

Full-Metal Jacket Mild Steel Core Ammunition : A Case Report

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No funding was received for this study.

The authors report no conflict of interest.

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The deceased was a 26-year-old man who was killed in a multiple shooting incident while sitting alone in his car.

This individual was shot by multiple individuals, with different types of ammunition, from different angles. It is beyond the scope of this article to describe all the gunshot wounds. It is the intention of the authors to merely focus on the pathology of trauma of full-metal jacket ammunition with a penetrator (mild steel core in this presentation). The authors describe what was found at autopsy.

Altogether, there were 38 gunshot wounds to the body, of which 19 were confirmed as gunshot entrance wounds. The rest of the gunshot wounds were classified as reentry gunshot wounds, tangential gunshot wounds, and exit gunshot wounds. Some of the wounds appeared to have been “high velocity” in nature. Two of the gunshot wounds were atypical in nature in that they contained unusual foreign bodies. It is these 2 gunshots wounds that serve as the basis for this illustrated forensic pathology paper.

Radiographs of the extremities are shown (Fig. 1).

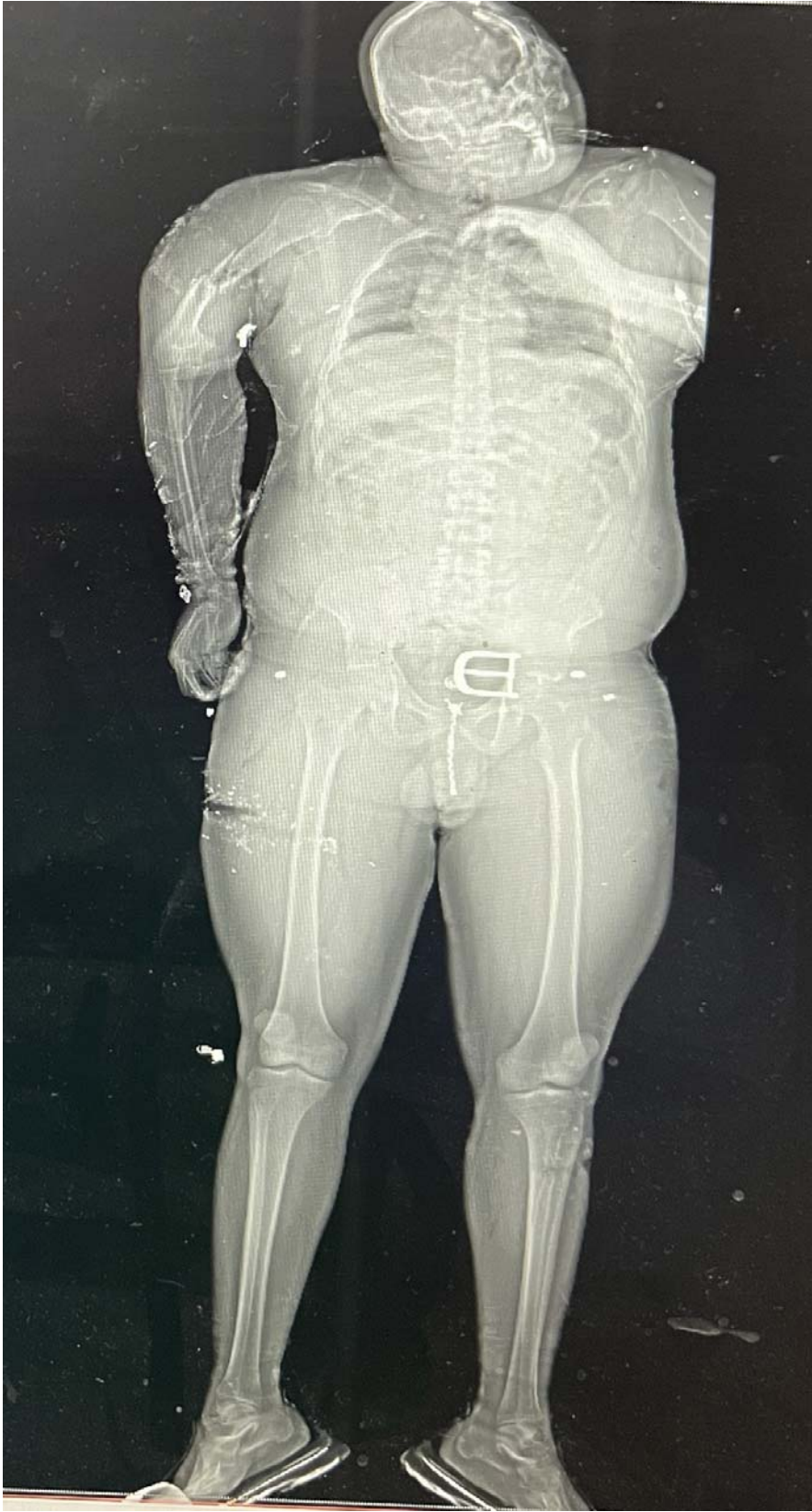


FIGURE 1: Lodox image showing the 2 mild steel cores.

Macroscopically, the right upper arm showed a gunshot entrance wound and a gunshot exit wound. The right humerus bone was fractured. An atypical gunshot entrance wound was located on the lateral aspect of the right upper arm. An atypical gunshot exit wound was located on the medial aspect of the right upper arm, which measured 2 × 1.5 cm. Within the central aspect of this gunshot exit wound was located a mild steel core projectile fragment (Figs. 2, 3).



