



E38 Killer Tractor: A Forensic Methodological Approach in Work-Related Deaths

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Learning Overview: The aim of this study is to present a careful forensic methodological approach to be performed in cases of work-related deaths due to polytrauma. A case of death due to a tractor equipped with a mechanical cutter is hereby presented. Attendees will be shown how crime scene investigation elements and macroscopical findings were used to reconstruct the dynamics of the accident and to identify the cause of death.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by showing the fundamental importance of combining a complete forensic methodological approach with crime scene investigation and a subsequent careful autoscopic examination in the case of work-related accidents with significant trauma. The autopsy should be based on the systematic evaluation of the vascular axes close to the lesions in order to highlight the source of the bleeding and attribute the correct cause of death. Given the proper cause of death, the association with the elements of the crime scene investigation allows the reconstruction of the accident dynamics with the final aim of highlighting critical issues in the security protocols.

One morning a 60-year-old man went to work on a farm where he had to mill olives after collecting them on a tractor with a mechanical cutter. Suddenly, the man got off the tractor and reached the front portion of it, getting sucked into the blades of the cutter. Shortly after, a colleague passing by noticed the man stuck in the blades and immediately called the ambulance. The medical staff quickly reached the accident site and positioned tourniquets at the lower limbs of the man, practicing a massive infusion therapy. Despite their efforts, the man died shortly after.

The crime scene investigation has highlighted that the tractor had the first gear engaged and the cutter indicator light turned on. Near the cutter and among its blades, multiple fragments of fabric similar to that of the victim's trousers were found in the proximity of a large pool of blood. At this point, the corpse was removed and a preliminary external inspection was carried out, confirming the presence of multiple and polymorphic lacerations located at various portions of the body, especially on the lower limbs. Particularly, two lesions appeared to be deeper, the first located at the upper third of the right thigh, the second located at the middle third of the left leg where it determined the nearly complete amputation of the lower third and the foot. For a complete definition of the cause of death, an autopsy was then ordered by the judicial authority.

The forensic investigation proceeded by single anatomical layers and highlighted the presence of areas of hemorrhagic appearance of the muscles underlying the abrasions and bruises. No traumatic lesions were found at the gross examination of the organs. The evaluation of the two deepest wounds was performed by proceeding equally to the dissection for single anatomical layers. The main vascular branches of the examined districts were then isolated. The evaluation of the left femoral artery and vein excluded the presence of laceration of the vessels, which were in any case characterized by widespread hemorrhagic appearance of the external walls. The evaluation of the left anterior and posterior tibial arteries and veins showed a complete laceration of both vessels. The histopathological examinations carried out later confirmed the generalized blood loss, therefore the cause of death was attributed to methemorrhagic shock due to the complete lesion of the main arteriovenous branches of the left leg. This data, together with the elements of the crime scene investigation, allowed the reconstruction of the dynamics of the accident, consisting of the victim's trousers getting caught in the blades of the cutter, which caused the death of the man.

Polytrauma, Vascular Lesion, Work-Related Death