



H39 A Gunshot Wound Trajectory Analysis Using Forensic Animation to Establish the Relative Positions of the Shooter and Victim

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After attending this presentation, attendees will better understand how forensic animation can be used to assist in gunshot wound trajectory analysis.

This presentation will impact the forensic science community by illustrating the value of forensic animation in examining complex gunshot wound trajectories and its use in investigations.

Few peer-reviewed articles or case reports detail how trajectory analysis is performed in complex gunshot wound cases with conflicting testimony. Forensic pathologists who autopsy the victims of gun violence are often called upon to answer questions in both criminal and civil courts about the relative position of the shooter and the victim. In this case report of an officer-involved shooting incident, the statement of the police officer contradicted the statements of other eyewitnesses. Trajectory analysis of the decedent's two gunshot wound pathways was performed in light of the physical evidence at the scene, including the final resting position of the decedent's body and forensic animation was used to create a court exhibit.

The officer stated the decedent had tripped and was on the ground, turning toward the officer in a threatening manner when the officer decided to shoot. Forensic trajectory analysis revealed that the decedent sustained two gunshot wounds: a penetrating wound to the lower right leg and a perforating wound to the head. The first gunshot wound to the right calf had a back-to-front, right-to-left, and upward trajectory. The bullet fractured the right tibia and lodged in the knee at the patella. It did not sever any major arteries and would not have been a lethal or incapacitating wound. The second gunshot to the back of the head entered in the inferior right occipital scalp and exited at the left forehead. The brain stem was transected at the pontomedullary junction. The direction of fire was back-to-front, right-to-left and upward. This second gunshot would have been instantaneously lethal and would have caused the immediate loss of all muscle tone. The decedent's final resting position at the scene was face down with his left leg externally rotated and extended and his right leg flexed at a 90° angle at the knee, with the right foot resting up against an adjacent tree. The left hand was palm up, down by the hip. His right hand was at the waist under his body. The final position of the decedent was consistent with the decedent running away from the officer, with his arms down, which contradicted the officer's testimony that he was on the ground and twisting to face the officer, with his arms poised as if to shoot. The use of forensic animation in this case allowed for all the evidence to be visualized to demonstrate the relative positions of the shooter and victim and demonstrate the sequence of events that occurred during the shooting. The legal case was settled to the satisfaction of both parties.

Gunshot Wound, Trajectory, Forensic Animation