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Characteristic Features of Entrance Wounds from Hollow-Point Bullets

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ABSTRACT: Several cases of gunshot wounds produced by hollow-point bullets showed characteristic central tags. These apparently arise from sparing of the skin surface by the hollow point cavity when the bullet strikes the skin tangentially. This unique feature may be helpful in assessing entrances of perforating wound tracks or other cases where the bullet is either not available or unknown.

KEYWORDS: criminalistics, gunshot, ballistics, autopsy, wound ballistics

Gunshot entrance wounds typically have features such as abrasion rings and bullet wipe in common [1]. Unique findings such as diameter of the abrasion ring [2], eccentricity [3], sabots [4], indriven clothing [5], foreign bodies [6-8], and wadding injuries [9,10] etc., may be more helpful in identifying the projectile or linking a bullet to a specific wound track. Over the years, we have collected several cases of entrance wounds produced by known hollow-point ammunition that had features not seen with any other projectile design.

Findings

Figures 1 and 2 show examples of entrance wounds produced by hollow-point bullets. A .38 caliber semi-jacketed hollow point entering the left upper arm at a very acute angle produced the wound seen in Fig. 1, while a 9 mm jacketed hollow point entering tangentially just lateral to the right eye was responsible for the wound depicted in Fig. 2. In both cases the wound track enters the skin at an extreme angle, leaving a tag of skin more or less intact in the central portion of the wound, but attached to the proximal margin by an abraded or lacerated bridge. This central tag is further characterized by the presence of a circumferential abrasion ring or laceration, or both, at its periphery, indicating contact with the full mouth of the hollow point cavity. This full contact is responsible for the abrasion or laceration across the bridge of skin linking the proximal

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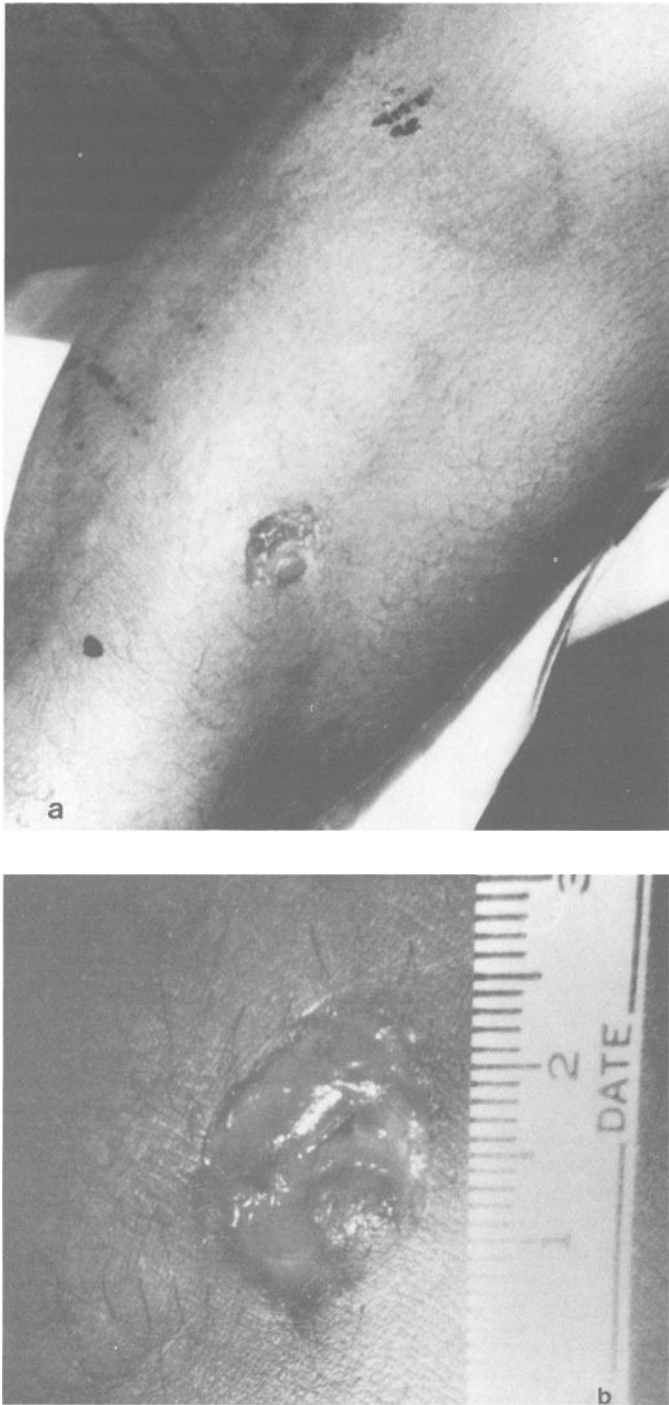


