

## CASE REPORT

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### Suicide by Air Rifle and Shotgun

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**ABSTRACT:** We report the case of a 39-year old white male who committed suicide by shooting himself with an air rifle and a shotgun. The ballistics of air guns and rifles, with particular reference to the Sheridan air rifle, are reviewed. Only two cases of multiple firearm suicide have been reported; both involved simultaneously fired handguns. Ours is the first case, to our knowledge, of an air rifle and a shotgun used in sequence to commit suicide.

**KEYWORDS:** pathology and biology, suicide, ballistics, wound ballistics

Air rifle and air gun deaths are rare. Nearly all reported cases have been accidents involving wounds to the head, usually entering the orbit [1]. There have been two homicides [1,2], and no suicides reported. We report the case of a suicide in which the deceased first shot himself in the head and neck with an air rifle, and subsequently inflicted the fatal shot in the chest with a shotgun. At first the case was thought to represent a homicide with three distant gunshot wounds in the neck and head and a coup de grace contact shotgun wound to the chest.

#### Case Report

A 39-year-old white male was found at about 1:00 p.m. in the basement of a Victorian mansion in which he lived with his girlfriend, who was separated from her husband. She last saw him at 8:45 a.m. that morning when he drove her to work. He was currently unemployed, having previously been co-owner of a sporting goods company that had gone out of business. At the scene, the deceased was found on his back, with two bullet wounds in the right neck and one in the right temple (Fig. 1). In addition, there was a large contact shotgun wound in the left chest with extensive soot on the clothing and skin around the wound and tears of the clothing around the entry defect. Many articles of sporting goods were scattered about the scene including a crossbow, fishing gear, a 12-gauge shotgun, and a Sheridan air rifle. Neither soot nor gunpowder were present around the circular entry wounds in the neck

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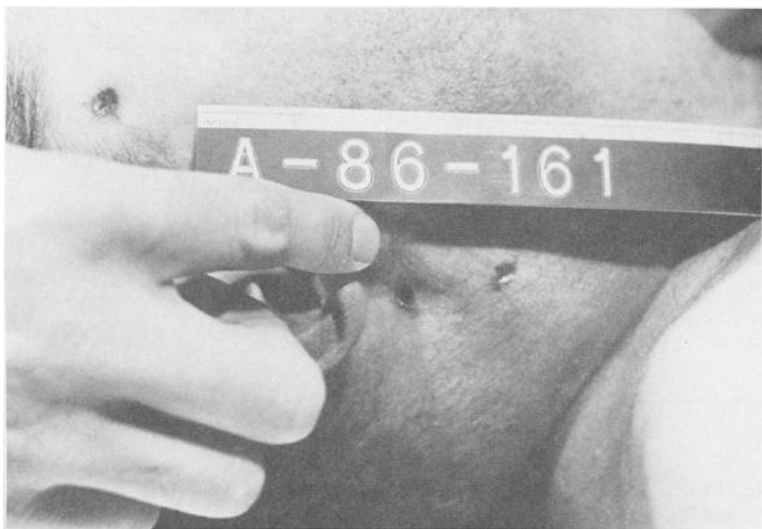


FIG. 1—Right side of head and neck showing two entry wounds in neck and one in right temple.

and temple, nor was there gunshot residue in the wound tracks. A .22-caliber pistol belonging to the deceased was missing. The estranged husband of the victim's girlfriend was known to have a violent temper. The girlfriend and the deceased had had an argument before he took her to work, and thus she and her estranged husband were suspects in the killing.

X-ray of the head and neck, conducted in conjunction with the autopsy the day after death, revealed two projectiles in the neck and one within the head (Fig. 2). At autopsy, two pellets were recovered from the soft tissue of the neck, and one was found in the right occipi-



FIG. 2—X-ray of head showing two pellets in soft tissue of neck at base of skull and one within the occipital skull.

tal lobe of the brain (Fig. 3). No major blood vessels were injured by the pellets in the neck. The pellet causing the head wound perforated the 1/8-in. (3.2-mm) thick right temporal bone and passed through the right temporal and occipital lobes causing a slightly hemorrhagic wound track up to 1.2 cm in diameter. There was neither midline shift nor herniation of the brain.

