

PAPER

PATHOLOGY AND BIOLOGY

Petr Hejna,¹ M.D., Ph.D. and Miroslav Šafr,¹ M.D.

Shooting Through Clothing in Firearm Suicides

ABSTRACT: There is a longstanding empirical rule that people who commit suicide rarely shoot through their clothing, but rather put it aside to expose the nude skin. Signs of shots through clothing have always been considered suspicious, raising presumptions of the presence of an abettor. Our report, based on a retrospective study of fatal suicidal firearm injuries from the years 1980 to 2007, points out that suicide victims only rarely remove clothing from the site of the future entry wound. The report covered 43 cases with fatal gunshot wounds in the area of the thorax, with only four persons (9%) removing the clothing present in the area of the subsequent self-inflicted wound. Defects present on the clothing of a victim cannot, therefore, be understood as an absolute criterion for disproving the possibility of suicide, and nor do they necessarily indicate an unfortunate accident or homicide. If, however, the suicide victim removes the clothing from the area of the future wound, then this is almost always an indication of suicide.

KEYWORDS: forensic science, gunshot wound, clothing, suicide, homicide, autopsy feature

One important task for the forensic pathologist is to differentiate fatal gunshot wounds caused by suicide from those caused by accident or homicide. Forensic medicine recognizes a whole range of basic characteristics, signs, indications, or prominences that are very significant during the process of differentiation (1–6). The most important criteria include the following: evaluation of the gunshot wound location, the shooting distance, shooting direction, the total number of gunshot wounds, the presence of blood spatters or other biological or gunshot residues on the shooting hands or hands holding the gun, discovery of a gun at the crime scene, and others (1–8). Apart from these main criteria, there is a whole range of secondary circumstantial evidence that is used in forensic medicine. One of these indicia is a long-standing empirical rule stating that suicide victims remove their clothing and shoot directly into the exposed skin (9). Removal of clothes applies mainly to areas where there is a logical and presumptive presence of garments, for example the thorax area or (more rarely) the head (cap, hat). This phenomenon was repeatedly referred to as a direct indication of suicide by German authors at the beginning of the 20th century (9–11). To a certain extent, the tendency to remove clothing from the future gunshot wound continues to be cited and mentioned even in modern forensic medical literature (8,12–14).

The definition of the aforementioned empirical rule is often interpreted incorrectly. For example, the presence of a gunshot defect in a garment corresponding to the gunshot wound on the victim's body implies an accident or homicide and speaks against suicide.

Mueller and Reuter (10,15,16) pointed out several exceptions, including mainly individuals suffering from mental disorders and also those individuals who, for whatever reasons, might try to fake a suicide. Mueller and Reuter (10,15,16) also showed an example of a proven suicide where the rule about clothing removal did not

apply. The goal of our retrospective study of suicides with firearms was to investigate this phenomenon as it relates to suicidal intentions and to the gunshot wounds subsequently inflicted.

Materials and Methods

We analyzed a group of victims of fatal gunshot wounds from the years 1980 to 2007, all of whom had their autopsies performed at the Institution of Forensic Medicine in Hradec Králové in the Czech Republic. The group comprised a total of 366 victims with gunshot wounds, 298 of which were the result of suicides. From this total of 298 cases, 43 firearm suicides were identified where the target area was the thorax, and this group formed the core of the study.

From the set of gunshot suicides (suicide was determined to be the cause of death in all cases and this was verified by the police), only suicides involving the area of the thorax were selected. Careful evaluation of the victims was performed with respect to the garments shot through. Two cases were excluded from the group because of insufficient data, their bodies having been sent for autopsy in different clothes than those which they had originally worn at the time of suicide. Besides autopsy protocols, the sources of information were original police reports, statements from prosecution records, accompanying reports of the medical examiners, and/or other medical documentation.

Results

Forty-three firearm suicides were clearly identified in which the chest represented the victim's target area (a total of 44 gunshot wounds to the chest). Thirty-nine gunshot wounds to the chest were confirmed to have been shot through the victims' clothing (91%). An obvious tendency to remove clothing from the intended site of the gunshot wound was identified in only four cases in which the chest was the target area. The basic group was subsequently divided into three subgroups according to the number of layers of

¹Institute of Legal Medicine, Charles University, Prague, Czech Republic.

