



Case #90

NAME Educational Activities Committee

Case provided by:

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1. At autopsy, a perforating wound is identified on the right lower extremity of a decedent. Based on the radiograph shown, the subject was likely:

A. Shot with high velocity rifle ammunition

B. Shot with a radically invasive projectile

C. Stabbed with a barbeque fork

D. Shot with an air gun pellet

E. Shot with .22 short handgun ammunition

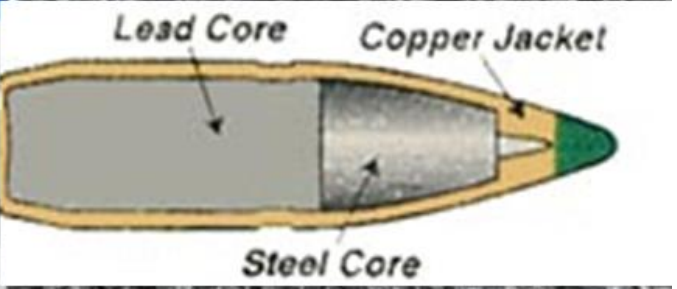
Answer...

A. Shot with high velocity rifle ammunition (15.69% responses)

While it is generally not recommended to identify a bullet based solely on radiology or injury pattern, certain distinctive radiological patterns can provide preliminary information about the type of weapon or bullet used. This must be confirmed after recovering the projectile.

In this case, the two radiopaque foreign bodies were radiologically detected in the lower extremity, showing a peculiar morphology. They represent the distal portion (tip) of a "green-tip" M855 rifle ammunition. It is a 5.56x45mm 62 gr. bullet with a velocity of approximately 3000 fps, made of a steel tip, tungsten or lead core, and full copper jacket. It can penetrate steel helmets at a distance but is not classified as an armor-piercing round by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). Although technically these are military rounds, they are also federally legal for civilian use (with some restrictions in certain States).

Injuries produced by the M855 can be extensive due to its high speed and penetration ability and based on the impacted tissues and organs. An interesting radiological finding, when present, is a radiopaque "flat top cone" (item **A** in the photos) representing the steel tip portion of the bullet. The lower foreign body (item **B** in the photos) represents the copper jacket covering the steel core that detached after the impact.

