

The Threaded Bolt Injury Pattern

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ABSTRACT: Threaded metal weapons may impart a characteristic abrasion of the skin with or without a laceration. When the head is struck, the threaded pattern may also be imprinted into the skull. Four cases of injury are described. Recognition of this pattern can be important in terms of the crime scene search for the suspect weapon.

KEYWORDS: pathology and biology, pipe threads

Threaded metal pipes, bolts, and dowels are ubiquitous structural items. When used as bludgeons, they may leave a characteristic pattern injury on the skin and underlying bone. Only one brief account of this type of wound was found after a literature search [1]. Four cases are presented to illustrate the features of this peculiar injury.

Case 1

A 62-year-old man was found unconscious in a used car lot. He was treated at a local hospital for multiple scalp lacerations and cerebral contusions, but he died from his injuries four days later. The assailant, a car thief, was apprehended and confessed to striking the victim with a threaded steel bolt 30 cm long and 2 cm in diameter, which had been recovered at the scene.

The postmortem examination disclosed four sutured lacerations of the forehead and one at the back of the head. These were 2.0 to 6.2 cm long and associated with underlying skull fractures, cerebral contusions, and blood in the subarachnoid and subdural spaces. Pattern abrasions along with lacerations were on the right cheek and bridge of the nose.

The forehead lacerations (Fig. 1) had a series of parallel marginal abrasions oriented perpendicularly to the main axis. These abrasions were 1 mm wide and 2 mm apart. An identical pattern was imprinted on the underlying skull. The pattern on a portion of skull matched the threaded portion of the steel bolt used to inflict the injuries (Fig. 2).

Case 2

An 18-year-old man was found dead in his apartment. He had been severely beaten and there was a penetrating gunshot wound to the head. On the back of his head was a 4.5-cm-long laceration with a 5-mm-wide marginal abrasion that extended along the entire length of

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FIG. 1—Forehead lacerations, Case 1.

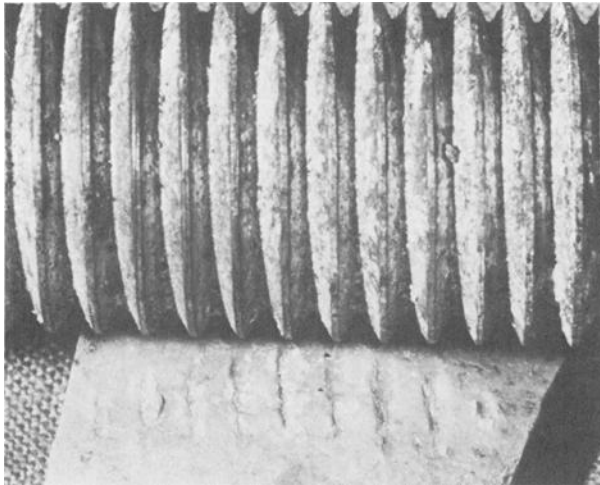


FIG. 2—Pattern of steel bolt imprinted on portion of skull, Case 1.

both sides of the laceration. Within this abraded margin, and oriented perpendicularly to the laceration, was a repeating pattern of small superficial lacerations approximately 1.5 mm apart. The intervening areas were slightly raised and either relatively spared or slightly abraded. The weapon that inflicted this injury was recovered at the scene. It consisted of two threaded steel bolts fastened to the end of a broom handle by duct tape. The threaded end of one bolt had bloodstains on it and matched the patterned abrasion (Fig. 3). In addition, the underlying periosteum and bone had the imprint of the weapon (Fig. 4).

