



### **H9 A Doubtful Case of Suicide by Firearm: The Comparison Between the Forensic Analysis of the Crime Scene and the Computed Tomography (CT) -3D Postmortem Investigation in Reconstructing the Manner of Death**

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After attending this presentation, attendees will be able to describe the impact of CT-3D postmortem investigation and forensic analysis of the crime scene in cases in which there were doubts concerning the manner of death.

This presentation will impact the forensic science community by demonstrating the importance of radiological investigations to clarify doubtful cases of suicide by gunshot wounds.

Suicide is a public health problem; generally, it is underestimated. Many different factors may influence personal decisions about the choice of suicide modality. In forensic pathology, some cases of suicide are not clear, particularly when the body is moved, when the dynamics of the crime scene are uncertain, or the method of suicide is unusual. In gunshot suicides, the primary problem is understanding the dynamics of the shot; specifically, after the gunshot, the body may be subjected to passive movements or the shot is not immediately fatal and thus the individual can move away from the exact point where the shot or shots were fired.

The case of a man found dead in the countryside just a few meters from his home is presented. The victim was in a supine position above steep ground near a tree. Next to his right foot was a dark green hat on the ground. A dirty rifle with handcrafted changes was located approximately two meters to the left side of the corpse. There was a gunshot injury to the victim's left chest. Blood spatters were detected between the thumb and the index finger of the left hand. The analysis of the clothes revealed the presence of lacerations on the left thoracic area. A knife was found in his left trouser pocket. Near the corpse, a 96.5cm wooden stick with a V-shaped smooth tip was found, recently honed by a sharp blade. The wife stated the man did not show any psychological problems and that he had gone hunting in the morning. An autopsy was performed that revealed a gunshot wound that had jagged and irregular edges and an oval 3cm x 2.5cm shape with blackish shades as a contact hit. Under the gunshot wound, an ecchymotic-bruised complex of 3cm x 2.5cm was detected on the left intercostal region, at the level of the fifth intercostal space. A CT-3D 64-slice postmortem imaging allowed the reconstruction of the corporeal pathway and the detection of multiple bullets inside the pleural cavity and in the left under-scapula region. At autopsy, 30 bullets were detected, along with a cylindrical plastic element compatible with an explosive cartridge fragment. The directionality of the corporeal pathway determined that the shot was fired from left to right and from bottom to top in an oblique direction; the rifle (leaning on the ground) was activated with the aid of the stick that was used by the victim as a lever. The stick with the V shape was previously honed by the victim himself with the knife found in his trouser pocket.

Conclusions concerning the manner of death were deduced after several simulations that considered as most likely the hypothesis of the barrel being supported under the left armpit and the weapon's being fired by the right-handed and previously prepared stick. This case demonstrates how the analysis of circumstantial data emerging from the inspection, with the support of postmortem radiology, in cases of gunshot wounds is a valuable aid in reconstructing the dynamics of the event. In this case, the question was raised that perhaps the man had fallen and the shot from the rifle was accidental. The accidental theory was excluded due to the circumstantial and radiological elements that made it possible to discover the truth. Therefore, it is suggested that in all cases of firearm injury, a careful inspection is performed of all measurements as well as a pre-autopsy CT-multislice to detect the bullets and perform vector analysis of the shot or shots fired.

#### **Forensic Science, Suicide, CT-3D Postmortem**