



Case #104

NAME Educational Activities Committee

Case provided by:

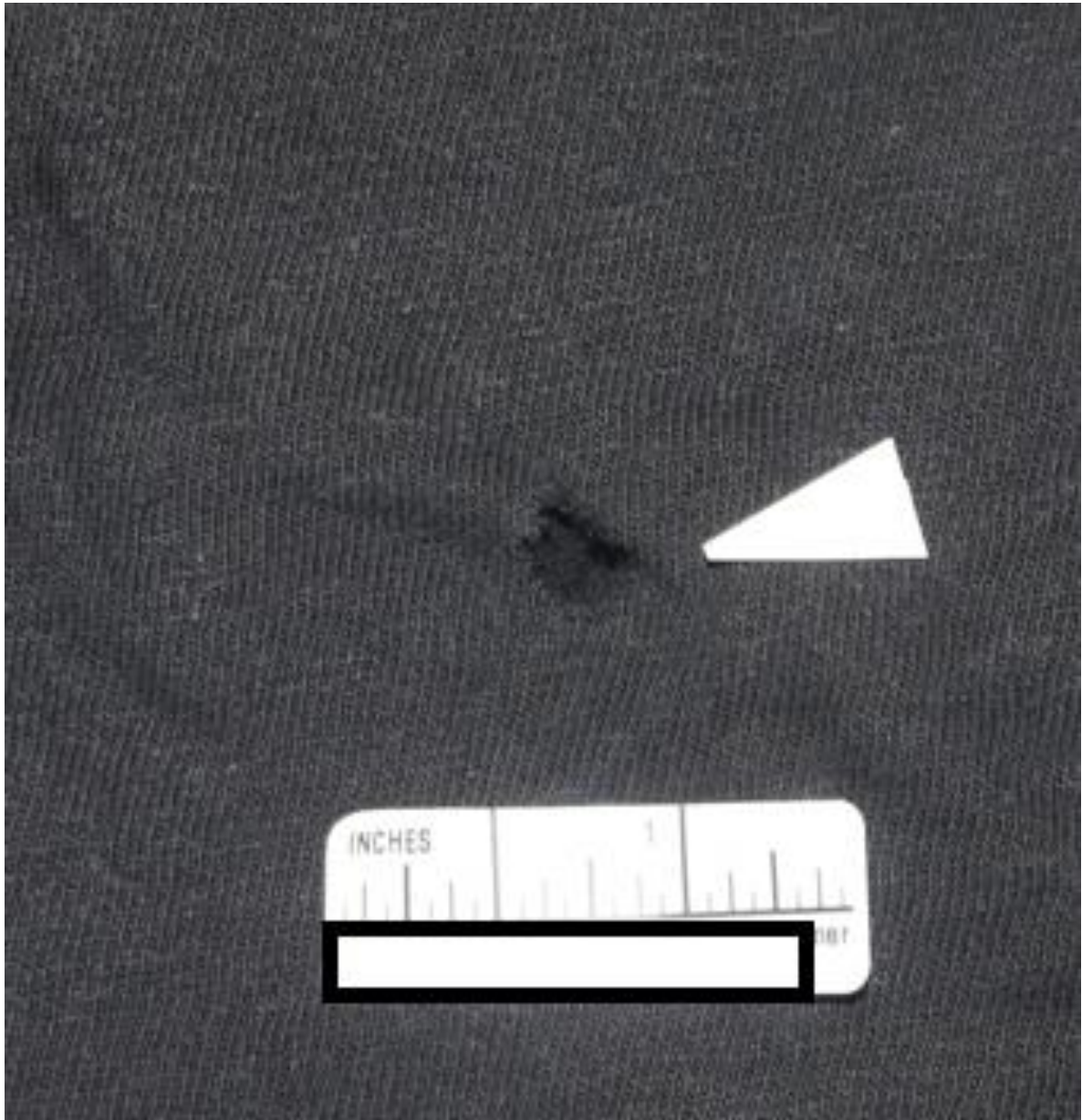
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1. Which of the following best describes this wound?

See both the wound photo and photo of the clothing overlying the defect.

- Exit gunshot wound
- Entrance gunshot wound, close range
- Entrance gunshot wound with bullet wipe
- Entrance gunshot wound, indeterminate range
- Entrance gunshot wound, intermediate range

Answer...