FIGURE 2: A photograph demonstrating some of the gunshot entrance wounds. The right humerus bone was fractured.



FIGURE 3: The gunshot exit wound was located on the medial aspect of the right upper arm and measured 2×1.5 cm. A mild steel core projectile fragment was present within the central aspect of this gunshot exit wound.

There was a further 4-cm-diameter, atypical gunshot exit wound located on the lateral aspect of the right thigh; within the central aspect of this atypical gunshot wound was located a similar mild steel core projectile fragment (Figs. 4, 5).



FIGURE 4: A photograph demonstrating one of the gunshot entrance wounds, together with a 4-cm-diameter, large-gaping gunshot wound located on the lateral aspect of the right thigh; a mild steel core projectile fragment was present within the central aspect of this wound.



FIGURE 5: Close-up view of the 4-cm-diameter, atypical gunshot exit wound located on the lateral aspect of the right thigh; a mild steel core projectile fragment was present within the central aspect of this gunshot wound.

Further examination of these 2 atypical gunshot wounds showed mild steel cores and copper alloy jacket fragments, within their central aspects (Figs. 6; 7).



FIGURE 6: A photograph demonstrating the projectile fragments removed from the wounds. Two mild steel cores of an AK47 Mild Steel Core projectile and 2 fragments of the copper alloy jacket.

