

CASE REPORT

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Single Wound Produced by Simultaneous Discharge of Both Shells from a Double-Barrel Shotgun

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ABSTRACT: We present the case of a man who was killed by simultaneous discharge of both barrels of a double-barrel shotgun. Externally, there was a single wound simulating a wound made by a discharge of a single barrel. Test-firing of the shotgun against cloth, paper, and naugahyde targets revealed defects similar in shape to the wound in the victim. Simultaneous discharge of both barrels from a double-barrel shotgun may simulate the wound made by discharge of a single barrel.

KEYWORDS: criminalistics, ballistics, wound ballistics, shotguns

Case History

A 44-year-old man was shot by his wife in the right chest with a double-barrel, 16-gauge shotgun while he lay sleeping in bed. On arrival, the police found the victim dead, clad in jockey shorts, lying on his left side in bed with an obvious shotgun wound to his right lateral chest.

Autopsy Findings

External examination revealed a penetrating shotgun wound to the right lateral chest. The wound was oval with scalloped margins, measured 3.8 cm in width by 6.4 cm in length (long axis directed in the 5:00-11:00 position), and was located in the midaxillary line (Fig. 1). Occasional separate pellet wounds ("fliers") were noted outside the wound margins. There was scattered deposition of flake powder immediately around the wound and on the right lateral thigh with occasional flakes located on the top of the right shoulder, the left chest, and the left malar eminence. There was no powder tattooing. An X-ray examination of the chest showed at least 264 pellets (many were overlapping).

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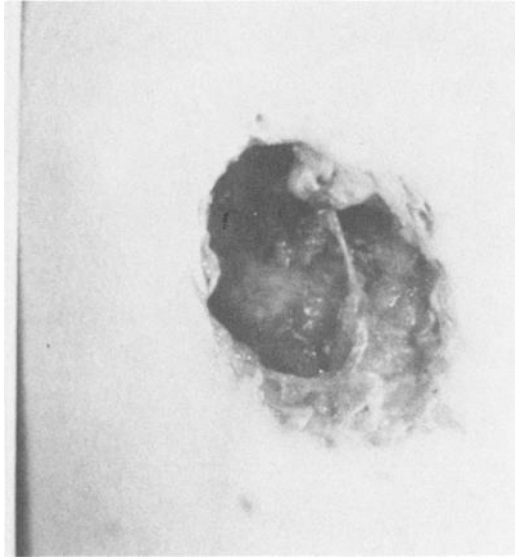


FIG. 1—The wound produced by simultaneous discharge of both barrels of the double-barrel shotgun. The arm is raised above the head, so the wound is elongated.

Internal examination of the wound showed a 5.1 by 10.2-cm defect in the right lateral rib cage through Ribs 4 through 7. The wound track passed through the right lung and exited the pleural cavity at the apex passing through the right first through third ribs at the costovertebral junction and terminated at the seventh cervical and first thoracic vertebrae. In addition to the injury caused by the main portion of the charge, there were multiple individual pellet tracks that perforated the innominate artery, right subclavian artery, the esophagus, and the apex of the left lung. There were approximately 700 cc of liquid and clotted blood within the right pleural cavity and extensive soft tissue hemorrhage along the wound track. The overall direction of travel of the charge was from right to left and from below upward (at a 45 to 60° angle) and from back to front.

One power piston was recovered from the apex of the right pleural cavity, and a second power piston was recovered in the distal wound track embedded in the spinal canal at the level of C7-T1 (Fig. 2).

Materials and Methods

The weapon used was a Stevens 16-gauge, side-by-side, double-barrel shotgun with 28-in. (71-cm) barrels. The ammunition was 16-gauge Remington Express 2 $\frac{3}{4}$ -in. (7-cm) shells charged with 1 $\frac{1}{8}$ -drams of powder and containing 189 No. 5 lead shot. There were identical discharged shotgun shell casings in the weapon on police inspection. The "power piston" is a one-piece modified shotcup-wad assembly which is made of plastic and used exclusively by Remington in their shotgun shells. It is designed to allow effective gas pressure buildup within the shotgun barrel during discharge as well as keep the shot charge contained as it exits the barrel.

