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Interpersonal Violence Between 18th Century Native Americans and Europeans in Ohio

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ABSTRACT During the winter of 1778–1779, a garrison of 176 individuals lived within the walls of a Revolutionary era stronghold named Ft. Laurens on the banks of the Tuscarawas River, near the present-day town of Bolivar, Ohio. At least 21 individuals were buried in the fort's cemetery during its occupation, 13 of whom were supposedly killed and scalped by Native Americans while gathering firewood and foraging horses. The purpose of this study is to build on previous work by Sciulli and Gramly ([1989] Am J. Phys. Anthropol. *80:*11–24) by adding a more detailed analysis of the traumatic lesions, in order to better understand what happened to the victims. Lesions were analyzed based on type, location, and dimensions, as well as their overall pattern on the skeleton. Results indicate that multiple blows to the cranium were common. Out of 12 observable crania, the order of blows could be determined in only one case. Eleven of 12 of the observable crania from ambush victims and four of the seven nonambush victims exhibited lesions consistent with scalping. Evidence of postcranial trauma was noted on four individuals: one was an ambush victim, and the other three were killed at other times. No evidence of gunshot wounds was found. Am J Phys Anthropol 122:113–122, 2003.

Careful identification, examination, and interpretation of skeletal trauma have the potential to verify or discount historical accounts of battlefield events, to add to what is known about the techniques and tools used on the battlefield, and to clarify the influence of environment, culture, and society on behavior (Liston and Baker, 1996; Martin and Frayer, 1997; Robarchek, 1994; Whenham, 1989; Willey and Scott, 1996). Although Sciulli and Gramly (1989) included traumatic lesions in their description of the health of the soldiers at Fort Laurens, they did not address the possibility of gunshot trauma; nor did they provide a detailed account of lesion location. The purpose of this paper is to examine the variety and pattern of lesions found on the supposed victims of the ambush, paying specific attention to possible gunshot wounds and scalping marks, and to compare the results with historical accounts to better describe the hand-to-hand combat that reportedly took place.

BACKGROUND

Pieper and Gidney (1976) provide the best summary of the events surrounding the ambush at Fort Laurens. The following background is a brief summary of their work and will be the primary reference unless otherwise noted. On October 23, 1778, an expedition of 1,200 men consisting of Continentals, French officers, Virginia militia, and guides from the Delaware tribe were led by General Lachlan McIntosh, under orders from the Continental Congress, to destroy a few Native American towns on the Sandusky River. The venture was ill-fated from the start, largely due to the fact that the troops were poorly supplied and did not leave Fort Pitt until late in the year. The expedition fell far short of reaching the Sandusky River, and instead stopped on the banks of the Tuscarawas River near the present-day town of Bolivar, Ohio. After building Fort Laurens there, the majority of troops evacuated, leaving 181 men to occupy the fort during the winter of 1778–1779.

On the morning of February 23, 1779, the commander of the fort ordered a wagon driver and 18 men out to gather firewood and horses that had strayed. According to eyewitnesses, as the party moved out of musket range, they were fired upon from cover and immediately overwhelmed. Allegedly, the attackers killed and scalped 17 people and took two as prisoners. No other details are known

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regarding the attack. The bodies of the ambushed individuals were not buried immediately after death, due to a continued enemy presence in the surrounding woods. As a result, the remains of the victims were exposed to weather and scavenging animals for approximately four and a half weeks before the siege was terminated. McIntosh arrived with a relief column on March 23, and shortly thereafter the bodies of the ambush victims were gathered up and buried.

MATERIALS AND METHODS

At least 21 individuals were buried at the fort during the nine months of occupation (Gramly, 1986). According to Sciulli and Gramly (1989), of the skeletons complete enough for examination, the sample consists of males aged between 10–45 years and of predominantly European ancestry. From our examination, we agree with the results of Sciulli and Gramly (1989) concerning age, sex, and ancestry, and will therefore refer to them in this report. Burial features 80, 81, 83, and 88 all contained single individuals. Burial feature 84 contained two individuals, and feature 87 was empty. The individual buried in feature 80 was unavailable for study because he is contained in the permanent Tomb of the Unknown Soldier of the American Revolution. Feature 85 contained 15 individuals, comprised of 13 buried in a cluster and two extended burials next to each other in the northern end of the feature. According to Gramly (1999), the cluster of individuals represents victims of the ambush, and the two extended burials belong to individuals who ventured out after the attack to recover the bodies of the victims and were subsequently attacked.

The remains varied in completeness: some skeletons included small bones of the hands and feet, while others included only large elements. Missing elements can be attributed to decay, but they may also have been removed by animal scavenging. According to Pieper and Gidney (1976), after the attack, the bodies lay exposed for approximately four and a half weeks. Lee (personal communication) identified evidence for scavenging on the remains in the form of carnivore tooth marks.

All skeletal elements were examined macroscopically and under 10× magnification. The location of each traumatic lesion was recorded, as were the dimensions of the defect, type of trauma, nature of the endocranial and ectocranial margins of the defect, and location of radiating fractures. If present, the direction of the blow relative to the external surface of the bone and the sequence in which the blows were delivered were also recorded.

All bones were examined for the presence of three types of trauma: blunt force, sharp force, and gunshot wound. Damage to bone as a result of blunt force is usually caused by a relatively low-velocity impact over a relatively large surface area (Galloway et al., 1999). Characteristics that aided in the classification of a fracture, such as perimortem blunt force trauma, include the presence of plastic deformation, fractures radiating from an impact site, or concentric fractures exhibiting an internal bevel (Berryman and Symes, 1998). Also associated with this kind of wound is the loss or "delamination" of the inner table, resulting in a fragment with only an outer table and diploë (Spitz, 1980). Finally, perimortem fractures typically have irregular edges, and the exposed cortical bone will exhibit the same color as the surface of the outer table (Sauer, 1998). Sharp-force trauma can be caused by a heavy bladed instrument used in a chopping or stabbing motion which results in a coarse, broad bevel. This type of lesion will be referred to as a "coarse" lesion. Sharp-force trauma can also be the result of a fine bladed instrument used for incising and cutting which results in a narrow, shallow bevel. This kind of lesion will be referred to as a "fine" lesion. Such descriptive categories were chosen because they do not imply how the lesion was created, in contrast to terms such as "scalping wound" or "hack mark."

