

## CASE REPORT

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### Accidental Deaths Involving Derringer Handguns: A Report of Three Cases

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**ABSTRACT:** Accidental deaths due to discharge of dropped handguns have been previously reported. In this report, the authors review the history and design of the derringer handgun and describe three cases of accidental death due to discharge of derringer-type handguns. In two of these cases, the gun was dropped, resulting in a fatal discharge. The design of the derringer and the absence of a safety feature are cited as underlying factors. If the alleged weapon can be obtained, testing may demonstrate that discharge could occur if the gun were dropped.

**KEYWORDS:** criminalistics, ballistics, death

Accidental deaths from firearms present a difficult problem for the forensic pathologist and the criminal investigator. In addition to the essential components of any medicolegal investigation of death, in these cases, it is imperative that the type of gun involved be determined, particularly when it is alleged that the gun was dropped.

Certain types of handguns are particularly prone to discharge when dropped because of the design of the weapon or a defect in its materials or workmanship [1]. Among these is the Remington .41-caliber rimfire derringer: a small, 2-barrel (over/under), single-action pistol, with an external hammer and a sheath trigger. First manufactured in 1866, over 150 000 were made over the next 70 years as the Model 95 [2]. This original model was only available in the now-obsolete .41-caliber short rimfire cartridge.

There are two basic design flaws that make this type of gun prone to discharge when dropped. (1) the external hammer rests on the firing pin, which in turn rests on the priming rim of the cartridge case [3], and (2) the handle of the gun is disproportionately

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heavy, which makes the butt end of the gun more likely to strike the ground first. With the external hammer located on the butt end of the gun, it is likely that, if dropped, the gun will strike the ground on the hammer with the barrel pointing upward. If sufficient force is applied to the hammer, discharge will occur.

Television and movies have popularized this compact handgun, which is easily concealed in a vest or coat, as that of the "riverboat gambler." The popularity of the gun has prompted several manufacturers, such as Rohm<sup>4</sup> and Fie (Fig. 1), to make copies of the original over/under model in modern calibers from the .22 rimfire to the .45 Colt. The early copies had the same lockwork design and thus the same shortcomings as the original Remington derringer.

In this paper, the authors report three cases in which derringer-type handguns were involved in fatal accidents. The circumstances surrounding these cases indicate that the gun was dropped or accidentally struck, resulting in a fatal discharge. These cases demonstrate the danger of careless handling of this type of weapon.

### Case 1

A 68-year-old man was found dead at home of an apparent gunshot wound of the face (Fig. 2). On the floor, near his legs, was a pair of pants containing a .38-caliber derringer. There was a spent cartridge in the lower chamber and no blood on the gun or in the barrel. Examination of the pants revealed a hole in the right rear pocket, adjacent to that a large gaping hole surrounded by grayish discoloration, and several adjacent rounded holes compatible with bullet holes extending downward and laterally (Fig. 3).

At autopsy, the gunshot entrance wound was located just above the nasal ala on the right (Fig. 2). There was no soot deposition or stippling around the wound. The wound track passed through the brain in a slightly upward and right-to-left direction. The bullet, a distorted large-caliber lead one, was recovered from the brain near the left parietal bone.

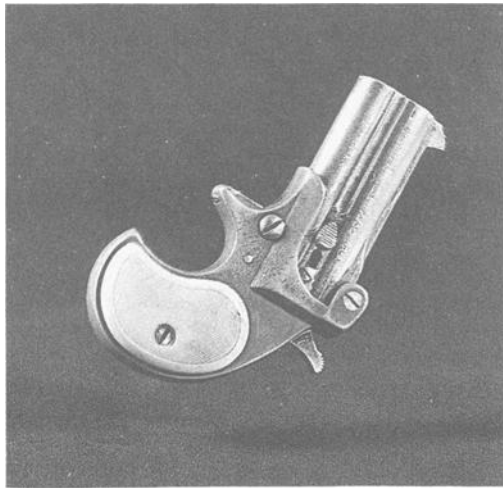


FIG. 1—The .38-caliber derringer manufactured by Fie, from Case 1, just prior to impact after being dropped. Note the exposed hammer and its relationship to the floor.