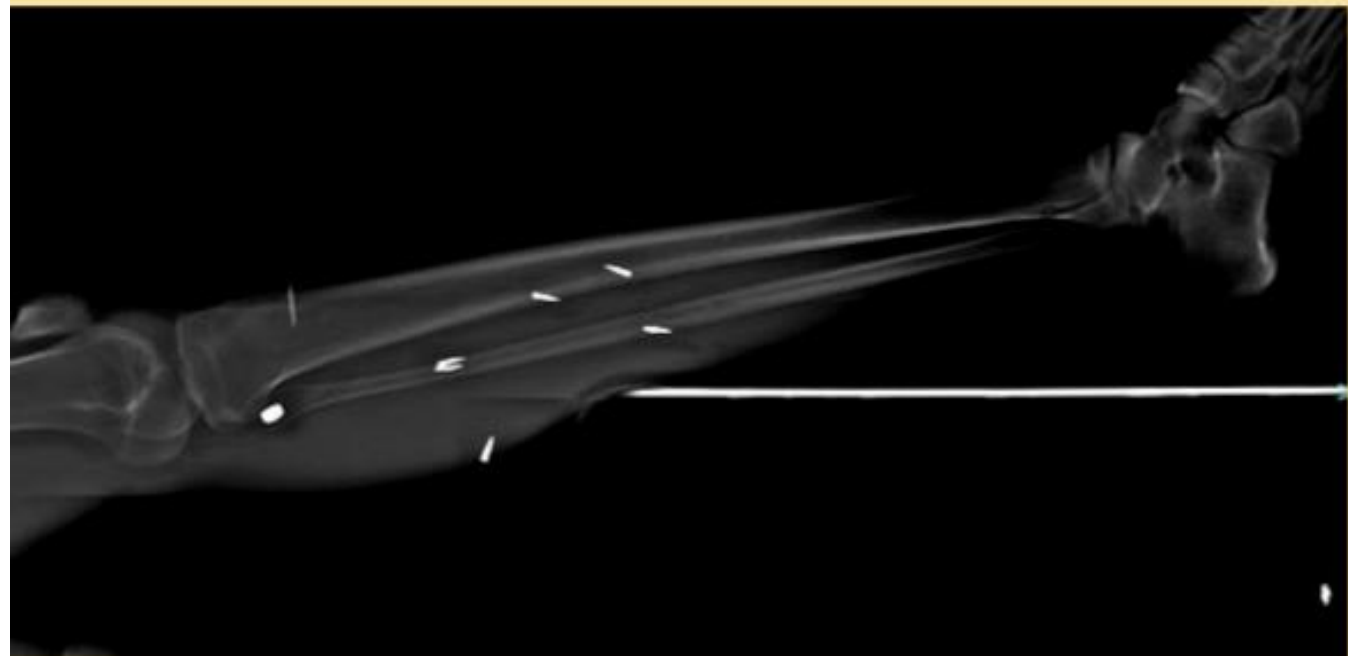
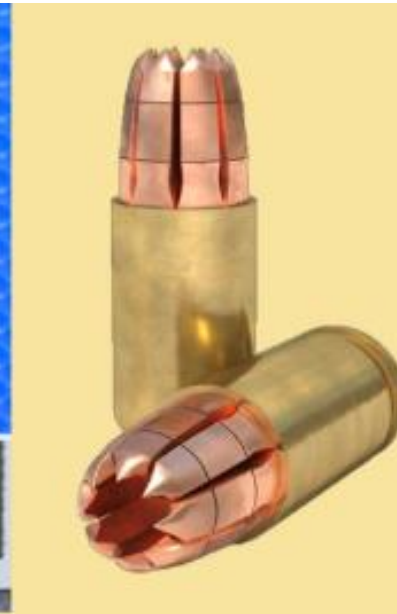
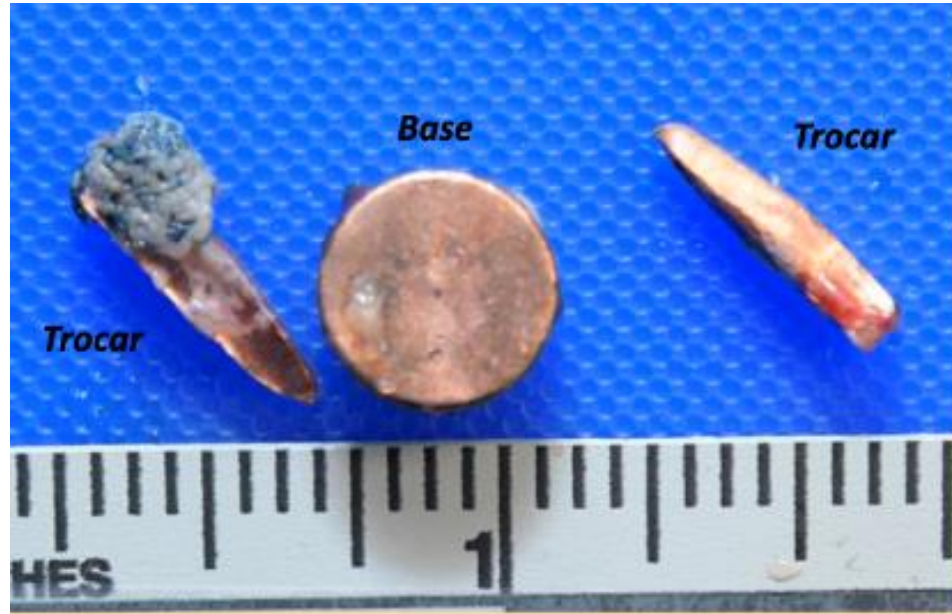


Other responses...