Gunshot wounds were identified using the following gross characteristics outlined by Berryman and Symes (1998) and DiMaio (1999):

1) Internally beveled entrance wounds that are circular or near circular in shape;
2) Externally beveled exit wounds that are usually larger and more irregular in shape than entrance wounds;
3) Secondary radiating fractures from entrance wounds, into which radiating fractures from exit wounds may terminate; and
4) Tertiary concentric fractures, often beveled externally in a manner opposite that of the entrance wound and the same as that of the exit wound.

Subtle traces of gunshot trauma can also be observed in the form of lead spatter or lead wipe created when metal fragments from the bullet become embedded in or adhere to the bone (Berryman and Symes, 1998; DiMaio, 1999; Maples, 1986). These fragments are best observed radiographically.

RESULTS

Ambush victims

Only 12 of the 13 suspected ambush victims had crania complete enough for examination. Ninety-two percent (11 of 12) of them exhibited at least one coarse lesion (Fig. 1, Table 1). The lesions measured between 17–88 mm in length, with a mean length of 48 mm. Four lesions were found on the frontal bone, seven on the right parietal, 11 on the left parietal, one on the right temporal, one on the right condylar neck of the mandible, and four on the occipital (Fig. 2). Some blows impacted more than one bone, and when this occurred, the lesion was counted as being present on the bone where 50% or more of the lesion was found. Twenty-three of the 28 coarse lesions appeared to have been delivered perpendicular to

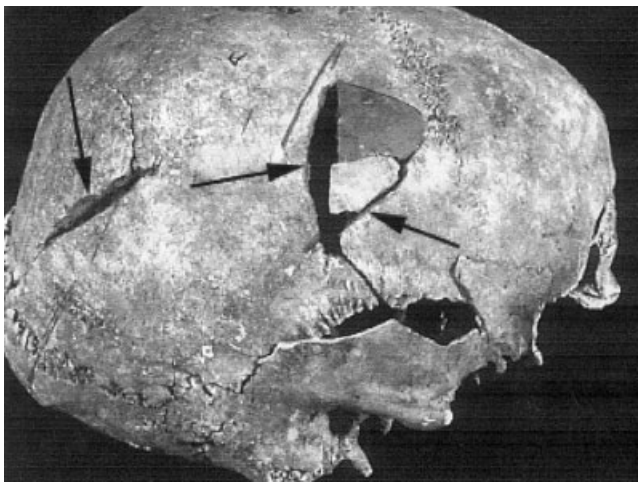

Fig. 1. Examples of sharp force-coarse lesions (arrows).

the skull surface. Glancing blows produced five lesions. Sixty-four percent of the lesions were found on the parietal bones. However, this is to be expected because the parietals represent a large proportion of surface area of the cranial vault. Of the lesions that could be confidently assigned to the right or the left of the skull, 13 were observed on the right, and 14 on the left.

One blow was delivered with such force to the cranium of burial 85-1 that not only did it penetrate the occipital, but the blade passed through the brain and produced a corresponding lesion on the endocranial surface of the right parietal bone (Fig. 3). The cut on the occipital bone was approximately 30 mm long, and the endocranial lesion on the parietal was approximately 20 mm long. Three other coarse lesions were observed on the endocranial surface of the vault of burial 85-1: two on the left parietal, and one on an unsided parietal fragment. There were no ectocranial lesions present that correspond with these. However, many cranial fragments were missing. An endocranial lesion similar to that on burial 85-1 was found on the right parietal of burial 85-12.

A coarse lesion was found on the postcranial skeleton of only one individual among the ambush victims (burial 85-8). The majority of the cut was located on the second cervical vertebra, and penetrated the right lateral aspect of the centrum in an oblique manner (Fig. 4). Some damage also occurred to the right inferior articular facet of the first cervical vertebra.

Multiple coarse lesions to the head were common. Unfortunately, the order of blows could not be determined for any individual. Nine of the 12 crania (75%) had more than one coarse lesion, and five crania exhibited three or more. The mean number of lesions per cranium was 2.33. The highest number of coarse wounds to a single cranium was five. This individual (burial 85-8) exhibited three lesions on the right parietal (Fig. 1), a fourth superior to the right supraorbital margin, and a fifth to the left side of the frontal near the temporal muscle line. All wounds were perpendicular to the skull and completely penetrated the bone.

Five of the 12 crania exhibited at least one blunt-force lesion. Figure 5 is a composite diagram showing the locations of all blunt force lesions. Wounds were either in the midline or on the right side of the skull. Four of the 6 lesions were circular, and all wounds produced fractures of the inner table of cranial bone. A good example of a circular depressed fracture is shown in Figure 6. Located at lambda, the blow produced two fragments and three large radiating fractures that extended into both parietal bones. The diameter of the wound was approximately 30 mm. No instances of blunt-force trauma were found on any postcranial remains.

Burial 85-8 suffered from two blows to the frontal bone and, in this case, it was possible to determine which occurred first. A large blunt force wound located in the midline of the frontal was made producing three fragments and two, large radiating fractures. One of the radiating fractures extended inferiorly toward nasion and adjacent to it was a small, depressed fracture. The concentric fractures from the small, depressed fracture terminate at the radiating fracture (Fig. 7). Spitz (1980) showed that in circumstances of multiple blunt-force lesions, radiating fractures from a second blow will terminate at the preexisting radiating fractures of the first blow.

