



# Case #49

NAME Educational Activities Committee

Case provided by:

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1. The decedent was a 20-year-old female found in a field. A firearm injury was identified on the mid back. What type of ammunition and range of fire is most consistent with the injury shown above?

- Birdshot, range of fire less than 12 inches
- Buckshot, range of fire 1-2 feet
- Birdshot, range of fire 4-6 feet
- Buckshot, range of fire >10 feet
- Birdshot, range of fire >20 feet

Answer...

## C. Birdshot, range of fire 4-6 feet (CORRECT ANSWER, 25.00% of responses)

The wound displayed in this case was from a 12 gauge shotgun firing birdshot. Test firing of the weapon showed a similar pattern at a range of 5 feet. The scalloped edges of the wound are caused by the small individual birdshot pellets starting to disperse from the center of the charge.

Shotgun ammunition generally consists of a plastic shell with a metal base (head), containing a primer, a wad, gunpowder, the shot/slug and sometimes filler material. When the shot shell is fired, the wad assemblage and the shot emerge from the barrel. Typical shotgun ammunition falls into three general categories: Birdshot (smaller diameter pellets), buckshot (larger diameter pellets) and slug (a single large metal projectile).

In the trunk, a shotgun wound fired from a contact or near contact distance (i.e. < 12 in) is expected to be circular in shape and to have a diameter approximately equal to that of the bore of the weapon, as the shot has not yet had time to disperse. In these “close” range wounds, soot deposition is expected, with increasing diameter and decreasing density as the range increases.

Stippling (or “powder tattooing”), although less than what is seen with handguns, is also expected in wounds with a range beyond a few inches from the barrel. The maximum range at which stippling is observed depends on the weapon and the ammunition used but will generally not be more than a few feet. Patterned abrasions associated with the wad striking the skin can also be observed in intermediate range wounds. Depending on the type of wad, these abrasions may have a circular, ovoid, or “petal” shape. At shorter distances, the wad may enter the body. At farther ranges, the wad will separate from the charge and strike the skin – in some cases up to 15-20 feet!

In more distant wounds, soot and stippling will no longer be visible, and the diameter of the circular wound of entrance will increase in size as the pellets start to separate from the main mass. Up to around 10 feet, a larger irregular central wound surrounded by individual pellet holes will be seen.

**A. Birdshot, range of fire less than 12 inches (37.14 % of responses)**

Contact to “close” range shotgun wounds are circular in shape and expected to have a diameter approximately equal to that of the bore of the weapon, as the shot has not yet had time to disperse. Additionally, soot (and possibly stippling) would generally be expected at this range.

**B. Buckshot, range of fire 1-2 feet (26.70 % of responses)**

The scalloped edges on the defect are most consistent with smaller diameter pellets (birdshot). Additionally, although soot may not always be seen at this distance, stippling would still be expected, and possibly wad abrasions.