Received 23 Dec. 2008; and in revised form 23 Mar. 2009; accepted 13 April 2009.

clothing. The first group had only one layer of clothing (for example, a shirt, T-shirt, undershirt), the second group of victims had two layers of clothing (for example, a combination of shirt and T-shirt or T-shirt and jumper). The last group had three or more layers of clothing (Table 1). The choice of firearms used by the suicide victims is presented in an overview in Table 2, with short-barreled and long-barreled guns equally represented. It is most likely that in suicides with long-barreled guns, as opposed to suicides in which short-barreled guns are used, the victim's target of choice is often the chest area (5). In 33 of the cases (77%), the act was committed in a room, for example, inside of a particular building, and the remaining 10 cases took place outdoors (23%). In the group where removal of clothing was confirmed (9%), ethyl alcohol was present in the blood in only one case (mid-range intoxication); in the rest of the cases, the blood alcohol levels were zero. In cases where clothing was not removed (91%), 25 showed zero levels of alcohol. Alcohol blood levels of 1 g/kg were found in four cases, eight victims had blood alcohol levels between 1 g/kg and 2 g/kg, and levels exceeded 2 g/kg in three cases. There were 39 men and 4 women in the basic set and the average age was 45.3 ($n = 39$). In cases where clothing was removed, the average age was 23 ($n = 4$).

In the four cases where clothing removal was identified, the following conditions appeared: in the first case, the victim was a 19-year-old conscripted soldier who shot himself with a pistol placed in the immediate vicinity of chest. The soldier wore an unbuttoned shirt and rolled up T-shirt, and his blood alcohol level was zero. The second victim was a 21-year-old student who was found in his living room, wearing only his underwear. He removed his undershirt immediately prior to the shooting and shot himself with a rimfire rifle pointed at the area of the heart's apex. His blood alcohol level was 1.58 g/L. The third case, in which a desire to expose the intended area of the wound was proven, was a 20-year-old conscripted soldier who shot himself with an assault rifle pointed at his chest. At the time of the suicide, the victim had a rolled up undershirt and shirt, and he was not under the influence of alcohol. The last case was the suicide of a 24-year-old woman who shot herself in the chest from close range with her husband's shotgun, and in doing so she rolled up the bottom part of her shirt and left sleeve. Considering the small size of the group, closer statistical evaluation of these cases was not possible.

Discussion

The conclusion of this study is unambiguous, and it points to the fact that, concerning gunshot suicides in which the chest is the target area, removing clothing to expose the chest prior to shooting is a relatively rare phenomenon. The results of the study confirm Davis's opinion (17), who considered the rule about clothing removal a myth founded on misconceptions. This study supports the investigation of Karger et al. (18), who challenged the criterion of clothing removal in a retrospective study (a tendency to remove clothing from the intended site of the gunshot wound was identified in only two cases out of 27 firearm suicides in which the chest was the target area).

The question to ask is why the rule regarding the removal of clothing was repeatedly stated and mentioned in the scientific forensic medical literature of the first half of the 20th century (9,10,16). It is likely that the phenomenon was relevant to its own time, and several possible justifications can be stated. The first regards the ballistic capacity of ammunition used, which was small at the time, and there was a justified fear of incomplete perforation through several layers of clothing. Economic considerations also played an important role,

TABLE 1—Division of cases according to the number of garment layers.

Number of Layers of Clothing	1	2	3
Shooting through clothing	14	20	6
Removal of clothing before shooting	2	2	—

TABLE 2—Overview of the firearms used.