Fine lesions were observed on all 12 crania (Fig. 8). Only one lesion was found on the frontal bone; the others were found equally on both parietal bones and the occipital bone. The typical pattern of lesions is shown in Figure 9, using burial 85-2 as an example. As a whole, the cuts appeared to form a semicircular pattern around the posterior aspect of the skull. Only two individuals exhibited fine lesions only; the other 14 also had at least one other type of lesion.

Evidence of gunshot wound trauma was not found on any of the remains. In addition to gross examination, all crania and postcranial bones were x-rayed at the Coroner's Office of Franklin County, Ohio, and were examined by forensic pathologist Larry Tate. All x-rays were determined to be negative, and neither lead fragments nor lead wipe were observed.

Five of the 12 crania (42%) exhibited at least one blunt wound and one coarse wound. Only coarse and fine lesions were found on the remaining seven crania; therefore, blunt-force lesions were always found in association with coarse lesions. In only one case was it possible to determine the order of blows. Mentioned previously, burial 85-8 exhibited two blunt-force wounds to the frontal bone, and associated with the larger blow was a radiating fracture that extended toward the nasion. Close inspection of the coarse lesion above the right eye orbit revealed that the medial aspect of the lesion cut into the radiating fracture (Figs. 10, 11). Therefore, the blow that produced the coarse lesion was delivered after

TABLE 1. Location of traumatic lesions among Fort Laurens burials[1]

Burial number	Cranial trauma	Postcranial trauma
81	Fine lesions only	No lesions
83	One coarse lesion on R. parietal, one coarse lesion on L. parietal	No lesions
84R	One coarse lesion on L. parietal	No lesions
84L	One coarse lesion on occipital, fine lesions	One coarse lesion on L. scapular spine
85-1	One coarse lesion on occipital, one blunt-force lesion on R. parietal, fine lesions	No lesions
85-2	One coarse lesion on L. parietal, fine lesions	No lesions
85-3	One coarse lesion on occipital, one coarse lesion on R. mastoid process, one blunt-force lesion on R. parietal, fine lesions	No lesions
85-4	Fine lesions only	No lesions
85-5	One coarse lesion on occipital, one coarse lesion on L. parietal, fine lesions	No lesions
85-6	One coarse lesion on occipital, two coarse lesions on L. parietal, fine lesions	No lesions
85-7	One coarse lesion on L. parietal, one coarse lesion on R. parietal, fine lesions	No lesions
85-8	Three coarse lesions on R. parietal, two coarse lesions on frontal, two blunt-force lesions on frontal, fine lesions	Coarse lesion on C1 and C2
85-9	Three coarse lesions on L. parietal, one coarse lesion on frontal, one blunt-force lesion on L. parietal, fine lesions	No lesions
85-10	One coarse lesion on R. parietal, two coarse lesions on L. parietal, fine lesions	No lesions
85-11	One coarse lesion on frontal, one coarse lesion on R. parietal, one coarse lesion on L. parietal, fine lesions	No lesions
85-12/13	One coarse lesion on R. parietal, one coarse lesion on R. mandible, one blunt-force lesion at lambda, one blunt-force lesion on R. parietal, fine lesions	No lesions
85-14	No skull present	No lesions
85 - N	One coarse lesion on frontal, two coarse lesions on occipital, fine lesions	Coarse lesion on left ilium
85 - S	Four coarse lesions on L. parietal, one coarse lesion on frontal	No lesions
88	One coarse lesion on R. mastoid process, one coarse lesion on R. parietal, one coarse lesion on L. parietal, fine lesions	Coarse lesion on R. rib

[1] R., right; L., left.

the blow that produced the large blunt-force lesion. Using the same principle illustrated by Spitz (1980) for determining the order of blunt-force wounds, the coarse lesion could not have come first, because the radiating fracture from the large blunt-force wound would not have continued past the preexisting coarse lesion toward nasion. Finally, when blunt-force lesions are combined with coarse lesions, burial 85-8 suffered a total of seven blows to the head, which was the highest number among any individual buried at Fort Laurens.

Victims not killed in the ambush

Some people killed at Fort Laurens died from events other than the ambush, and among these individuals, only coarse and fine lesions were observed. Overall, eight coarse lesions were located on the left parietal bone, two on the right parietal, two on the occipital, one on the frontal, and one on the right temporal. Thirteen blows were delivered perpendicular to the cranium; glancing blows produced one lesion. Two or more cranial lesions were found on four individuals, including burial 85-S who suffered five. Postcranial lesions were more common compared to the ambush victims, and were found only on the left scapular spine of burial 84-L, a rib from burial 88, and the iliac fossa of burial 85-N.

Fine lesions were found on 4 individuals, including burial 81, who did not display any other type of lesion. The overall pattern of fine lesions was the same as observed on the ambush victims (Fig. 5).

No blunt-force wounds were found, and there was no evidence of gunshot wound trauma.

DISCUSSION

Skeletal evidence from the remains of soldiers at Fort Laurens seems to support at least one eyewitness account of an ambush and scalping of victims by a force consisting of Native Americans and British soldiers. Although some reported having been "fired upon," evidence of gunshot wounds was not found through gross or radiographic examination. Of course, this does not mean that no one among this group suffered a gunshot wound, as it is entirely possible that a musket ball could have passed through the body without impacting bone. Additionally, taphonomic forces in the form of animal scavenging could have removed bone fragments with evidence of a gunshot wound.