<sup>4</sup>Mars, R., North Carolina State Bureau of Investigation, Firearms and Tool Marks Section, Raleigh, NC, personal communication, 1988.



FIG. 2—Photograph of the victim in Case 1, showing the entrance wound just above the right nasal ala.

The .38-caliber derringer involved in this case was obtained from authorities and tested to determine if accidental discharge could be reproduced. The gun, containing a cartridge case with primer only, was repeatedly dropped from approximately 40 in. (102 cm) onto  $\frac{3}{4}$ -in. (1.9-cm) plywood (Fig. 1). Discharges occurred on several attempts.

### Case 2

A 33-year-old man was removing his coveralls, which contained a .38-caliber derringer. When he dropped the coveralls, the gun discharged, and the bullet struck him in the chest. Examination of the garment showed the barrel of the gun sticking out through a hole in the pocket. The surrounding fabric tested positive for nitrates.

The bullet entered the victim's chest, penetrated the sternum at the level of the third rib, and traveled right to left, penetrating the arch of the aorta.

### Case 3

A 27-year-old man was carrying a .38-caliber derringer in his right pocket when he became involved in an altercation with another man. A scuffle ensued and the gun discharged while still in the pocket of the decedent, the bullet striking him in the right abdomen. At autopsy, there was a contact-type wound through intervening cloth material on the right side of the abdomen. The bullet traveled through the abdomen and exited at the left lateral abdominal wall. The blood alcohol was 190 mg/dL.

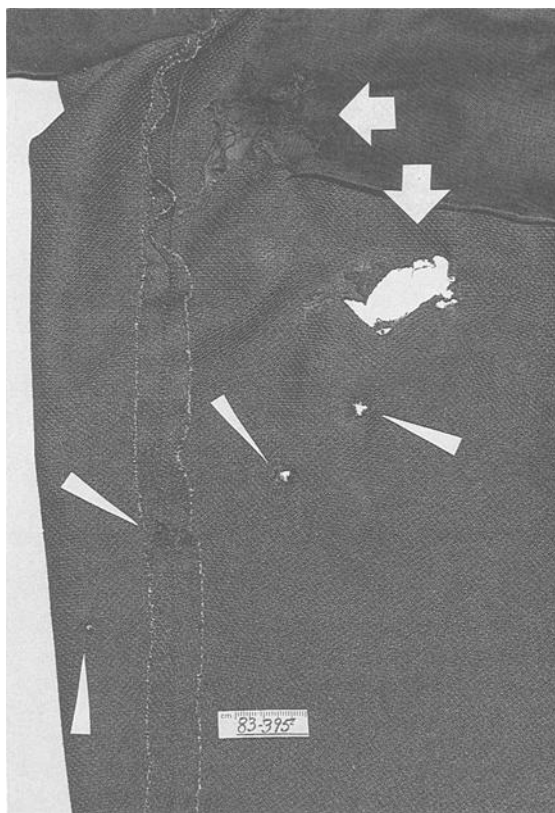


FIG. 3—The pants from Case 1, showing multiple bullet holes (pointers) and blowout defects of the pocket and pants (arrows). This pattern is consistent with discharge of the gun while in the pants pocket.

### Discussion

To evaluate adequately an alleged accidental death due to a firearm being dropped, the medical examiner must be aware of the various types of handguns in which accidental discharge may occur. These types have been previously reviewed by DiMaio and include many single- and double-action revolvers, striker-operated and external hammer automatics, and certain types of derringers [3]. In a given case, even when the gun is not of a type associated with misfires, testing of the alleged weapon may demonstrate that accidental discharge could have occurred if the weapon was dropped.

From the cases just described, it is apparent that derringer-type handguns with certain design flaws are inherently dangerous. Several derringer-type models are currently manufactured with a manually operated, hammer block safety feature. If working properly and if engaged, this feature will prevent discharge from accidental contact with the hammer. Unfortunately, the original Remington over/under derringer and many of the direct copies made in recent years do not have this feature.

It is interesting that in these three cases, the weapon discharged while in the clothing of the decedent. Although easily concealed, the derringer may be easily forgotten or otherwise carelessly handled and, upon removal of the clothing, may discharge. It is important that firearms enthusiasts, police officers, and anyone else who uses this weapon be aware of the potential risk and handle the gun with appropriate caution.

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