Int J Legal Med (2008) 122:323–325
DOI 10.1007/s00414-007-0213-3

CASE REPORT

Deaths caused by mole guns: three case reports

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Received: 20 October 2006 / Accepted: 4 October 2007 / Published online: 3 November 2007

Abstract Possession of firearms is limited because of the technological requirements in production and strict laws. However, anyone can manufacture a handmade firearm by following simple instructions and has no legal liability. A mole gun is an unusual weapon used to kill moles in agricultural areas. It propels pellets in a similar way as a shotgun. This study presents three cases of death caused by mole guns. Two of the cases were accidental, and the other case was suicidal. The first case involved a 51-year-old man who was checking the mole gun when it fired, injuring his left eye and the left region of his face. He died in the hospital after 3 days of medical treatment. The second case was a 78-year-old man, who had been intermittently treated for depression over the last 15 years. He died instantly after placing the mole gun vertically against his head and firing it. The third case was a 43-year-old man who had been trying to set up a mole gun device in his potato field when the weapon accidentally discharged. The victim was injured seriously and died in the hospital a short time later. In conclusion, because the mole gun may cause lethal wounds in humans when fired from a short distance, the researchers believe that its production and use should be in accordance with firearms laws.

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Keywords Mole gun · Mole · Firearm · Death · Forensic medicine

Introduction

Handguns and shotguns are the most common firearms involved in injuries and deaths. In spite of the current laws concerning the production and use of these weapons, there is no legal regulation pertaining to mole guns.

A mole gun is a handmade weapon used as a trap by farmers to kill moles. However, this weapon may also cause injuries and deaths in humans. Three death cases caused by mole guns are presented herein. In all cases, the autopsies were performed at the Konya Branch of the Forensic Medicine Council of Turkey in 2005 and 2006.

Case 1

A 51-year-old man had set up a mole gun device in his potato field. Two days later, when the gun had not work as planned, he removed the mole gun from its fitting. As he was checking the gun, it suddenly discharged and injured his left eye and the left region of his face. The opaque appearance of the shotgun pellets and the linear fractures involving the frontal and left temporal bones could be seen in the craniography (Fig. 1). Despite undergoing medical treatment for 3 days in the hospital, he died.

During the autopsy, the wounds resulting from the shotgun pellets were noted to occupy a 9×10-cm area in the left facial region (Fig. 2). The left eye was perforated. Fractures in the left side of the frontal bone and in the left temporal bone and a bone defect, 2×2 cm in size, involving the left side of the frontal skull base were present. There were extensive subdural hematomas occupying the left

Fig. 1 Multiple small foreign bodies (pellets) on plain craniography (case 1)

frontal and parietal regions of the cerebrum, subarachnoidal hemorrhages in both cerebral hemispheres, and contusions of the left frontal lobe of the cerebrum. A large number of shotgun pellets, 3.25 mm in diameter, were removed from the cerebrum.

Case 2

Two days after he had been discharged from a psychiatry clinic, a 78-year-old man who had been intermittently treated

Fig. 2 Partially sutured wounds caused by shotgun pellets (case 1)

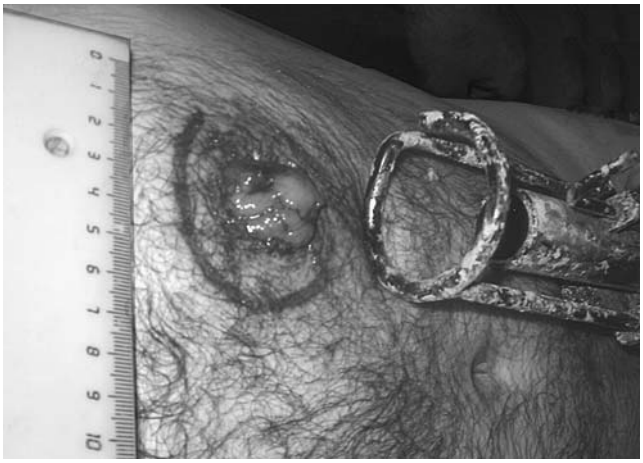

Fig. 3 Stroke imprint lesion of the front ring of the mole gun (case 3)

for depression over the last 15 years and had once attempted suicide by ingesting an insecticide placed a mole gun vertically against his head and fired it, dying instantly.

During the autopsy, a 12×10-cm scalp wound with peripheral soot at the vertex and a bone defect, 5×5 cm in size between both parietal regions, were noted. Additionally, there were large contusions in both parietal lobes of the cerebrum and in the cerebellum, as well as subarachnoidal hemorrhages on the cerebral and cerebellar surfaces. A plastic shotgun wad and a large number of shotgun pellets, 3.25 mm in diameter, were removed from the cerebrum and cerebellum. Multiple fractures existed in the base of the skull.