Different weapons were probably used during the ambush at Fort Laurens, and it must be noted that only in rare circumstances can a specific weapon be identified by a mark or a fracture pattern left in the bone. However, the lesions are consistent with certain types of weapons that were available at that time. The shallow cut and narrow bevel of the fine lesions were probably made by a knife, and the deep, wide bevel of the coarse lesions indicates that they

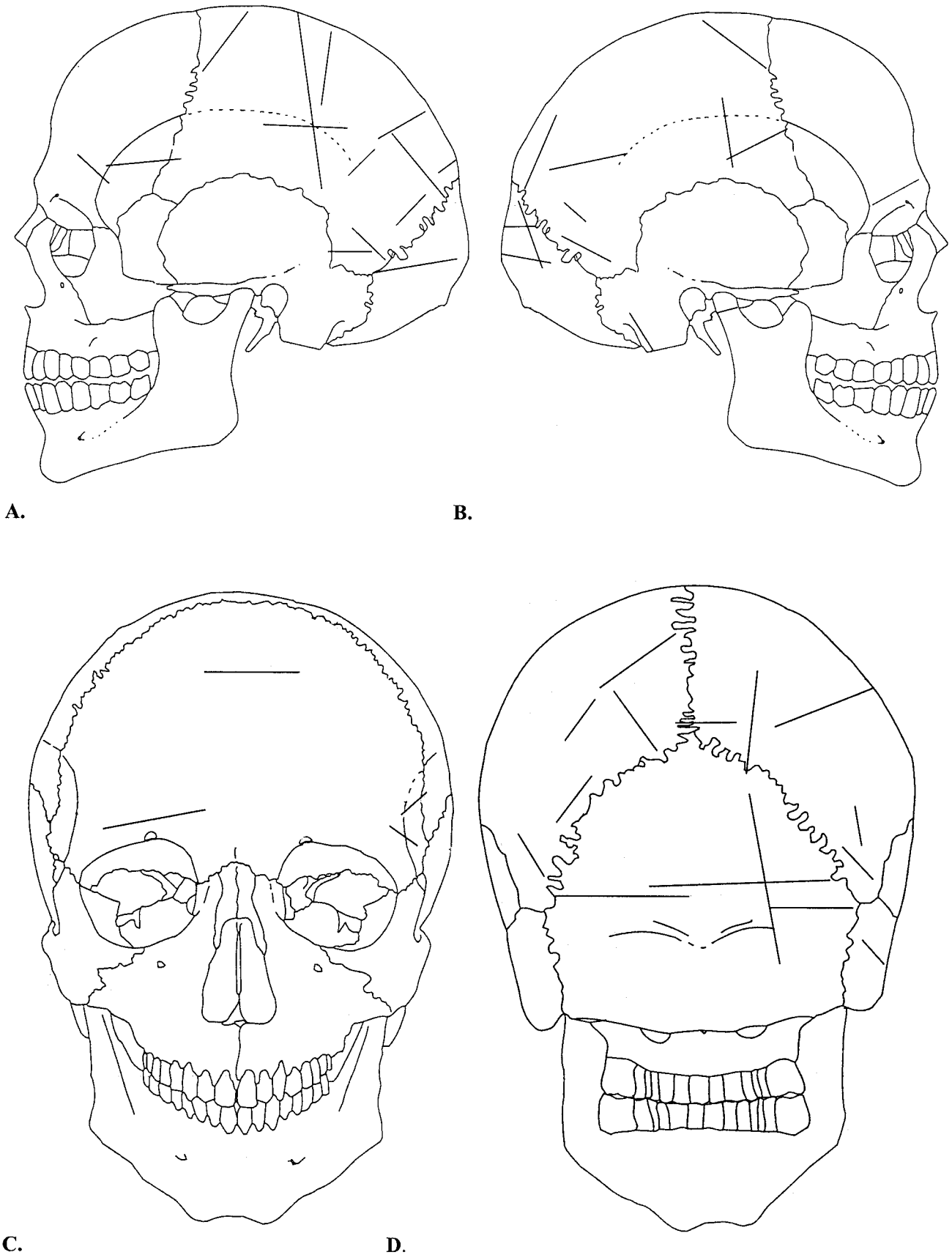

Fig. 2. Composite diagram, showing location of all coarse lesions on skull. **A:** Left lateral view. **B:** Right lateral view. **C:** Anterior view. **D:** Posterior view.

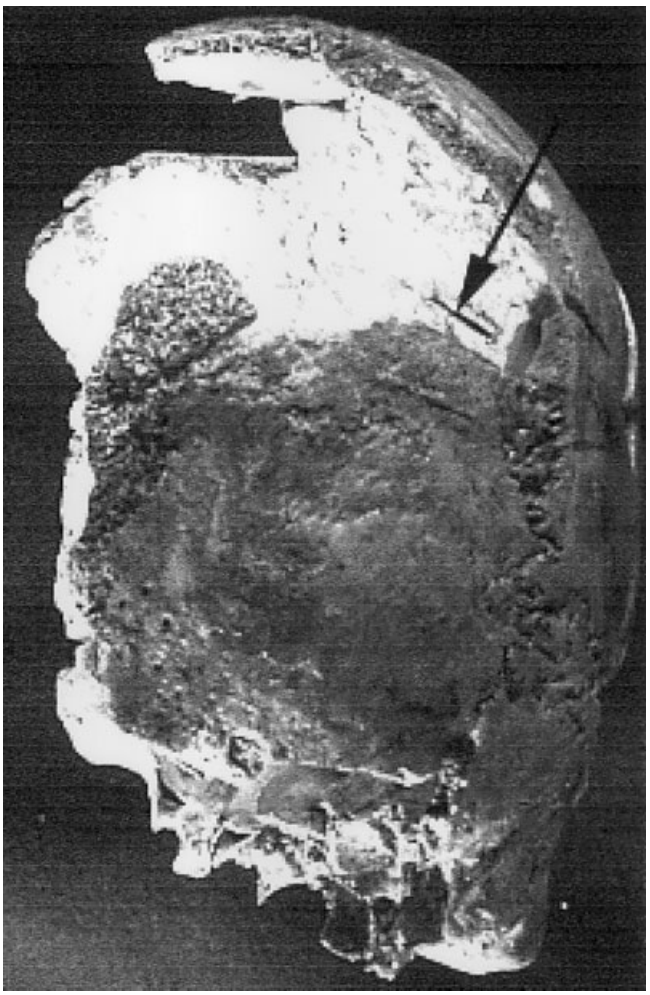

Fig. 3. Posterior view, showing coarse lesion on occipital and a corresponding coarse lesion on illuminated endocranial surface of parietal (arrow). Both lesions were produced by a single blow.