The finding of the second "power piston" in the wound indicated the victim was shot twice, although external and preliminary internal exam apparently showed a single shotgun discharge. Two hypotheses are proposed to account for the pattern of injury in this case. The first is that the victim was shot with one round and subsequently was shot with

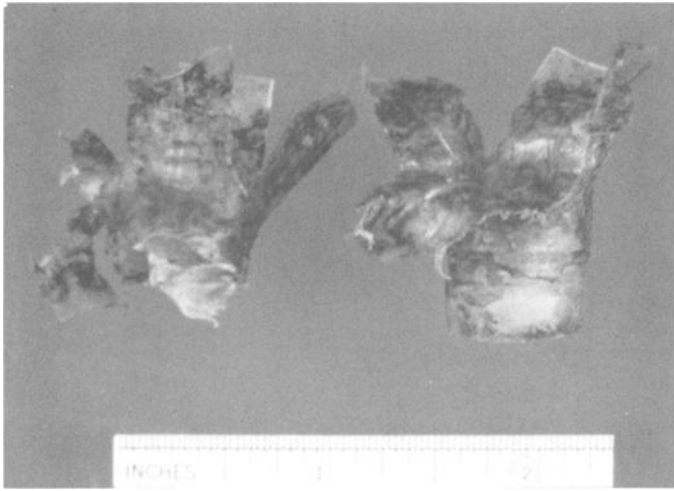


FIG. 2—The two power pistons recovered from the wound track.

the second through the exact same entry wound. This possibility is highly unlikely given the obvious inherent difficulty of recreating the exact same angle of fire for a second shotgun discharge at a distance of approximately 4 to 6 ft (1.2 to 2 m) (vide infra). The second and more probable hypothesis was that both barrels were fired simultaneously producing a wound and track that was virtually indistinguishable from that produced by a single discharge.

The two trigger firing assembly on the Stevens shotgun involved in this case was arranged such that each trigger discharged only one barrel; the other barrel was discharged only after the alternate trigger was pulled. Thus, it seemed possible that if the two triggers were pulled simultaneously, both barrels, if loaded, would discharge simultaneously. To test these suppositions, the weapon was test-fired at paper, cloth, and naugahyde targets in an attempt to recapitulate a defect similar to the entry wound in the victim. Using the same weapon and same type of ammunition shells were fired at distances ranging from 3 to 5½ ft (0.9 to 1.7 m) at angles of approximately 45° to the targets. An oval scalloped defect similar in size to the entry wound with occasional "fliers" was produced. Multiple attempts were made to discharge both barrels simultaneously with the gun firmly held in a support stand, but this was not easily performed. The vast majority of firings produced two separate holes in the targets (owing, we think, to the interaction between the difficulty of simultaneous discharge and the effect of recoil, causing one barrel to discharge before the other). On about one out of ten attempts we were able to produce a single target defect very similar to the wound on the patient's chest (Fig. 3). On the cloth target occasional deposits of powder were present, and on the naugahyde target circular black marks consistent with having been made by flake powder were present; they were most heavily concentrated at 3 ft (0.9 m) and occasional marks were present at 5 ft (1.5 m).

Discussion

The expected wound from a double-barrel shotgun with both barrels fired simultaneously would be two completely separate defects or at least a figure of an eight-shaped wound. The autopsy findings in the case presented here and the subsequent test-firing demonstrates that, at least with this particular 16-gauge double-barrel shotgun, using

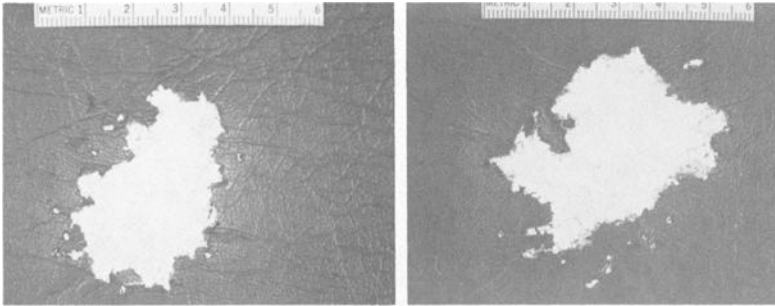


FIG. 3—Pattern on naugahyde resulting from firing both barrels simultaneously at about a 45° angle from the following distances: (left) 3 ft (0.9 m) and (right) 4 ft (1.2 m). The marks made by the flake powder are not visible in the photographs.

Remington Express 2 $\frac{3}{4}$ -in. (7-cm) shells with No. 5 shot, a single defect similar to that produced by one discharged shotgun shell may result.

Conclusion

After review of several pertinent text books and papers [1–5] and a search of the medical literature for the past 20 years, we believe this to be the first reported case of a single shotgun wound resulting from simultaneous discharge of both shells from a double-barrel shotgun. We recommend a thorough scene investigation, firearm examination, and at autopsy, a search for components of two shotgun shells in those cases in which the deceased is shot with a double-barrel shotgun.

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