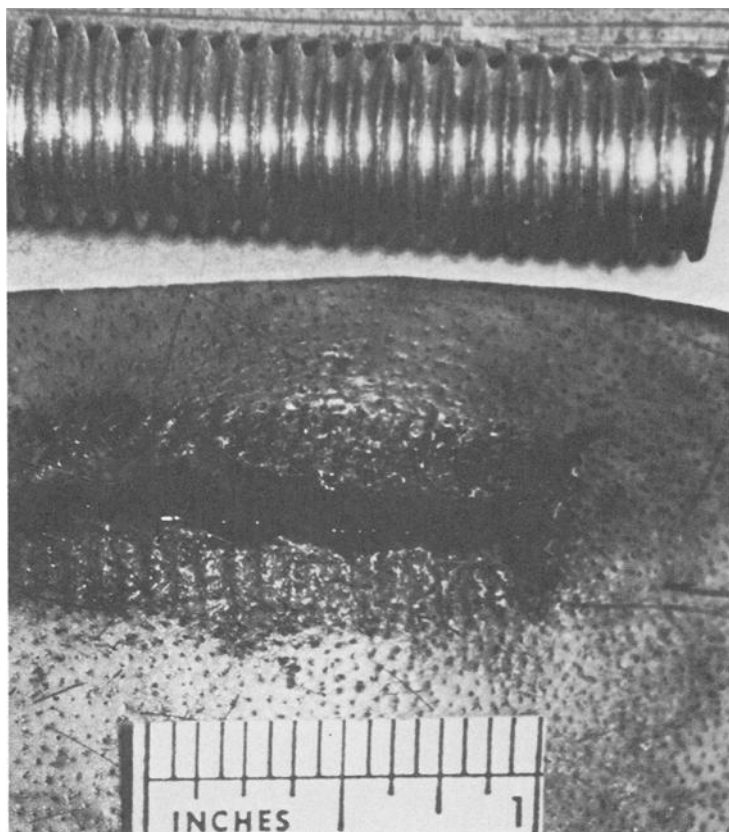


FIG. 3—Bloodstained end of bolt matches patterned abrasion, Case 2.



FIG. 4—Underlying periosteum shows imprint of weapon, Case 2.

Case 3

A 45-year-old man was found on the floor of the rear passenger compartment of his automobile. He had been beaten and strangled. On the left side of his forehead was a 1.9-cm-long laceration with a marginal abrasion that appeared serrated (Fig. 5). This abrasion was approximately 4 mm wide and extended along both sides and slightly beyond the ends of the laceration. The serrated pattern was formed by abrasions at right angles to the laceration and separated by relatively intact skin in an alternating fashion. The pattern repeated itself at 2-mm intervals. The underlying bone was intact and there was no periosteal imprint of this injury. A similar pattern abrasion with a laceration was on the left cheek of this individual.

Although the weapon used was not recovered, subsequent investigation revealed the victim worked as a mechanic. Threaded steel bolts were found both at his home and his place of employment.

Case 4

A 39-year-old man was found beaten to death. The murder weapon, found at the scene, was an iron pipe threaded at one end. The postmortem examination revealed scalp and skull injuries consistent with having been inflicted with the pipe. On the left forearm was a 2- by 4-cm pattern abrasion that matched the threads of the pipe (Fig. 6).

Discussion

Threaded metal bolts and pipes, when used to inflict blunt injuries, leave a characteristic pattern abrasion on the skin, with or without a central laceration. If the head is struck with the instrument, the threaded pattern may be imprinted on the underlying skull, as illustrated in our first two cases.

Recognition of this characteristic injury may categorize the lethal instrument or even lead to the actual weapon used. The peculiar abrasion pattern should lend itself to the techniques used to preserve bite mark evidence from skin, including bite molds [2]. Also, methods ap-



FIG. 5—*Laceration with serrated marginal abrasion, Case 3.*

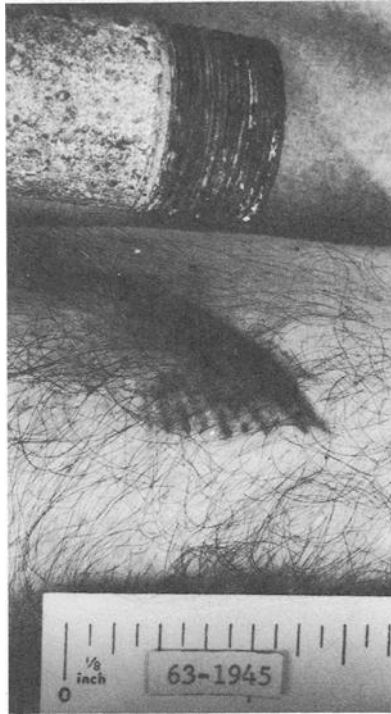


FIG. 6—Patterned abrasion and pipe threads, Case 4.

pllicable to tool mark identification may be an avenue for further investigation [3-5]. Although these techniques were not applied in the cases presented here, they could potentially lead to the identification of a specific instrument.

References

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