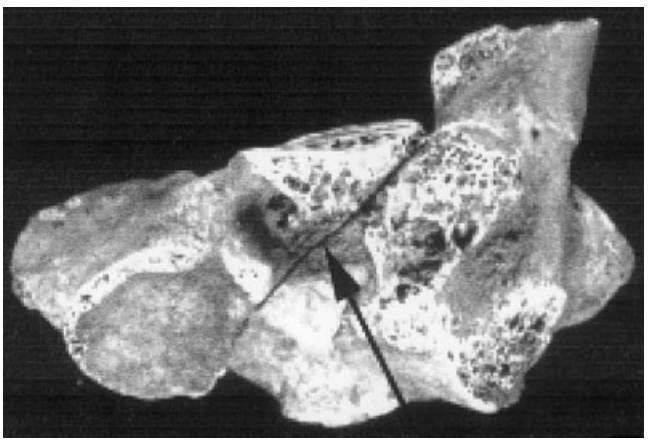

Fig. 4. Coarse lesion on right lateral aspect of C2 centrum (arrow).

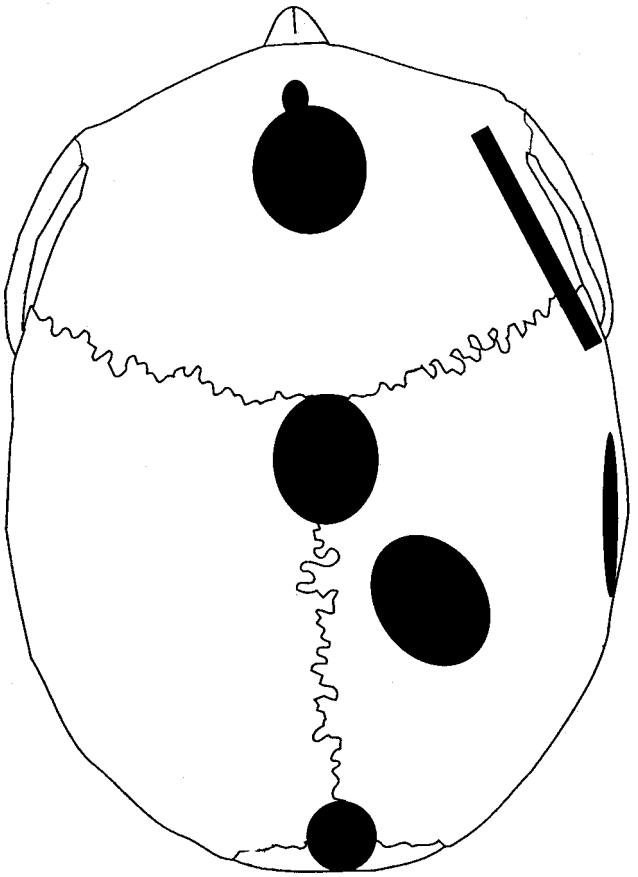

Fig. 5. Composite diagram, showing locations of all blunt-force lesions on skull.

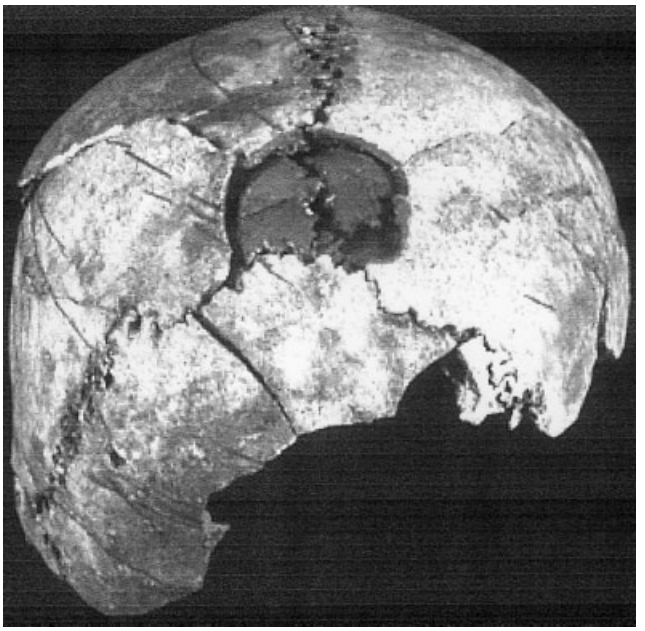

Fig. 6. Depressed fracture at lambda produced by a blunt instrument.

were made by a thicker, wedge-shaped blade. We agree with Sciulli and Gramly (1989), who suggested that the coarse lesions could have been caused by steel trade tomahawk or hatchet. Finally, the most depressed fractures are circular and, in burial 85-8, the lesion exhibits a small hole in the center of the fragments. Again, we concur with Sciulli and Gramly (1989) that the blunt-force lesions could