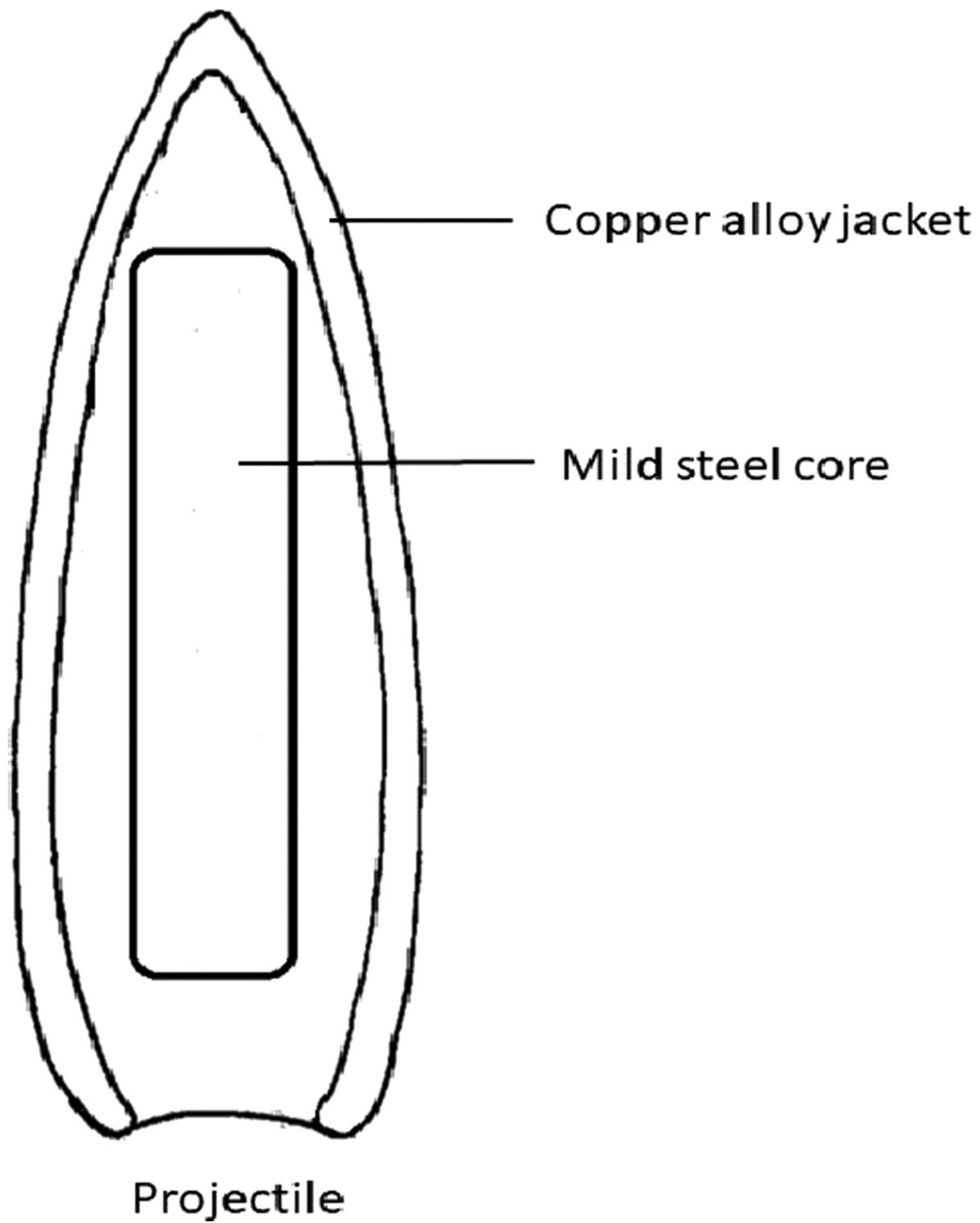


FIGURE 7: Longitudinal section of an AK47 Mild Steel Core projectile. AK47, 7.62 × 39 mm (Kalashnikov).

The ballistic experts determined the ammunition to be AK47, 7.62 × 39 mm (Kalashnikov).

DISCUSSION

What makes this case of academic interest is that military ammunition was used on a civilian. Gunshot wounds in civilian populations are relatively well documented in the literature.¹⁻⁴ Gunshot wounds in military populations may be more complex because of the different types of ammunitions involved and the higher velocities of the projectiles.

Some of the projectiles in our case only partially penetrated the body, which is suggestive of the projectiles having moved through an intermediary target before entering the body. The intermediary target, in this case the car, served to decrease the energy of the projectiles.

This illustrated article depicts the entrance and exit wounds of the 2 gunshot wounds described. The entrance wounds and the corresponding exit wounds have been shown. As stated, the projectiles went through an intermediary target producing atypical wounds. Mild steel cores and copper alloy jacket fragments were detected within the gunshot exit wounds.

The jacket of full-metal jacket ammunition with mild steel core does not typically separate unless the bullet strikes an intermediary target before striking the body. Even when hitting a bone, the jacket typically remains intact if the bullet has not struck an intermediary target.

Crouch et al⁵ found that stripping of the jacket, from AK47 Mild Steel Core rounds, makes a difference to its penetrating ability: the mild steel core is significantly reduced in length and mass, when the jacket is not present. The magnitude of this effect is much greater than previously reported for high-strength steel-cored rounds and for tungsten carbide-cored rounds.

When one recovers cores and fragments of the jacket, it is indicative of the projectile striking an intermediary target before striking the body.

The purpose of this article was to highlight this phenomenon to other practitioners. This kind of data becomes important when practitioners have limited information about the scene.

ACKNOWLEDGMENTS

The authors would like to thank the Research Ethics Committee of the Faculty of Health Sciences, University of Pretoria, for their permission and authorization (Ethics Reference Number: 694/2022).

The authors would also like to thank Mr T. de Wit from the Department of Forensic Medicine at the University of Pretoria for his technical assistance. The authors wish to thank Lodox Systems (Pty) Ltd.

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