The pointed conical .20-caliber hollow based pellets, each containing six land and groove impressions on the driving band, were of the type commonly used in the Sheridan pneumatic air rifle, which was found at the scene. Test-firing indicated that the air rifle in question had fired those pellets recovered from the head and neck.

Subsequent investigation revealed a suicide note written to the girlfriend.

### Examination of the Air Rifle

We measured the muzzle velocity of the Sheridan Silver Streak air rifle used in this suicide. Using a Telepacific Ballistics Chronograph Model TPB-01, we found that at five pumps the mean velocity was 499.5 ft/s (152.2 m/s) with a standard deviation of 4.24; at ten pumps, the mean velocity was 615 ft/s (187 m/s) with a standard deviation of 4.95; and at twelve pumps the mean velocity was 652.5 ft/s (199 m/s) with a standard deviation of 4.24. Three trials were performed for each number of pump strokes. These experiments were performed by pumping the gun at an even rate and *immediately* thereafter shooting, then *immediately* beginning the next sequence. Table 1 compares the muzzle velocities obtained by several authors with the Sheridan air rifle.

We found that if there were delays between pumping and shooting, there was a wide variation in the muzzle velocity, possibly a result of air leak from the storage chamber.

### Discussion

DiMaio and associates [4] reported that with 16-grain, .22-caliber pellets, a muzzle velocity of 245 ft/s (75 m/s) was necessary to penetrate skin. Green and Good [2] state that a muzzle velocity of 600 ft/s (183 m/s) can penetrate bone, suggesting that, at least for the wound penetrating the skull and brain in our case, about ten pump strokes were needed.

Multiple gunshot wound suicides are recognized to occur but are unusual. In a study covering 7 years, Hudson found 58 cases of multiple gunshot wound suicides. Those accounted for 1.6% of the 3522 suicides by firearm during that period. No individual in that large series

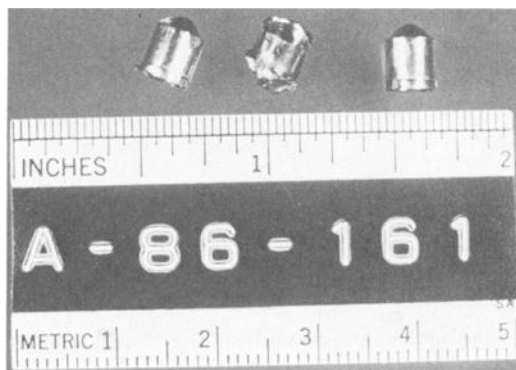


FIG. 3—Pellet (center) recovered from right occipital lobe and relatively undeformed pellets recovered from soft tissue of neck.

TABLE 1—Comparison of muzzle velocities obtained by several authors with the Sheridan air rifle.

Author	Pump Strokes	Muzzle Velocity, ft/s <sup>a</sup>
Cohle	5	499.5
	10	615.0
	12	652.5
Di Maio	5	470.0
	10	566.0
Green <sup>b</sup>	6	sufficient to penetrate 1 in. (2.54 cm) of soft wood
	12	770.0
Nonte [3]	5	454.0
	10	615.0

<sup>a</sup> 1 ft/s = 0.3048 m/s.

<sup>b</sup> Quoting a study performed by Wesley (Ref 7 in Green's paper).

used 2 or more weapons. Of the 58, 23 fired the second shot into a different body area [5]. Two cases of suicide using two different weapons have been reported. Fatteh [6] reported a suicide in which there was a gunshot wound in the head and one in the precordium. The weapons used were a .22-caliber pistol and a .22-caliber revolver. Hudson [7] mentions one case of a man shooting himself in each temple, using a .32-caliber pistol and a .22-caliber pistol. In each case the weapons were fired simultaneously, as heard by witnesses.

### Conclusion

In summary, we report the first case, to our knowledge, of suicide with an air rifle and a shotgun. Air rifle pellets have land and groove impressions and the interior of the pellet may have tool marks from the pin at the forward end of the bolt [8], and the recovered pellet can thus be compared with the weapon. Not all contact wounds (for example, those caused by air rifles) leave characteristic injuries or firearms residue or both on the skin or clothing surrounding the wound.

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