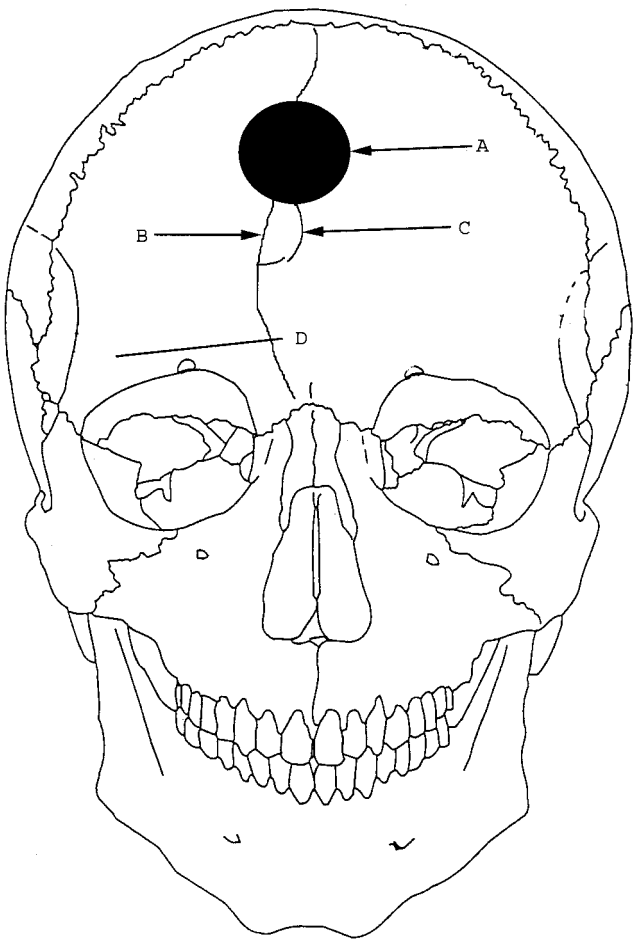

Fig. 7. Blunt and coarse lesions to frontal bone of burial 85-8. **A,** large blunt-force lesion. **B,** inferior radiating fracture. **C,** small blunt-force lesion. **D,** coarse lesion.

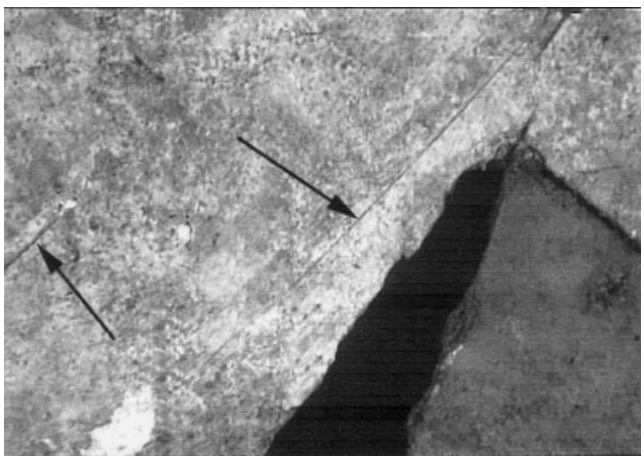

Fig. 8. Examples of fine lesions (arrows).

have been caused by a ball-headed war club, one of which may have had a spike attached to the ball.

Many individuals exhibited both blunt-force and coarse wounds to the cranium that were probably caused by a war club and a hatchet. Unfortunately, it is impossible to know if the blows were delivered by a single attacker who held a club in one hand and a hatchet in the other, or if the blows were delivered by two different attackers. Moreover, we feel it is necessary to stress that it is also impossible to make definite conclusions regarding the handedness of the assailant or the relative positions of the combatants based solely upon the location of the wounds. For example, a blow to the left parietal does not necessarily indicate that the combatants were face to face and that the assailant was right-handed. Care must be taken to avoid such dubious claims. The same wound could just as easily be produced if the victim was hit by a blow that did not produce a skeletal lesion, fell down, and was then hit from behind by a left-handed assailant.

The pattern of fine lesions observed on all individuals who died at Fort Laurens is consistent with a form of scalping described by Nadeau (1941) as "scalping of the vertex or partial scalping." According to Nadeau (1941), it was performed by holding the scalp at the crown with the left hand and cutting around the hand with a knife which could have produced the fine lesions located on the back and sides of the heads of the Fort Laurens victims. Sciulli and Gramly (1989) proposed that removing the crown in this way documented that the scalp came from a single individual rather than simply being a piece cut from the scalp of another person, and would insure that the bounty would be paid. This form of scalping is different from what was found by Milner et al. (1991), who reported cut marks predominantly on the frontal bone among Native American remains from Illinois. Consistent with the "total simple scalping" form described by Nadeau (1941), they believed the pattern indicates that cuts were first made on the frontal, followed by incisions on the sides, and then across the back.

Multiple perimortem wounds to the head were common among the Fort Laurens ambush victims, which raises the question, why club or hack someone many times when one or two blows would suffice to incapacitate or kill? Is this just an expected outcome of normal Native American warfare tactics? It does not seem likely. Most warfare consisted of small-scale, seasonal conflicts that were quickly terminated and resulted in only a few dead (Newcomb, 1974; Smith, 1951). According to Newcomb (1974), it was rare to see large-scale wars with hundreds of combatants. In the American Southeast, raids consisted of one or two men and ended after the death of just one of the enemy. They were often motivated by a desire for revenge or social advancement (Hudson, 1976). Providing a first-hand account of small-scale society warfare, Chagnon (1992) noted that among the Yanomamo, raids focused on the ambush and killing of a single, vulnerable individual, followed by a rapid retreat.

