E50 Never Trust Appearances: A Case of Screwdriver Homicide

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Learning Overview: The goal of this presentation is to present an uncommon pattern of injury in a case of screwdriver homicide.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by focusing on the advantages of postmortem Computed Tomography (CT) and autopsy in studying uncommon patterns of injuries.

Lesions of the head caused by screwdrivers, while uncommon, are potentially lethal.[1-4] Skull bones are very resistant and most weapons usually break or bend when hitting the skull. Screwdrivers are much more resilient and are less likely to break or be deflected when striking the skull.[5] According to the literature, skull lesions caused by screwdrivers are most frequent in temporal (28.6%), parietal (23.8%), and orbital (9.5%) areas. The mortality rate of craniocerebral screwdriver injuries is approximately 47.6%. This presentation concerns a reported case of homicide committed by using a screwdriver, found embedded in the posterior part of the neck, simulating a fatal injury of the upper spinal cord. The forensic examination demonstrated that the cause of death had to be searched for elsewhere.

An 89-year-old man tried to commit suicide by jumping from the third floor of his apartment where he lived with his wife, who suffered from neuropsychiatric disorders. He was found still alive and transported to the local hospital, where he died a few hours later. The police entered the apartment where the man lived and discovered his 82-year-old wife lying on the bed with a blood pool under her body and a screwdriver embedded in the posterior part of the neck. The screwdriver was not removed to avoid potential neurologic damage, and she was transported to the hospital where she died a few minutes after her husband. At the apartment, a letter authored by the husband was discovered which begged forgiveness for his actions. No other weapons used on the woman were discovered in the apartment.

An autopsy was conducted on both bodies. The man's cause of death was confirmed as polytrauma due to a fall from height. In the woman's case, the autopsy was preceded by a total body CT, which revealed that the stem of screwdriver didn't hit the spine, but it was embedded in the soft tissue near the third cervical vertebra. Radiological examination revealed several fractures of the cranial bones and brain damage. The screwdriver stem protruded 5cm and, upon removal, was found to have a total length of 13cm. The layer-by-layer autopsy, which started from the neck, revealed diffuse hemorrhagic infiltration of the soft tissues, while the bony-ligament structures, cervical spine cord, and cervical organs were undamaged. There were 13 lacerations on the skull that were widely different from one another in shape and size. The bones on the right side of the skull buckled inward with several linear fractures in the parietal-temporal-occipital right bones. There was subdural hemorrhage of the left temporal lobe and bilateral subarachnoid hemorrhage of the parietal lobe and of the left parietal-temporal left lobe. The screwdriver produced a total of 13 lesions of different shapes and sizes. The radiological and the autoptic examination proved that the killing weapon was the screwdriver. The cause of death was not the penetrating injury of the neck as initially observed, but rather blunt force trauma to the head.

Penetrating injuries of the skull are most common in the thinnest bones, such as orbit and temporal. Screwdrivers are rarely used in assaults, but they can produce severe penetrating injuries. This case is peculiar because it is an uncommon case of homicide with a screwdriver found embedded in the posterior part of the neck. The screwdriver was indeed used to produce lethal blunt trauma to the head. Without discovering the screwdriver, identification of the single instrument used to inflict the injuries the multiple different lacerations of the scalp would have been very difficult. This case amplified a pitfall common in the forensic experience.

Reference(s):

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Screwdriver, Postmortem CT, Head Trauma

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