



Volume 19, Issue 3 (July 1974)

# Casualty Criteria for Wounds from Firearms with Special Reference to Shot Penetration—Part II

(Received 14 October 1973; accepted 3 January 1974)

**Published Online:** 1974**CODEN:** JFSOAD

	Format	Pages	Price	
	PDF (516K)	5	\$25	 ADD TO CART

Cite this document

ASTM Suggested Citation Style

Mattoo, B., Wani, A., and Asgekar, M., "Casualty Criteria for Wounds from Firearms with Special Reference to Shot Penetration—Part II," *Journal of Forensic Sciences*, Vol. 19, No. 3, 1974, pp. 585-589, <https://doi.org/10.1520/JFS10215J>. ISSN 0022-1198

EMAIL CITATION

EXPORT CITATION

PRINT CITATION

[ASTM License Agreement](#)

## Reprints and Permissions

Permissions to reprint documents can be acquired through  
Copyright Clearance Center 

VISIT COPYRIGHT CLEARANCE CENTER 

## Abstract

The authors have previously shown [1] that the casualty criterion for wounds from firearms, particularly the shot penetration, is given by the energy/area of presentation of the missile in question. The impact velocity must exceed that required for penetration of human skin. The threshold velocity for skin penetration by steel spheres is given [2] as 125–170 ft/s. Against this the energy criterion [2–4] alone (which is quoted between 40–100 ft-lb or 5.5–14 m-kJ) is misleading and subject to forensic misuse. Likewise, it is imprecisely reported [5,6] that shotguns ordinarily have an effective range of 30–40 yd, ignoring the shot size in question. For forensic purposes, a missile is effective as long as it penetrates into the human body, irrespective of the accuracy of the ammunition. A 12-bore rifled slug is quoted [7] as having an extreme range of 800 yd, and American Eastern Buckshot 0 (equivalent to British shot size SG) a range of under 700 yards. "Whenever a Police weapon is used, the extreme range must be taken into account" [7]. It can be shown that an American Eastern Buckshot 000 (equivalent to British shot size LG) fired from a shotgun with a muzzle velocity of 800 ft/s will have sufficient wounding power (corresponding to energy/area of presentation = 3 m-kJ/cm<sup>2</sup>) even at a distance of ~200 yd and a threshold value for penetration into human skin at ~300 yd, *vide infra*. Obviously, it was of interest to evaluate experimentally the criteria for penetration of human skin by lead shot and the extent of this penetration further into human muscle as a function of energy/area of presentation, *E/a*, of the missile.

**Author Information:**

Wani, AK

*Director, senior analyst, and assistant chemical analyser, Forensic Science Laboratory, Byculla, Bombay, State of Maharashtra*

Mattoo, BN

*Director, senior analyst, and assistant chemical analyser, Forensic Science Laboratory, Byculla, Bombay, State of Maharashtra*

Asgekar, MD

*Director, senior analyst, and assistant chemical analyser, Forensic Science Laboratory, Byculla, Bombay, State of Maharashtra*

**Stock #:** JFS10215J

**ISSN:**0022-1198

**DOI:** 10.1520/JFS10215J

Contact firearm wounds typically cause spattered blood to be deposited on the firearm and, often, the hand or body of the shooter, as seen in the following image. Such spatter may take place in other than contact wounds, with its degree decreasing with the muzzle to target distance. Blood spatter and soot deposited on a hand that gripped the barrel of a firearm during a suicidal gunshot wound. [Image Placeholder]: Adult Cadaver Humans Muscles Skin Wounds, Gunshot. Casualty criteria for wounds from firearms with special reference to shot penetration. II. Mattoo B N Wani A K Asgekar M D. PMID: 4850909 J Forensic Sci [Image Placeholder]: 1.127 [Image Placeholder]: 19740701. Contact Wounds Intermediate-Range Wounds Distant Wounds References. 7. Gunshot Wounds: Practical Aspects of Firearms, Ballistics, and Forensic Techniques, Second Edition is written clearly and concisely. The text is accented by numerous photographs that depict exactly what to look for and how to interpret gunshot wounds and evidence. As I have said before; "With-out a doubt, this book is the most comprehensive text on gunshot wounds available today. Rie. A rie is a firearm with a ried barrel which is designed to be fired from the shoulder. Barrel length is immaterial in classifying a firearm as a rie. How-ever, U.S. Federal law requires ries to have a minimum barrel length of 16 inches.

All ▼

*Search topic, title, author, A53*

GO



- [Home](#)
- [Contact](#)
- [About ASTM](#)
- [Policies](#)
- [Site Map](#)
- [Privacy Policy](#)
- [Support](#)
- [Copyright/Permissions](#)
- [Reading Room](#)