Perhaps the delivery of multiple cranial blows is a common occurrence in massacres or large-scale conflicts. Liston and Baker (1996) examined a sample of five European males killed by Native Americans at Fort William Henry in 1757. They observed multiple coarse lesions on the chest, back, and pubic region of

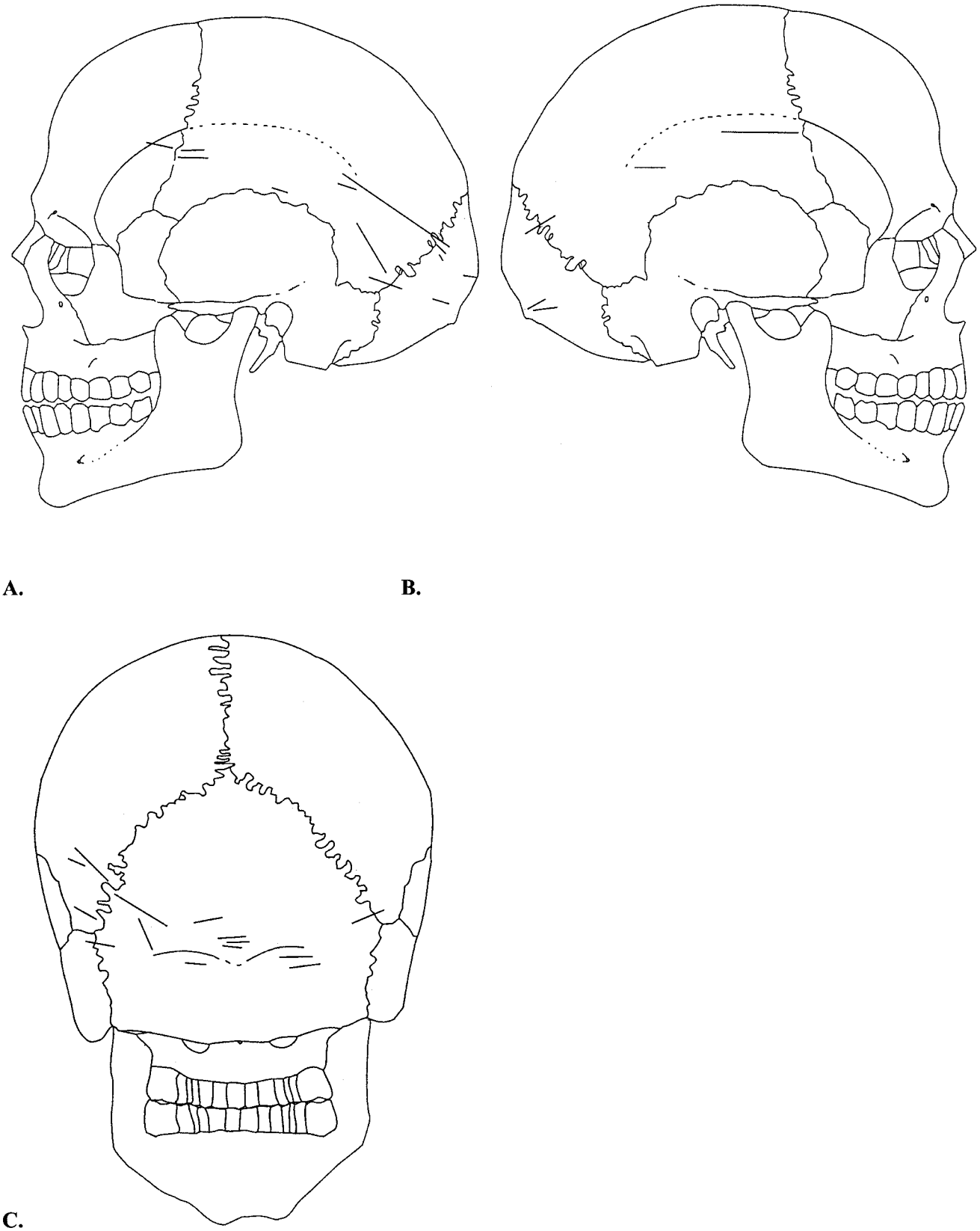

Fig. 9. Typical pattern of sharp force-fine lesions. **A:** Left lateral view. **B:** Right lateral view. **C:** Posterior view.

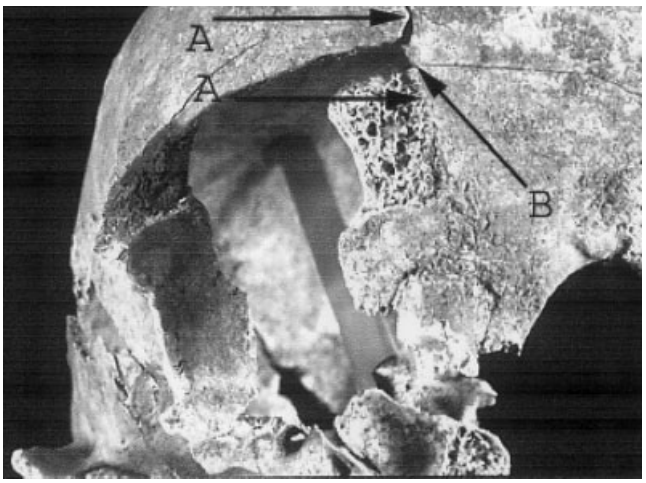

Fig. 10. Close-up of coarse lesion above right orbit of burial 85-8. **A,** inferior radiating fracture from large blunt-force lesion. **B,** medial margin of coarse lesion crossing radiating fracture.