Firearm	Hunting			Assault Rifle	Rimfire Rifle
	Handgun	Rifle	Shotgun		
Shooting through clothing	20	11	8	—	—
After removal of garments	1	—	1	1	1

because the clothing could still be used by the family members left behind. Uniforms, for example, had a high material and professional value, and it was considered an offense for a police officer, ranger, or soldier to damage it or dishonor it. Today, the removal of clothing is mostly a question of location of the target area and control over correct firearm positioning. Removal of clothes and exposure of skin can be understood as a component of the victim's preparation and determination, as well as an understanding on the victim's part of the finality of the act. The literature (1–3,5,8,13) mentions instances when suicide victims do not remove clothing from the place of the future gunshot entry site. Such instances can be because of the victim's mental health, a sense of urgency on the part of the victim, low temperature in the surroundings, or the influence of alcohol and psychotropic drugs. It is important to bear in mind possible dissimulative behavior on the part of the victim, who can feign an unfortunate accident or even homicide by shooting through clothing. Another possible scenario is demonstrative suicidal behavior that unexpectedly ends in fatality. Concerning multiple gunshot wounds, when the first shot is for whatever reason unsuccessful, the victim, although impaired, chooses a "new" target. He or she might put the firearm to the chest, for example, and fire again. Under such circumstances, it is impossible to even talk about rational motivation for removing clothing from the site of the self-inflicted wound.

Conclusion

The conclusions of this retrospective study underline the following facts:

- Today, the tendency of suicide victims to expose the site of future bullet entry is small. To an extent, this reality weakens the outlived dogma supporting the thought that it is necessary to suspect coincidence or homicide when a gunshot defect in the fabric of the victim's clothing is present.
- Shooting through garments in no way precludes suicide.
- Removal of clothing from the site of the future wound is still a rare and valid indication of suicidal behavior, and such findings can be understood as a certain "presumption" on the part of the victim concerning the act of suicide.

References

1. DiMaio VJM. Gunshot wounds: practical aspects of firearms, ballistics, and forensic techniques. Boca Raton, FL: CRC Press, 1998.
2. Dolinak D, Matshes EW, Lew LE. Forensic pathology. Principles and practice. London: Elsevier Academic Press, 2005;37–9, 163–200.
3. Dodd MJ. Terminal ballistics. A text and atlas of gunshot wounds. Boca Raton, FL: CRC Press, 2005;153–9.

4. Karger B, Billed E, Koops E, Brinkmann B. Autopsy features relevant for discrimination between suicidal and homicidal gunshot injuries. *Int J Legal Med* 2002;116(5):273–8.
5. Saukko P, Knight B. *Knight's forensic pathology*. London: Arnold, 2004;239.
6. Sellier K. *Schusswaffen und Schusswirkungen*. Lübeck: Schmidt-Römhild, 1982;346–9.
7. Spitz WU. *Medicolegal investigation of death*. Springfield, IL: Charles C. Thomas Publisher, 2006;690.
8. Spitz WU, Fisher RS. *Medicolegal investigation of death*. Springfield, IL: Charles C. Thomas Publisher, 1973;232–48.
9. Puppe G. *Atlas und Grundriss der Gerichtlichen Medizin*. München: Lehmann, 1908;313.
10. Mueller B. Schuss in die linke Schläfe—Mord oder Selbstmord? *Arch Kriminol* 1933;93:52–9.
11. Reimann W. Der Schuss durch die Kleider als Unterscheidungsmerkmal zwischen Mord und Selbstmord. *Arch Kriminol* 1933;93:109–16.
12. Knight B. Firearm injury. In: Tedeschi CG, Eckert WG, Tedeschi LG, editors. *Forensic medicine*, Vol. 1. Philadelphia, PA: Saunders, 1977;1.
13. Simpson K. *Forensic medicine*. London: Arnold, 1979;86–90.
14. Polson CJ. Firearms and injuries caused by firearms. In: Polson CJ, Gee DJ, Knight B, editors. *The essentials of forensic medicine*. Oxford: Pergamon Press, 1985;263.
15. Mueller B. *Gerichtliche Medizin*. Berlin: Springer, 1953;556.
16. Reuter F. *Lehrbuch der gerichtlichen Medizin*. Berlin, Wien: Urban & Schwarzenberg, 1933;413.
17. Davis JH. Bodies found in the water. *Am J Forensic Med Pathol* 1986;7:291–6.
18. Karger B, Kersting C, Brinkmann B. Prior exposure of the entrance wound region from clothing is uncommon in firearm suicides. *Int J Legal Med* 1997;110:79–81.

Additional information and reprint requests:

Petr Hejna, M.D.
Institute of Legal Medicine
Charles University
Šimkova 870, 500 01 Hradec
Králové, Czech Republic
E-mail: hejnap@lfhk.cuni.cz