B. Shot with a radically invasive projectile (31.76% responses)

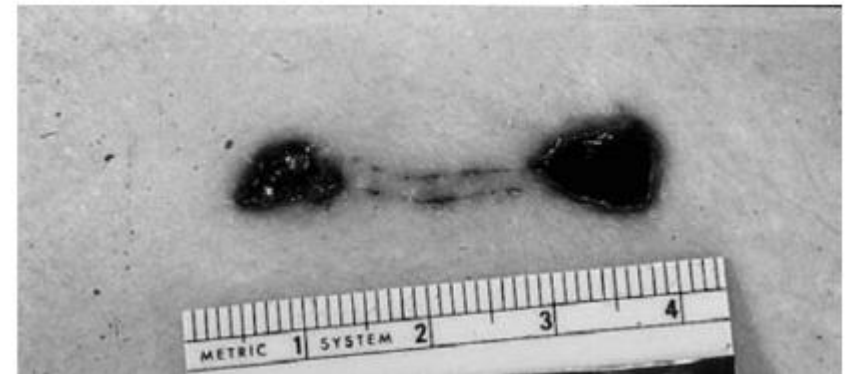
“Radically invasive projectiles” display predictable fragmentation, breaking into metallic trocars upon impact, enhancing stopping power and damage. They typically feature 6 or 8 trocars, spreading out within the target in radial symmetry at approximately 45-degree angles from the core. The heavier bullet base allows for deeper penetration.

Radiographically, the ammunition generally exhibits fragmented jacketing, thin triangle-shaped metallic trocars, and a round base.



C. Stabbed with a barbecue fork (23.62% responses)

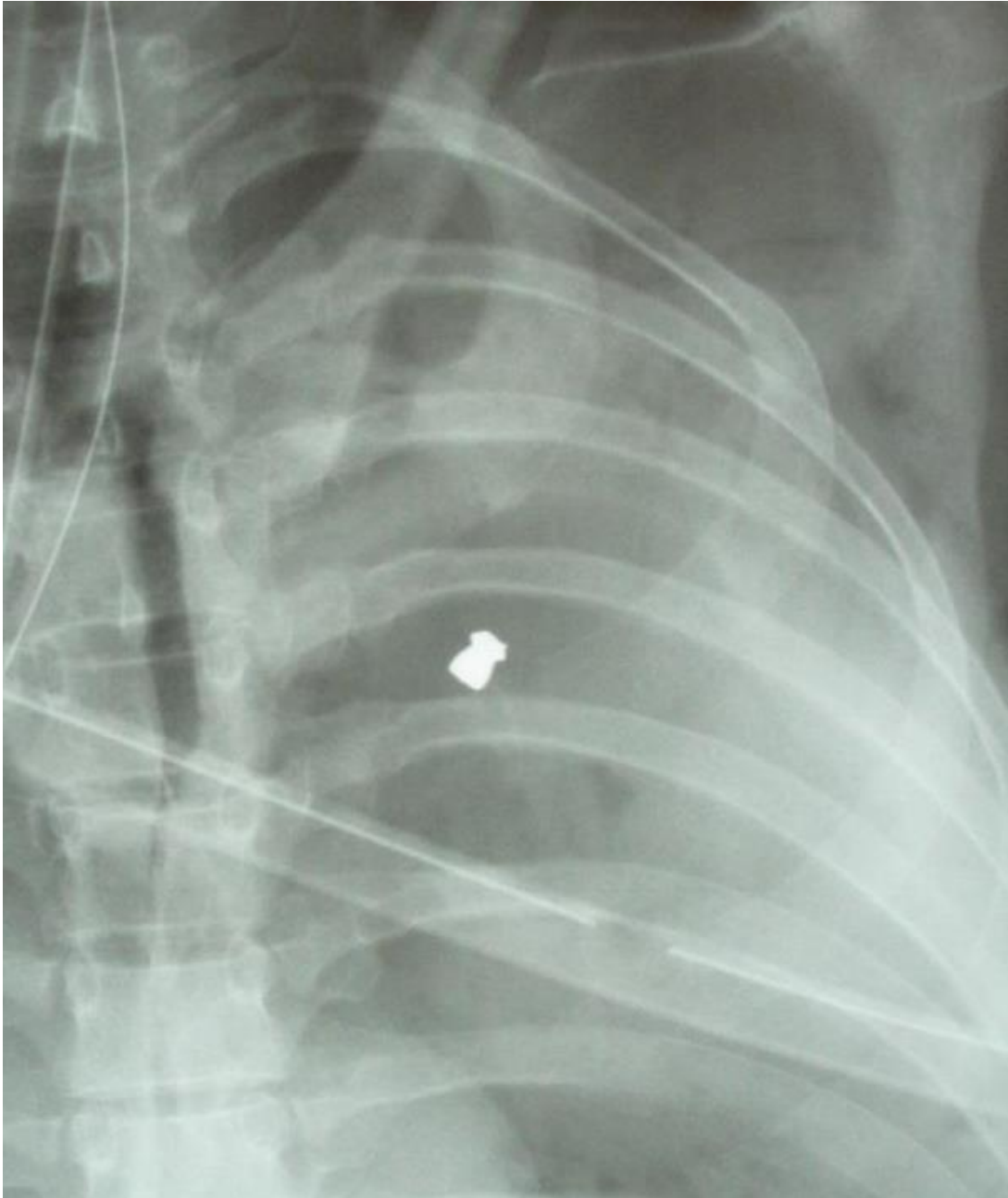
Wounds caused by a barbecue fork with 2 or 3 prongs typically result in groups of 2 or 3 skin wounds. The appearance of the skin between the wounds can be regular or irregular, depending on the angle of penetration. Perforating injuries are generally not observed. The fragmentation of the prong tips is uncommon, leading to limited or absent radiologic findings.