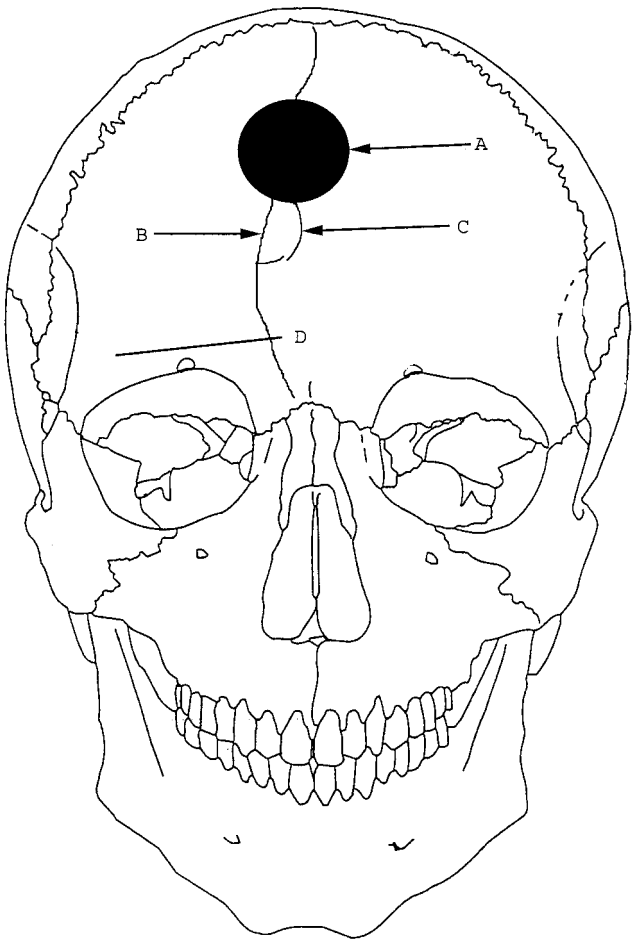

Fig. 11. Diagram illustrating lesions on frontal bone of burial 85-8. **A,** large blunt-force lesion. **B,** inferior radiating fracture. **C,** small blunt-force lesion. **D,** coarse lesion.

all five victims. Crania were not recovered during excavation, which led them to conclude that the individuals may have been decapitated. A decapitation attempt could explain the coarse lesion on the first and second cervical vertebrae from Fort Laurens burial 85-8 (Fig. 4). However, it was apparently unsuccessful, because the skull was recovered along with the rest of the skeletal remains. Scott et al. (1998) and Snow and Fitzpatrick (1989) analyzed bones from the Battle of Little Big Horn and found evidence of dismemberment, decapitation, blunt-force trauma, and gunshot wounds. The lack of complete crania prevented them from determining the number of blunt-force blows. Moreover, Snow and Fitzpatrick (1989) warned that the cranial fractures which, they determined, were probably caused by blunt-force trauma could represent radiating fractures produced by a gunshot wound present on a missing fragment. Willey (1990) found evidence for scalping, decapitation, dismemberment, and multiple blunt-force wounds on the remains from the Crow Creek Massacre, but did not report the number of blows or if they were perimortem. Novak (2001) examined remains from the Battle of Towton in medieval England and found evidence of more than one perimortem blow to various individual crania. The apparent lack of head protection, evidence for protection of the thorax, and the possibility that these individuals were killed by mounted soldiers are used to explain the higher frequency of cranial vs. postcranial trauma. The eyewitness account of the Fort Laurens ambush does not mention that the Native Americans were on horseback. From these studies, it is clear that cases of multiple cranial blows have been documented at large-scale conflicts, but due mostly to the fragmentary nature of the remains, it is difficult to know how frequently they occur.

Cases of multiple perimortem cranial wounds have also been documented at sites where massacres did not occur. Mensforth (2001) described several individuals from the Late Archaic period Ward site in Kentucky that exhibited multiple perimortem blows to the head, including one victim with four. Some of the burials from the later Norris Farms #36 cemetery in Illinois exhibited multiple perimortem blows to the skull (Milner et al., 1991). It is possible that there are victims of multiple perimortem trauma at other prehistoric sites, but they have been overlooked because of the difficulty of discerning postmortem from perimortem damage in archaeological specimens and poor preservation. Finally, at Fort Laurens, nonambush victims from burials 83 and 88 displayed evidence of having suffered more than two perimortem blows to the head.

The ambush victims at Fort Laurens were outnumbered, which might account for the presence of multiple perimortem cranial injuries. But it is still not clear why this was tactically necessary. In this context, it is even more confusing that three, four, or five blows were required to subdue a victim who had essentially no chance to fight back. We feel that the distribution of traumatic lesions at Fort Laurens may indicate something more than just warfare tactics, such as intense anger. For example, at postcontact sites in the Pueblo Southwest, Stodder (1994)

observed an increase in the frequency of cranial trauma, especially among males. Obviously, a skeletal analysis is not required to suspect that the Native Americans were angry about European colonization, but the treatment of the Fort Laurens victims would be a particularly stunning example of it.

At present, a definitive explanation for the existence of multiple cranial blows to the victims at Fort Laurens is not evident. The chosen method of killing was probably dependent on multiple factors, such as the types of weapon available, what was accepted within a particular culture, the desired outcome of the conflict, and the evolution of warfare within a particular culture, just to name a few. Indeed, Robarchek (1994) pointed out that warfare itself may be a cultural and regional phenomenon, and that there does not seem to be a universal cause.

CONCLUSIONS

In the final months of 1778, an American military force began a march to take Detroit from the British, but due to inclement weather they were forced to stop halfway and construct Fort Laurens. Attempting to improve their conditions, a small group ventured from the fort and were killed. The purpose of this study was to examine the extent and pattern of traumatic lesions on the skeletal remains of the victims, and to look for evidence of gunshot wounds. There is no evidence for gunshot wound trauma, however, lesions consistent with scalping and with blows from a hatchet and club are present. Almost everyone suffered at least one wound to the head from a sharp object and was scalped. Moreover, many victims provide a testimony to the intense violence of the conflict, as evidenced by multiple wounds on their heads. Despite the sacrifice of losing their comrades, the surviving American force never made it to Detroit. Fort Laurens was neither captured nor surrendered, and was ultimately abandoned in August 1779.

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