



H104 Troubling Trocars: The Time-Consuming Recovery and Wound Documentation of Fragmenting Bullets

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The goal of this presentation is to illustrate the time-consuming process of wound documentation and recovery of high-performance fragmentation bullets.

This presentation will impact the forensic science community and the general population by illustrating the destructive nature of the copper fragmenting bullets, which have recently entered the public marketplace for self defense. This presentation will also address the complications pathologists face while determining the pathway of the bullet due to its separation into multiple projectiles and the additional time required for projectile recovery.

Introduction: Copper fragmenting bullets entered the public marketplace in 2014, marketed toward self defense. The Liberty Ammunition Civil Defense bullet and G2 Research's Radically Invasive Projectile (R.I.P.[®]) are designed to inflict maximum trauma by expelling metal trocars that track away from the base of the bullet. These bullets are advertised as able to "defeat all barriers, such as sheet metal, sheet rock, windshields, plywood, and heavy winter clothing." The separation of the trocars cause damage to multiple organs and prove to be problematic when trying to describe the path of the bullet, as they create up to nine separate wound channels. When multiple gunshot wounds are present, the trocars may not be reliably reassembled with their corresponding base, causing further documentation complications. The process of documenting the wound path and recovering all fragments is tedious and time-consuming, greatly reducing efficiency in the autopsy suite.

Materials and Methods: Two cases involving copper-fragmenting bullets were evaluated. The first involves a 25-year-old African American male who was shot while drinking inside a bar. The decedent was shot in the left chest and forearm. He ran after the assailant before collapsing on a sidewalk outside the establishment. Emergency personnel arrived on scene and found the decedent unresponsive. He expired at a nearby hospital.

The second case involves a 16-year-old White male who was shot while sitting in the back of a friend's car during a marijuana drug deal. He was shot multiple times in the head and neck and was declared dead on arrival of emergency personnel.

Results: Autopsy of the first homicide victim revealed penetrating gunshot wounds to the chest and a perforating gunshot wound to the left forearm. One bullet lacerated the upper left lung, the pericardium, the left atrium, and the root of the aorta. A second bullet lacerated the diaphragm, spleen, liver, left lower lung lobe, pericardium, right ventricle and atrium, and right upper lung lobe. Trocars lacerated the stomach, small intestines, colon, mesentery, the left lung, and the left chest wall. Each were located and retrieved with great effort.

Examination of the second victim revealed multiple perforating gunshot wounds to the head and neck. One bullet lacerated the right neck and fractured the C3 vertebrae, while two others fractured the maxilla. A fourth bullet entered the neck, lacerating the left jugular vein. The fifth bullet lacerated the right parietal lobe. Trocar fragments were recovered from the oral cavity and could not be ascribed to a specific shot.

Conclusion: R.I.P.[®] and Liberty Civil Defense fragmentation bullets, while marketed for self defense, cause extensive organ damage and significantly increase autopsy time for the forensic pathologist. The extra trocars from the projectile ravage the tissue and can be difficult to locate. Reimaging the body and organs may be necessary for retrieval. The bullets also pose serious complications for the forensic pathologist when describing the wound path. The trocars of these bullets splay outward, causing additional wound paths that may intersect with each other or intersect with the paths from additional bullets. Associating the trocars with their respective bullet base can also be challenging when multiple shots are fired. In addition to the damage done to the body, these bullets do damage to the efficiency of the autopsy suite.

R.I.P.[®], Trocars, Fragmentation Rounds