G72 Accidental Decapitation Due to Tamping Machine: A Case Report

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The goal of this presentation is to report an uncommon case of accidental decapitation in a worker of a railway line.

This presentation will impact the forensic science community by enhancing worker knowledge of the risks associated to railway activities by showing an unusual incident of work related heheading by heavy machinery.

Decapitation is represented by separating the head from the body with cuts in the soft tissues of the neck and resection of the spine at the level of the last cervical vertebrae. Generally speaking it is referred to the act of intentional or accidental decapitation and it can be the result of an explosion, car or industrial accident, or other violent injury. Suicide by decapitation is unusual. Death by beheading is quickly fatal and it consists in the resection of the neck structures (vessels, nerves, cervical spine).

Presented here is a case of a 45-year-old man who worked on the railway line with other four colleagues, in close proximity to a ballast machine. A ballast tamper or tamping machine is a machine used to pack (or tamp) the track ballast under railway tracks to make the tracks more durable. For each rail there is a tamping unit attached to the main frame by means of vertical guide columns and a lifting/lowering hydraulic cylinder. The operations are controlled from the control cabin by an operator using three pedals, while the lining bogie holds the track in its lifted and slewed position. The Ballast Cleaning Machine (BCM) carries-out deep screening of ballast, which is an important maintenance activity to improve drainage and the resilience of the track. The cutter blades of the BCM dig out ballast from under and around the sleepers, and a conveyor belt transfers it to the on-board cleaning equipment where the ballast is passed over screens which remove fine debris. The clean screened ballast is returned to the track and the fine screened residue is ejected to one side, usually into a hopper wagon on an adjacent track. The machine goes into reverse and the blades rotate counter-clockwise.

The victim was located to the left of BCM, near the cutter blades, checking the correct progress of operations, while another worker was driving the machine the other two were together on the other side. All workers were dressed with safety equipment such as helmet, headset, and reflective vest. The victim was probably bent near the chain when he was slipped due to the instability of the ground, being hit on the helmet or on the jacket by the teeth the chain. The speed of the machine did not allow the victim to move away from the chain and he was transported to the right arm of the BCM, inside of which entered his head, but whose size (45 centimeters height and 40 centimeters wide) did not allow the passage of whole body.

At the autopsy time we found the head and the right forearm detached from the rest of the body. The longitudinal diameter of the head was 28.5 centimeters and the diameter of the laceration at the base of the neck was 15x10 cm. In the right parietal region there was a large lacerated and bruised wound the total length of 15cm and in the left fronto-temporal region there was another lacerated and contused wound with margins diastase that affects the entire skin thickness; also he had fracture of the left lateral eye socket. The laceration line passed through the high left lateral to the low right lateral and posterior part of the upper cervical region. Head and neck were covered with powdered material. The airway was severed at the trachea level. The laceration present in the cervical region had a longitudinal diameter of 21.5 centimeters and transverse diameter of 16 centimeters and through it passed heart and part of lungs, traction by trachea and neck vessels. Excoriated streaks and de-epithelialisation area were observed in whole body even if mainly in the dorsal region; these injuries were due to the action of sliding on the stones present in the binary. The helmet and the headset were broken.

No other similar cases are reported in literature.

Decapitation, Railway, Ballast Cleaning Machine

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