



## Engineering Sciences Section - 2013

### **C25 Who Pulled the Trigger? Blood Evidence and Bullet Path Determine Whether Shooter Was Friend or Foe**

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The goal of this presentation is to demonstrate how basic physics principles were used to determine who shot a man in the neck. An analysis of the blood evidence and the bullet path was used to identify who pulled the trigger.

This presentation will impact the forensic science community by showing a unique case where both the body motions of the individual who was shot and the motion of the vehicle in which he was a passenger were factors used in determining where the shooter was physically located and, ultimately, who fired the gun.

**Summary of Case Facts:** An adult male was the right front passenger in a sedan when he sustained gunshot wounds to his neck and right shoulder.

The sedan's driver told police that he and the victim were sitting in the vehicle parked near the corner of their apartment complex when three males approached the vehicle. The driver backed up to get away, and when he was halfway out of the parking spot, he heard three shots coming from the right rear window, which was rolled halfway down. He continued backing, hit a curb, drove forward and stopped directly in front of their apartment. The victim's wife came out and observed that her husband was bleeding from the right side of his neck. She and the driver then moved the victim to her vehicle, whereupon she took him to the hospital, which reported the incident to police.

When police inspected the vehicle, the right rear window was partially down. Blood was on the front passenger seat. Drips of blood were on the passenger B-pillar trim and doorframe of the right rear door. A .380 semi-automatic spent casing was on the back seat. No casings were found outside the vehicle at the scene. There were no slugs inside the vehicle or evidence of bullet strikes.

The victim's wife later told police she believed the driver shot her husband. She did not see anyone or any vehicles leave the scene. She stated that the driver had threatened to kill her husband a month earlier when they got into a fight.

A family friend also told police she suspected the driver and suggested he and the wife were lovers, and may have colluded to commit the assault.

**Injuries:** The victim sustained three external gunshot wounds to his right shoulder and neck and spinal fracture at C2. A bullet remained in the left lateral soft tissues of the neck. He had right upper extremity paralysis and right lower extremity weakness.

**Analysis:** Only one casing was ever found at the scene and it was in plain view on the sedan's back seat. The single bullet was lodged in the victim's neck. With the victim's right shoulder shrugged up toward his right ear, one bullet could have caused all of his wounds. The bullet entered the right shoulder just above the clavicle and exited just medial and forward of the entry location before it re-entered his body on the right side of his neck at C2. The bullet shattered C2 and lodged in the soft tissues on the left side of his neck.

The bullet contact locations were reproduced on a surrogate victim in an exemplar vehicle for two scenarios: (1) the gun being fired through the vehicle's right rear window with the victim seated in the right front seat; and, (2) the gun being fired by the driver as the victim exited the vehicle. A rod was used to analyze the bullet path in these scenarios. Both scenarios were possible, but it was unlikely that one could fire through the rear window while the vehicle was backing up. Also, the casing location was consistent with the scenario of the driver firing the gun.

Blood evidence was also more consistent with the second scenario. Blood droplets traveled vertically downward along the B-pillar trim before traveling at an angle toward the front of the car. Tests were conducted that showed that blood would travel down the B-pillar due to gravity, but would travel at an angle similar to that in the car due to rapid vehicle backing. This indicated the blood on the inside of the vehicle traveled vertically from gravity before the vehicle backed up. Significantly, this is inconsistent with the driver's statement that shots were fired as he was backing the car.

**Conclusions:** Due to circumstances at the time of the crime, evidence was lost and no one was prosecuted. However, later in a civil suit, the available evidence showed the driver shot his passenger.

**Shooting, Blood Evidence, Bullet Path**