



Engineering Sciences Section - 2014

C15 Officer Fatally Shot in the Line of Duty: Murder or Suicide?

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After attending this presentation, attendees will understand how a biomechanical analysis of fatal gunshot injuries can contribute to conclusions regarding manner of death.

This presentation will impact the forensic science community by demonstrating a case where an analysis of fatal injuries from a biomechanical standpoint provides insight into whether or not a person was murdered or committed suicide.

Summary of Case Facts: An on-duty police officer was found with a fatal gunshot wound. The medical examiner ruled the manner of death as suicide. A biomechanical analysis was conducted to determine if this was suicide or murder.

The officer was found in a vacant lot, lying on his back with his legs straight, his arms bent at the elbows, and his hands resting on his torso above waist level. His shotgun was on his chest with the muzzle below his chin.

The shotgun was a manually operated Remington® Model 870™ pump-action firearm loaded with department-issued federal 12-gauge, .50-caliber solid slugs with sabot. The slug was never found. Likewise, a recognizable impact between the slug and the asphalt or adjacent soil was never located. The wad was found approximately 35 feet from the officer's head.

Recoil testing with the gun held in two hands, but not against the body, demonstrated recoil distances from five to nine inches. Recoil testing with the gun on the ground (not held by a human) demonstrated a much greater recoil distance of 48 inches, estimated from video.

Injuries: The officer sustained a fatal gunshot wound to the head with the entry wound under the chin. Additionally, there was a patterned abraded laceration (2.5x1cm) just posterior to the entrance perforation. The bullet path ran through the mouth floor, tongue, palate, nasopharynx, skull floor, frontal lobes, and parietal skull with external beveling. The exit wound was over the right superior frontoparietal region. A second exit wound, from the wad, was just above and medial to the right eye. The direction of the bullet path with respect to the standard anatomic position was upward and from left-to-right. Postmortem radiographs showed no projectile in the head.

Analysis: Based upon the location of the gunshot wound, as well as the high energy of the weapon used, the officer would have been incapacitated and lost bodily control virtually instantaneously upon the shot being fired.¹

If he were standing when the shot was fired, his body would have collapsed vertically and would not have come to rest as he was found at the scene. In order to reach his as-found position on his back from standing, his body's center of gravity (cg) would most likely have to have been traveling rearward with some initial velocity, such as being shoved rearward or initially running backward. If he were moving, the gun would not come to rest on his chest. His as-found body position is consistent with being moved by someone after the shot was fired.

If the officer was initially lying on his back at the time the shot was fired, his arms would not be in the as-found position had he pulled the trigger. His instantaneous loss of body control would not allow any significant force to counteract the gun's recoil and the gun would not likely have been found on his chest. Thus, his position and the gun's position are inconsistent with suicide.

The abrasion/laceration located posterior to the entry wound on the underside of his chin requires an interaction with a sharp object or a forceful interaction with a blunt object. The end of the tubular magazine under the barrel is not sharp and the force required to lacerate his skin would not exist in the suicide scenario, because of recoil. This abrasion/laceration means the gun was forcefully pushed under his chin and the recoil was then resisted, or the gun was moved rapidly toward his chin/neck as it was fired. Only a person positioned to control the recoil or a person shoving the gun with speed into the officer's chin/neck as the gun was fired could cause the magazine to abrade/lacerate the tissue. Thus, this abrasion/laceration was not produced in any potential suicide scenario.

Conclusion: A biomechanical analysis of the fatal gunshot wounds to the on-duty police officer indicates that his death was not a suicide, but a murder.

Reference:

6. Spitz WU and Fisher RS, Physical Activity Following Fatal Injury by Gunfire, in *Medicolegal*



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Investigation of Death, p. 266, 1980, Thomas Books, Springfield Illinois.

Gunshot, Fatality, Biomechanical Analysis