A. Exit gunshot wound (CORRECT ANSWER, 35.59 % of responses)

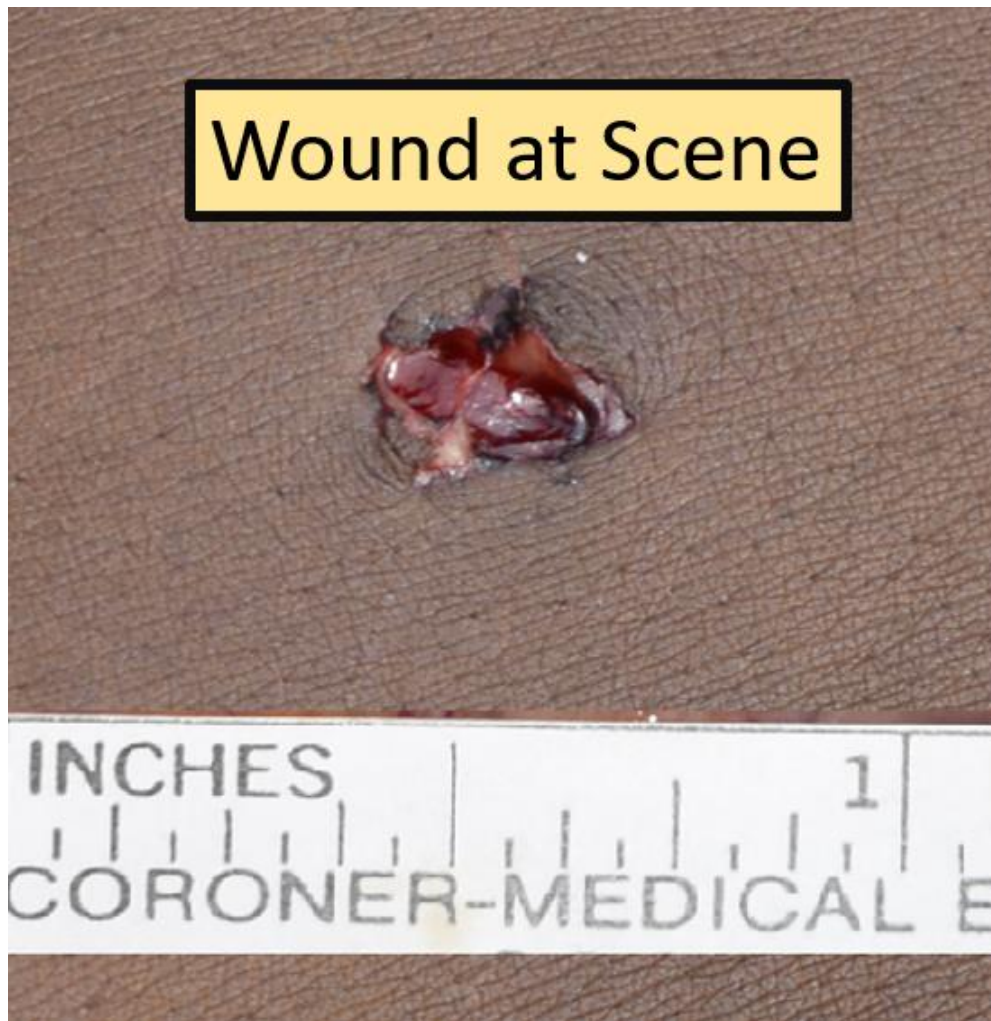
The correct answer is A. This is an exit gunshot wound. The main teaching point for this case is recognition of drying artifact. The shape of the wound suggests an exit rather than an entrance wound, as the wound has a stellate shape, without symmetric features or abrasions^{1,2}. The dark discoloration around the wound is the teaching emphasis of this case, which can be mistaken for soot, and be a point of confusion.

This isn't soot for a few reasons. First, soot doesn't belong around exit gunshot wounds. Second, this wound is fairly small (see ruler reference), and a close-range entrance type gunshot wound would often be larger. Furthermore, the garment overlying the defect doesn't appear to show any evidence of close-range fire. The other answer choices are incorrect for these reasons.

The black coloration seen on the photo is due to drying artifact of the wound edges and is not to be mistaken for soot. Attached (on the next slide) is a picture of the fresh wound at the scene, highlighting the usefulness of viewing initial scene photos. The difference between the features of a fresh wound versus a wound with drying artifact can occasionally assist in distinguishing entrance from exit gunshot wounds.

Of note, bullet wipe is made by bullet/barrel lubricant and other gunshot residue depositing on the skin³. This can be more circumferential than the discoloration seen here and is sometimes observed to be greasy. Additionally, the presence of clothing makes a bullet wipe on skin unlikely, as it would have been deposited on to the textile before entrance⁴. Bullet wipe can be seen in bullet wounds of any distance⁵.

Wound at Scene



Drying Artifact



PERCENTAGES FOR THE INCORRECT ANSWER CHOICES:

- B. Entrance gunshot wound, close range (15.25 % of responses)**
- C. Entrance gunshot wound with bullet wipe (19.59 % of responses)**
- D. Entrance gunshot wound, indeterminate range (23.73 % of responses)**
- E. Entrance gunshot wound, intermediate range (5.84 % of responses)**

REFERENCES

1. Shrestha R, Kanchan T, Krishan K. Gunshot Wounds Forensic Pathology. StatPearls Publishing, Treasure Island (FL); 2022. <http://europepmc.org/abstract/MED/32310579>
2. DiMaio VJ. Gunshot Wounds: Practical Aspects of Firearms, Ballistics, and Forensic Techniques. CRC press; 2015.
3. Heard BJ. Handbook of Firearms and Ballistics: Examining and Interpreting Forensic Evidence. John Wiley & Sons; 2011.
4. Pircher R, Große Perdekamp M, Mierdel K, Pollak S, Thierauf-Emberger A, Geisenberger D. Bullet wipe on the uppermost textile layer of gunshot entrance sites: may it be absent due to pre-existing blood staining? Int J Legal Med. 2019;133(5):1437-1442. doi:10.1007/s00414-019-02087-0
5. [guidelines_for_gunshot_residue_distance_determinations.pdf](https://www.nist.gov/system/files/documents/2016/11/28/guidelines_for_gunshot_residue_distance_determinations.pdf). Accessed May 17, 2024. https://www.nist.gov/system/files/documents/2016/11/28/guidelines_for_gunshot_residue_distance_determinations.pdf