

Gunshot Wounds and Evidence

Session Materials

I. Discharge of a Gun.

- A. On discharging a gun, the following material leaves the barrel:
 - 1. The bullet
 - 2. Gas
 - 3. Soot
 - 4. Powder: burning and un-burnt
 - 5. Metal vaporized from the bullet and jacket
 - 6. Primer compounds (lead, antimony and barium)
 - 7. Copper and nickel vaporized from the cartridge case

II. Wounds Due to Handguns.

- A. Contact Wounds
 - 1. The muzzle is in contact with the body.
 - 2. Contact wounds are either: hard contact or loose contact. In loose contact wounds, there is a wide zone of soot deposited around the entrance.
 - 3. In all contact wounds, there is:
 - a. Scorching of the wound edges.
 - b. Soot (powder blackening) deposited on the wound margins.
 - c. Soot and powder particles are driven into the wound track.
 - 4. In contact wounds, there may be:
 - a. A muzzle impression, due to blowback of the skin, caused by the gases.
 - b. Soot on the skin adjacent to the wound.
 - c. Singeing of adjacent hair (rare).
 - 5. In contact wounds over bone, such as in the head:
 - a. A stellate wound of entrance is often produced by subcutaneous expansion of the powder gases between the skin and bone.
 - b. Soot is deposited around the entrance in the bone.
 - c. Soot may also be deposited on the inner surface of the skull and on the dura.
 - 6. In contact wounds over clothing, the clothing may absorb all the external soot and powder. Powder grains and soot will still be inside the wound track, however.
- B. Intermediate Range Gunshot Wounds
 - 1. The range is greater than contact, but close enough to cause "powder tattooing" of the skin.
 - 2. Powder tattoo marks are punctuating abrasions of the skin due to impact of un-burnt and burning grains of powder in the skin.
 - 3. Maximum range for powder tattooing depends on the physical forms of the gunpowder, the barrel length and to a lesser degree the caliber.
 - 4. Powder tattooing from rifles and shotguns is less dense than due to handguns.
 - 5. The size and density of the powder tattoo pattern can be used to determine the range. The same weapon and ammunition should be used, as powder patterns are variable from gun to gun and ammunition to ammunition.
 - 6. Soot (powder blackening) is present on close-up gunshot wounds out to a maximum of 12 inches for handguns.
 - 7. Soot can usually be wiped off, but powder tattooing cannot be.
 - 8. Hair and clothing may interfere to some degree with powder tattooing. All clothing should be examined.



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C. Distant Gunshot Wounds

1. Range greater than intermediate. No soot or powder tattooing present.
2. Exact range cannot be determined.
3. Entrance wound can be differentiated from exit, however.

III. Entrance Wounds

1. Virtually all entrance wounds have an abraded margin, called the "abrasion ring". This is due to the bullet scraping the margins of the bullet hole as it perforates the skin.
2. The abrasion ring is present in contact, close-up and distant gunshot wounds.
3. Except for contact wounds over bone, entrance wounds tend to be small, circular or oval and regular.
4. Symmetrical abrasion rings suggest a head-on shot and eccentric rings, an angled shot. This is not absolute, however. The course of a bullet can only be determined by an internal examination of the body.

IV. Exit Wounds

1. These are usually larger and more irregular than entrance wounds. This is due to:
 - a. Bullet tumbling.
 - b. Bullet deformation.
2. There is usually no abrasion ring.
3. Rarely an abrasion ring is present at an exit. This occurs when the exit is shored up by a firm object, such as a belt, a wall, the floor, clothing, etc.

V. Bullet Wound of Bone

1. Entrance: punched out, circular to oval hole with sharp edges. The opposite surface is beveled. Therefore, in skulls, the entrance bullet hole is beveled inward.
2. Exit: beveled or cratered. In skulls, the exit hole is beveled outward.

VI. Bullet Wipe

1. A gray ring around the entrance hole in skin or clothing, due to grime on the bullet being wiped off on the skin or cloth as the bullet enters.
2. Occurs with both revolvers and automatic pistols.
3. Must not be mistaken for soot on the wound margin.

VII. Miscellaneous points

1. Cannot tell caliber of a bullet from an x-ray of it in the body, due to x-ray distortion.
2. Cannot tell the caliber of a bullet by the entrance hole in skin, due to elasticity or lack of elasticity of the skin.
3. The trajectory of the bullet through the body is dependent on:
 - a. The position of the victim.
 - b. The position of the assailant.