**D. Buckshot, range of fire >10 feet (9.35 % of responses)**

and

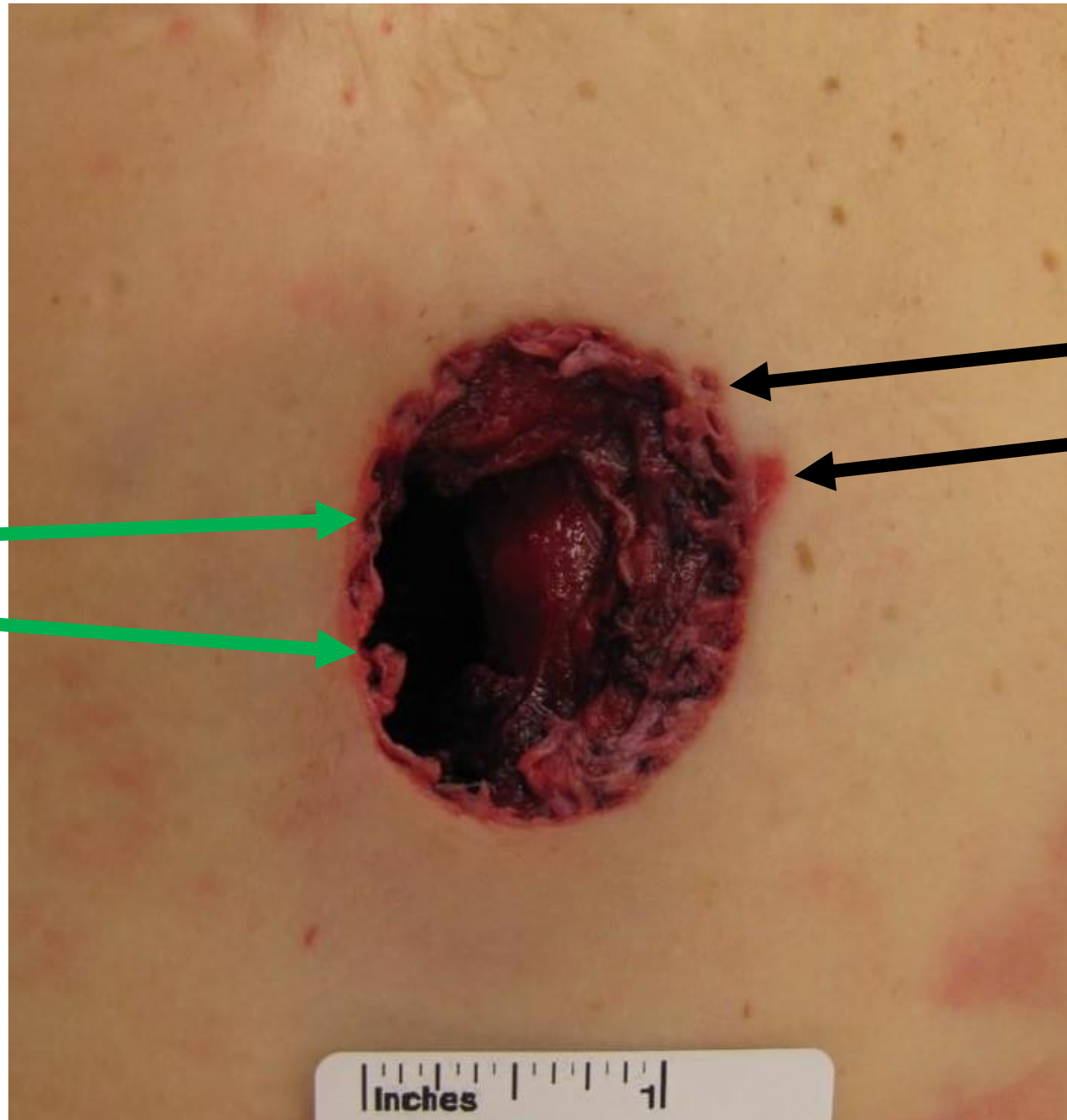
**E. Birdshot, range of fire > 20 feet (1.53 % of responses)**

At a distance of more than 10 feet the shotgun charge is expected to have dispersed significantly, with more individual pellet wounds (larger pellets with buckshot and smaller pellets with birdshot) on the body, rather than a large single entrance wound.



Scalloped edges  
consistent with  
small pellet  
diameter of  
birdshot

Individual pellet wounds  
starting to disperse  
from the primary  
shot cluster





Birdshot on imaging. A plastic wad was also found in the left pleural cavity at autopsy.

## Additional examples:



Birdshot, farther distance but still with a central "charge" or pellet mass.



Birdshot, at a significantly farther distance where all pellets have separated.

# Side notes:

Spitz and Fisher's Medicolegal Investigation of Death uses the term "close" range to include firearm injuries that are not firm contact but not yet "intermediate". These injuries show soot deposition and possibly a tight cluster of stippling.

Other texts such as Di Maio's Gunshot Wounds or Dolinak's Forensic Pathology may use the terms "loose" contact or "near" contact to describe the same type of injury.

# REFERENCES

1. Di Maio VM. Gunshot Wounds: Practical Aspects of Firearms, Ballistics and Forensic Techniques. CRC Press 2016, 3<sup>rd</sup> edition.
2. Spitz WU, Spitz DJ, Fisher R S. (2006). Spitz and Fisher's medicolegal investigation of death: Guidelines for the application of pathology to crime investigation. Springfield, Ill: Charles C. Thomas.
3. Matshes EW, Lew E, Dolinak D. (2005). Forensic pathology: Principles and practice. Elsevier Academic Press.