From 'DiMaio DJ, DiMaio VJM. Forensic Pathology. 2nd ed. Boca Raton, FL: CRC Press; 2001'

D. Shot with air gun pellet (17.26% responses)

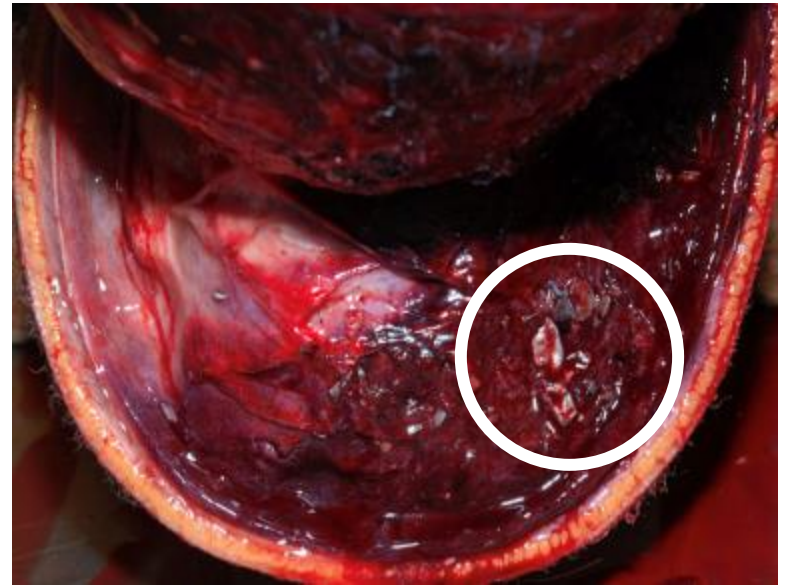
Air gun pellets are small projectiles designed for use in air guns, also known as pellet guns or air rifles. These pellets are typically made of lead or other materials and come in various shapes and sizes, including flat-nosed, pointed, hollow-point, and round-nosed configurations. Air gun pellets are propelled by compressed air or gas, and their caliber varies, with .177 and .22 being two of the most common sizes. Despite their lower power compared to traditional firearms and bullets, they still show penetration ability and may result in severe injuries or death. However, perforating injuries are typically not seen. Radiologically, the radiopaque foreign body resembles the shape of the air pellets.



Photos provided by Dr. Reade Quinton, Mayo Clinic (Rochester)

E. Shot with .22 short handgun ammunition (11.73% responses)

These rounds are commonly used in small pistols and revolvers and are known for their relatively small size, low recoil, and low kinetic energy. They are generally associated more with penetrating wounds than with perforating ones. The bullet is typically markedly deformed or flattened. The radiograph generally shows a distinct radiopaque object with a circular or rounded end.



References

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