



G110 Postmortem Multi-Slice Computer Tomography in the Evaluation of Single Gunshot Injuries

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After attending this presentation, attendees will understand the role of postmortem imaging in the evaluation of single gunshot injuries.

This presentation will impact the forensic science community by discussing the usefulness of Multi-Slice/Computer Tomography (MSCT) in the description of gunshot injuries in relation to entrance and exit wounds and bullet paths, as well as in 3D reconstructions.

Postmortem MSCT is a new approach in forensic pathology for helping investigations. Gunshot injuries are one of the foremost fields of postmortem forensic radiology. MSCT is performed to locate the projectile, to identify entrance and exit wounds, to detect bullets and bullet fragments in the body, to show the bullet course, and other, inflicted injuries. Also it is possible to do 3D reconstruction of the soft tissue and skeletal injuries.

The purpose of this study is to determine the role of postmortem multislice computer tomography in characterization of gunshot injury to reconstruct the site gunshot entrance wound and the direction of the bullet path.

In this study three cases of death due to single gunshot injury are reported. In the first case, an 80-year-old man was found dead in the bedroom of his apartment with a gun in the right hand. An external examination of the victim showed devastating head injuries. In the second case, an 81-year-old man was found dead in his apartment. He did not have any gun in his hand because it was removed by the police. In this case an external examination showed the anatomical site of gunshot injuries. In the third case, a 56-year-old man was found dead on the road near the center of the city. Postmortem radiological investigation (MSCT) and autopsy examination were performed in these three cases. The determination of entrance and exit wounds was reconstructed from the characteristic fracture pattern with inward or outward beveling of the bone respectively.

In this study, MSCT showed an overvalued internal hemorrhage and a precise detection of skeletal injuries and skull fractures. Circumstantial data and autopsy investigation showed cause and modality of death. For this reason radiological approach is very important for reconstruction of gunshot injuries but it does not give any information about modality of death.

In some countries, the use of imaging techniques such as computerized tomography and magnetic resonance is becoming a routine procedure before the autopsy, or even, in some cases, investigations carried out in place of the autopsy. Other advantages of this investigation are: presenting clear and objective information to the court as forensic evidence, 3D documentation of the investigation, and quality assurance through the digital data filling and transfer. The documentation and analysis of postmortem reports identified by MSTC, a non-invasive method, will lead over time to qualitative improvements in forensic pathology investigations. The methodological operative combination between the two disciplines (radiology and forensic pathology) has begun to define common objectives, especially through the use of methods such as MSCT, which are:

- Determination of the cause and modality of death.
- Evaluation of vital signs depends on the presence of anatomical damaged structures.
- Developing a forensic reconstruction based on various reports.

Currently, MSTC is a method increasingly used for forensic purposes so as to have the potential to enhance today's formal procedures. Apart from the accuracy and three-dimensionality, this method allows the corpse to be re-examined even after some time. In fact, it is believed that this virtual approach, non-invasive or minimally invasive, will improve forensic pathology tools in the near future.

Gunshot, Virtopsy, Autopsy