Case 3

While trying to set up a mole gun device in his potato field, a 43-year-old man was seriously injured when the weapon fired accidentally. He died in the hospital after a short time.

During the autopsy, a stroke imprint (6×5 cm), formed by the front metal ring of the mole gun because of its pressure on the skin, was observed on the left upper abdomen. An entry wound, 3×3 cm in size, formed by the discharged shotgun pellets, was localized at the center of this mark, with dense soot around it (Fig. 3). A shotgun wad and a large number of shotgun pellets, 2.5 mm in diameter, were found in the abdominal cavity, and serious

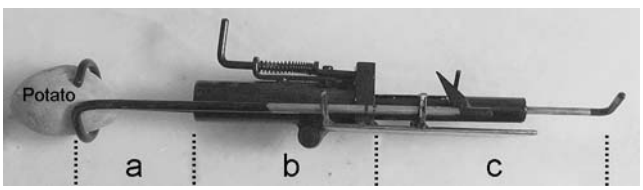

Fig. 4 Design of a typical mole gun. *a* A metal ring in front of the gun, connected to the trigger mechanism; *b* barrel, and *c* trigger mechanism

injuries were observed involving the abdominal aorta, transverse colon, and omentum. There was a 2.5-L abdominal hemoperitoneum.

Discussion

Mole guns are primitive weapons produced for the purpose of trapping and can fire a standard shotgun cartridge. A typical mole gun generally consists of three parts (Fig. 4): (1) a metal ring in the front, connected to a trigger mechanism, (2) a barrel, and (3) a trigger mechanism.

The barrel is 12 gauges in terms of caliber, and its length is 10 cm. The barrel is opened in the front and locked after the cartridge is placed. There is a metal ring, 8 cm in front of the barrel's edge, which is used to hold food, such as a potato or an onion. The mole gun's mechanism is simple; to reach food, the mole places its head through the metal ring, which is pushed backwards, thus triggering the mechanism and propelling the pellets from the barrel. The ignition mechanism is composed of a thick nail stretched by a spring.

In the first two cases, cartridges containing 32-g pellets, 3.25 mm in diameter, were used, while in the third case, a cartridge containing 24-g pellets, 2.5 mm in diameter, was used. In the trial shots performed at the Criminal Police Laboratory in Ankara, Turkey, the mole gun was fired with cartridges containing 32-g pellets, 3.25 mm in diameter, and the average muzzle velocity of the pellets was calculated to be 165 m/s, which is lower than that of standard shotguns. The low velocity causes loss of energy according to the equation, $E=1/2\ mV^2$. Although the energy of the pellets discharged by the mole gun is lower than that of a shotgun, these pellets are likely to cause lethal wounds. In the first case, the entry wounds of the shotgun pellets were spread over an area 9×10 cm in size. In the trial shots, carried out using the same mole gun used in the first event and cartridges containing 32-g pellets, 3.25 mm in diameter, the pellets were spread over the same sized area when the mole gun was shot from a 50-cm distance to the target. However, when a standard shotgun was fired from the same distance using the same qualified pellets, it was determined that a central entry wound of 2×2 cm formed on the target. These differences of distribution between mole guns and shotguns could be explained by the short barrel and low muzzle velocity of the mole gun.

Accidental injury cases caused by mole guns are reported in the national and local press from time to time [1–3]. In a website related to hunting, a general surgeon reported that a victim had been injured above the abdominal region by a mole gun that had gone off accidentally and that he had died before the operation [4]. Similarly, accidental deaths may occur with mole guns, as presented in our first and third cases. The second case shows that a mole gun may also be used to attempt suicide.

Uner et al. [5] reported an injury case in which a mole gun had been used as a trap by a homeowner against burglars in a flat. Two weeks later, he installed a mole gun device on the edge of the window; while a burglar had been attempting to break into the house, the burglar's right arm was injured by the mole gun and resulted in the loss of dorsoflexion at the wrist. No death cases because of mole guns have been reported in the medical literature to date; however, cases might not have been identified by researchers because the wounds caused by mole guns are similar to those caused by shotguns.

In Turkey, anyone who wants to own a mole gun can purchase one for $5 from an ironmonger. This weapon could thus be easily abused. In conclusion, because mole guns may cause severe injuries and even deaths, both the production and use of mole guns must be carried out in accordance with the legislation.

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