FIG. 1—(a) Photograph of the entrance wound produced by a .38 caliber semi-jacketed hollow point bullet proceeding from left to right. The bullet strikes the surface of the upper arm tangentially, creating a circular tag attached to the proximal margin by a bridge of contused and mildly abraded skin. (b) Close-up showing the margins of the central tag are abraded similar to the ring about most entrance wounds, indicating contact with the cuplike margins of the hollow point.

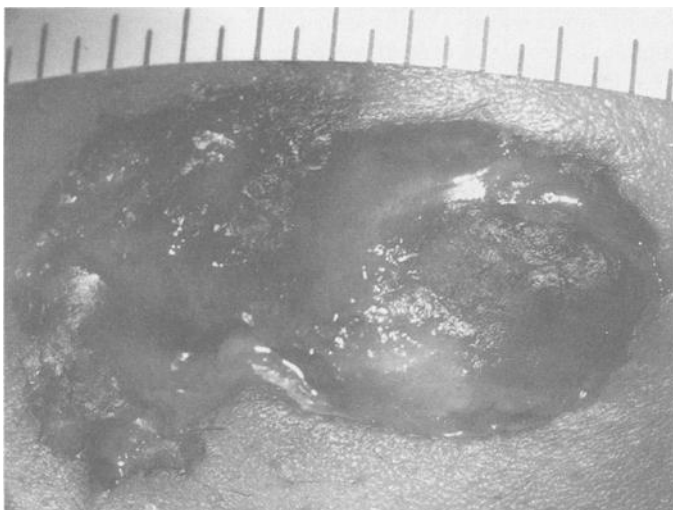


FIG. 2—Photograph of an entrance wound produced by a 9 mm jacketed hollow point bullet proceeding from right to left. The bullet strikes the lateral orbital region at an extreme angle leaving a wound very similar to that depicted in Fig. 1. Here the proximal bridge to the central tag is more deeply lacerated but the attachment remains.

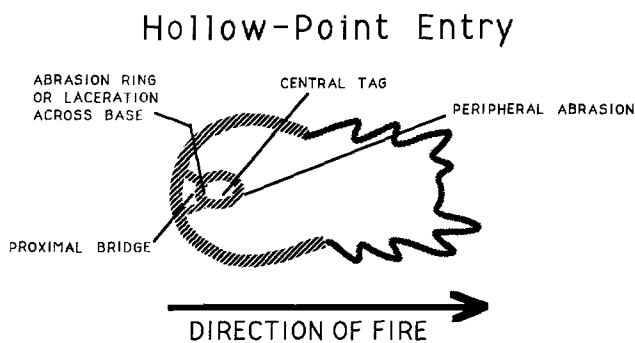


FIG. 3—Diagram depicting the salient features of a tangential hollow point entry wound.

edge of the entrance wound to the central tag. The key features of this type of wound are depicted in Fig. 3.

Discussion

Gunshot wounds of entrance may reveal much information about the weapons or projectiles used. Silencers may embed portions of baffles or wipes into the area adjacent to the bullet [11]. The abrasion pattern of plastic shotgun wads may reflect the design used [10], and sabot ammunition may do the same [4]. With the size and shape many hollow point bullets have, it is reasonable to expect some indication of these unique features to be exhibited in the wound morphology. The findings described here are sufficiently alike in each case but the origin of the phenomenon is unclear and open to hypothesis. The skin at the distal margin may lacerate before the proximal margin does and with resistance now overcome, proceeds. Evidently, at some critical point the bullet

design, angle of impact and skin or tissue characteristics (such as external tension, laxity, or tissue configuration) act in concert to produce the circumferentially abraded central tag that lies within the entrance wound, attached to the proximal margin.

This is a relatively rare phenomenon in our experience, and despite several attempts to reproduce the morphology by tangentially firing hollow point bullets into rawhide and leather models we have been unable to duplicate it. A cadaver model may be necessary to reproduce the required conditions. However, the fortuitous formation of this tag remains sufficiently characteristic to identify the class and direction of the projectile. Such may be of use when interpreting wound morphology and how it relates to the body position, direction of fire and type of ammunition used. It may also help clarify the circumstances by differentiating the wounds produced by different shooters, if one uses hollow point bullets and the other does not.

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