H69 Terminal Performance of Zombie-Killing Bullets and Polymer-Tipped Bullets

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The goal of this presentation is to illustrate the terminal effects of polymer-tipped handgun bullets on the human body and the counter-effects of the body on the tipped bullet.

This presentation will impact the forensic science community by illustrating the terminal ballistics/performance of polymer-tipped handgun bullets that were recovered during autopsy. This presentation will illustrate the need for awareness of tipped bullets and collaboration between the forensic pathologist and the firearm examiner when dealing with cases of polymer-tipped bullets.

Introduction: Polymer-tipped rifle bullets have been around since the mid-1980s. They were first developed by Nosler® to provide streamlined shape with the expansion of a hollow-point bullet. Polymer-tipped handgun bullets, which are a more recent invention developed in the mid-2000s, are being encountered more by forensic professionals.

Polymer-tipped handgun bullets are designed to expand reliably and not clog like standard hollow-point bullets when fired through heavy clothing. The polymer tip/insert is also designed to feed reliably in semi-automatic pistols. The bullets are advertised to deliver controlled expansion with large deep-wound cavities over a wide range of velocities.

Materials and Methods: The autopsy and scene pictures were reviewed for two individuals that were shot with Hornady® polymer-tipped bullets. The first individual was a 24-year-old male who weighed 215 pounds and measured 74.5 inches. He was shot twice with Hornady® Zombie-Max™ ammunition in the trunk. The second individual was a 27-year-old male who weighed 148 pounds and measured 68 inches. He was shot once in the chest with Hornady® Critical Defense® ammunition.

Results: A slightly deformed non-expanded 45 caliber Hornady® Zombie-Max™ bullet with a green polymer tip was recovered from the left thigh. The bullet entered the right lower back and injured the skin, subcutaneous tissues, and muscles of the right buttock. The bullet lacerated the urinary bladder and fractured the pubic ramus. A deformed and fully expanded 45-caliber Hornady® Zombie-Max™ bullet was recovered from the chest muscles. The bullet entered the left back and injured the skin, subcutaneous tissues, and muscles of the back. The bullet lacerated the left lung and heart and fractured the left 9th rib.

A slightly deformed, non-expanded 40-caliber Hornady® Critical Defense® bullet with a red polymer tip was recovered from the soft tissues of the anterior chest. The bullet entered the left lateral chest and injured the skin, subcutaneous tissues, and muscles of the chest. The bullet lacerated the heart and fractured the left 3rd and 5th ribs.

Conclusions: Two of the three Hornady® polymer-tipped bullets did not perform as advertised. The 40-caliber Hornady® Critical Defense® bullet passed through a thick hooded sweatshirt and two thin T-shirts before impacting and fracturing two ribs. The 45-caliber Hornady® Zombie-Max™ bullet passed through denim jeans and cotton boxers before impacting and fracturing the pubic ramus. The counter-effect of human bones on the bullets caused crimping of the bullet tip, thereby entrapping the polymer insert, resulting in minimal expansion of the bullets.

Ballistics, Polymer-Tipped Bullets, Zombie