractures are more likely to result from violent interactions than postcranial injuries, and that young males are preferentially affected. Furthermore, accident cranial injuries are more frequently observed in subadult (<15 years of age) and older adult (>50 years of age) groups. To address violence in Neolithic Scandinavia, Fibiger and colleagues assessed 378 individuals from 87 sites for the presence of cranial trauma, including a Danish sample and a Swedish sample. Since many of the skeletal remains included in the study consisted of unassociated crania, typical age-at-death estimation methods could not be used, especially for adult remains. Dental wear and cranial suture closure were used for adult age assessment, although these methods are not the most reliable. For example, dental wear is population-specific and cranial suture closure can be very inaccurate. As a result, broader age categories, such as adolescent and adult, were utilized. Sex determinations of adults were based on standard methods, most likely cranial morphology.

Researchers recorded antemortem and perimortem injuries, including depressed fractures and linear fractures in varying states of healing. Only fractures exceeding 0.5 cm in size were included in the study, because smaller fractures may result from non-

violent origins, such as dermatoid cysts. Determinations of perimortem trauma were based on the presence of depressed, but adhering bone, secondary fractures, contrecoup fractures (i.e., fractures occurring at a site opposite the point of impact), oblique angles and smooth edges of fracture margins, beveling on endocranial surface, and consistent coloration. Fibiger and colleagues assessed the frequency and distribution of traumatic injuries in several ways, including crude prevalence (based on number of complete and partial crania examined), prevalence for individual elements, comparison of injury location, and comparison of size difference between healed and unhealed trauma.

The results of their study revealed that approximately 15 percent of the crania displayed traumatic injuries, the vast majority of which were from adults. Healed injuries (~11 percent) were significantly more common than unhealed injuries (~4 percent). Frequencies of injuries between the Danish and Swedish sample were not statistically different. In the Danish sample, significantly more males were affected than females, while in the Swedish sample male and female frequencies did not differ statistically. For the combined sample, healed injuries were significantly more frequent among males than among females. Unhealed injuries in the combined sample did not differ based on sex. There were no statistically significant differences between the Danish and Swedish samples based on skeletal element involved. Additionally, no significant differences in skeletal element involvement were found between the sexes. Comparisons of cranial region, such as anterior or lateral aspects, yielded a pattern in which the right side of the cranium was affected more often than the left side. Finally, comparisons of lesion size found that healed injuries were significantly smaller (<2 cm) than unhealed injuries.

Based on these results, males more frequently were the victims of violent, nonlethal interactions (healed injuries), which may be a function of sexual division of labor. Furthermore, women experienced violent death as frequently as men (based on unhealed trauma). When the distribution of injuries is considered, a more nuanced understanding of injury patterns can be discerned. Males were more likely to sustain perimortem (unhealed) injuries on their left side, which may reflect face-to-face interpersonal violence (if both individuals are right-handed). Females, by contrast, were more likely to have unhealed injuries on their right side. Additionally, males had a higher rate of healed injuries on their frontal bones, which may be the result of nonlethal face-to-face encounters. The involvement of women as active participants in violent conflict cannot be excluded. However, the injury patterns observed in this study suggest women may have been more likely to have been on the ground or more often subjected to surprise attacks than men.

Collectively, these results suggest a more endemic form of interpersonal violence in which death may not have been the preferred outcome. The aim of such violence from small-scale battles, feuds, and/or raids may have been to stun or incapacitate the opponent, not necessarily to kill him/her. Moreover, women's risk of suffering a fatal cranial injury was comparable to that of males, which suggests that their "child-bearing potential" did not protect them from attacks, as has been hypothesized elsewhere.

This study illustrates the importance of population-based, regional studies of trauma. Inferences regarding involvement of men and women in violent conflict can be drawn and overall patterns of interpersonal violence can be discerned. Overall, this study shows that males and females were victims of violent attacks and that both men and women had comparable risk of lethal injuries. Nonlethal injuries, however, were more common among men, which suggests a type of combat where injury, not death, was the aim. Future studies of traumatic injuries on postcranial remains may help to bolster this argument.

### Reference

Fibiger L, Ahlström T, Bennike P, Schulting RJ. 2013. Patterns of violence-related skull trauma in Neolithic southern Scandinavia. *American Journal of Physical Anthropology* 150:190-202.