D7 Singular Skull Fractures Pattern in a Pedestrian

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After attending this presentation, attendees will understand the importance and the necessity of a close collaboration between investigators and forensic pathologists in order to reach a comprehensive resolution of the case by integrating their skills.

This presentation will impact the forensic science community by detailing the importance of an accurate external examination of the corpse in order to understand events and cause of death.

The forensic pathologist along with his or her clinical trauma service colleagues, play a similar role in identifying injuries and mechanisms of death. Interpreting injury patterns can provide useful information for accident reconstruction. The injuries to the body can be the equivalent of a report from a reliable witness of the accident. Information that the pathologist provides helps law enforcement and survivors to understand what happened, provide details on how quickly they died, and give potential causes of the accident. Seldomly, forensic pathologists go to the scene of a motor vehicle fatality: however, viewing the scene can often provide vital clues about the dynamics of the accident and the source of the injuries, for example, looking for blood, tissue, or hair can reveal impact sites.

There are many factors to consider: the speed and type of the vehicle, adult versus child pedestrian (stature), position of pedestrian, etc. The causes of death in pedestrians are commonly head and neck injuries: skull fractures, epidural and subdural hemorrhages, cortical contusions, atlanto-occipital dislocation, and cervical fractures. Head injuries can be caused by the impact of the vehicle or the fall to the ground. Many autopsies are performed without information about the circumstances of death. The medical examiner must then attempt to determine the time, cause, and manner of death relying only on autopsy results.

In November 2006, a young woman was found dead on a country road. The postmortem interval was estimated to be about two to three hours prior to the recovery of the body. No witness to the murder was found. The crime scene investigation did not find traces of blood or signs of dragging on the ground near the location of where the body was found. A full autopsy was performed which identified a stab wound by a single edged knife localized in the abdomen and multiple abrasions and cuts on the upper limbs and thorax. However, these were very superficial to represent the cause of death. Also noted were a skull fracture and lacerations of the brain. The depressed circular skull fracture with fragmentation of the bone perfectly matched to each other. In the thickness of the front edge of fracture revealed a series of multiple and minute fractures. These multiple injuries were probably produced by a tool with multiple cutting edges. It was possible to assume that a screw plug located below the engine oil sump could have caused the head injury. Toxicology results were negative.

Investigators examined all the cars that had been identified near the area of crime scene. The morphological and metrical characteristics of the lesion of the head of the victim was then compared with those different engine oil sump screw plugs of those different cars, allowing investigators to identify the car model that could have possibly hit the victim.

In conclusion, it was hypothesized that the young woman was first stabbed with a single edged knife in the abdomen and then run over by a car. The car was finally identified thanks to information supplemented by the autopsy; moreover, blood traces were found on the bottom of the car, which were consistent with the blood type of the victim.

Pedestrian, Identification, Run Over by Car

 ** Presenting Author*