

## CASE REPORT

Amy M. Tharp,<sup>1</sup> M.D. and Donald R. Jason,<sup>1</sup> M.D., J.D.

# A First Time for Everything: Homicide Involving the Brenneke<sup>®</sup> SuperSabot Shotgun Slug\*

**ABSTRACT:** Sabot shotgun slugs are not a new projectile, but the Brenneke<sup>®</sup> SuperSabot shotgun slug has never been reported in a homicide. We present the case of a 28-year-old man killed with multiple gunshot wounds during an alleged “drive-by” shooting. At autopsy, a 496.2 grain slightly deformed projectile with a base diameter of 5/8” (1.7 cm) was found within the decedent’s clothing. Six distinct bullet tracks were identified. An entrance of the anterior right thigh was 3/4 × 5/8” and ovoid, having only passed through the decedent’s jeans. This bullet track passed through the soft tissue of the right thigh, exiting out the medial aspect and partially transecting the right greater saphenous vein, re-entering the medial left thigh and re-exiting out the posterior left upper thigh. With the exception of an irregular entrance on the sole of the left foot, which passed through the decedent’s shoe, all other entrances were less than 1/2” in greatest dimension. Investigating officers recovered an additional projectile of the same type, which had undergone more extensive deformation after striking and penetrating the tailgate of a truck. Further investigation identified the projectiles as the Brenneke<sup>®</sup> SuperSabot shotgun slugs.

**KEYWORDS:** forensic science, shotgun slug, sabot, Brenneke

On November 17, 2004, a 28-year-old man, along with two of his companions, was shot multiple times during an apparent “drive-by” shooting as they exited a residence. He was declared dead at the scene. Investigating officers suspected the use of a shotgun, handgun, and high-powered rifle based on ballistics material recovered at the scene. This case stresses the importance of careful examination of all personal items at the time of autopsy, as well as good scene investigation.

### Autopsy Findings

At autopsy, six distinct bullet tracks were identified. All but two of the entrances were no more than 1/2” in diameter. An entrance of the sole of the left foot, which passed through the decedent’s shoe before entering the body, was 1” in diameter and irregular in shape. An additional entrance of the anterior right thigh was more regular (3/4 × 5/8”), having only passed through the decedent’s jeans (Fig. 1). This bullet track passed through the soft tissue of the right thigh, exiting out the medial aspect and partially transecting the right greater saphenous vein, re-entering the medial left thigh and re-exiting out the posterior left upper thigh. The trajectory was anterior to posterior, right to left, and upward.

While undressing the individual for external examination, a 496.2 grain projectile with a yellow metal exterior, a nearly pristine white metal tip, and a 5/8” (1.7 cm) base diameter, was found loose in the victim’s clothing (Fig. 2). The projectile had obvious

tissue clinging to the junction of the exterior bushing and tip. According to investigating officers, a similar projectile was found within a tailgate of a pickup truck, although with much more deformation and mushrooming of the tip.

His additional gunshot wounds to the chest, abdomen, and left upper extremity involved the lower lobe of the right lung, auricle of the right atrium, liver, right kidney, and fracture of the left humerus. An additional wound to the right hip involved soft tissue and musculature only. This victim’s blood ethanol level was 0.20% (200 mg/L) and the only natural disease identified was emphysematous changes within the lungs. No projectiles were recovered within this victim’s body. Radiographic studies performed at the time of autopsy did not reveal any additional projectiles. An additional victim from the same incident was also autopsied on the same day and no projectiles were recovered at that autopsy either.

The large projectile recovered from the clothing was not recognized by either the staff at the medical examiner’s office or investigating officers present at the time of autopsy. Owing to the unusual nature of the projectile, it was sent to the NC State bureau of investigation for further examination. It was identified as a Brenneke<sup>®</sup> SuperSabot (Hanover, Germany) shotgun slug and the Brenneke<sup>®</sup> company was contacted for further information. According to the company, this was the first ever reported homicide using the projectile.

### Discussion

A sabot is a device used in a firearm to fire a projectile that is smaller than the bore diameter. As a strong seal is needed to trap propellant gasses behind the projectile, and keep the projectile centered in the barrel, something is needed to fill the gap between projectile and barrel, which is the role of the sabot. When the sabot reaches the end of the barrel, the shock of hitting still air

<sup>1</sup>Department of Pathology, Wake Forest University Baptist Medical Center, Winston-Salem, NC 27157.

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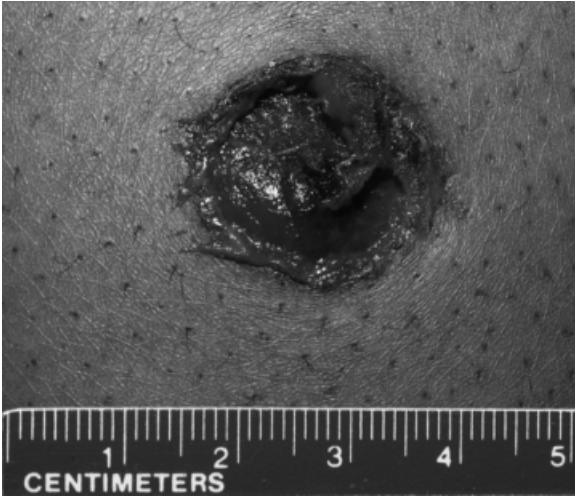


FIG. 1—Close-up of initial entrance wound of right lateral thigh.

pulls the parts of the sabot away from the projectile, allowing the projectile to continue in flight (1).

The Brenneke<sup>®</sup> company was founded in 1895. The first shotgun slug was designed by Brenneke<sup>®</sup> in 1898, which continues to produce up to 10 million slugs/year. In 1898 Brenneke<sup>®</sup> developed the first modern slug which consisted of a pointed nosed projectile with 12-angled ribs and cardboard and felt wadding attached to the base by a screw, effectively creating a longer profile and improving accuracy. The effective range was 70 yards, with a 3" grouping of 5 at 50 ft. (2).

Beginning in 1999, research and development of the SuperSabot was completed in 2000. In order to improve accuracy, a unique piston design was used that allowed for the use of more powder which increased the velocity and produced a 2 1/2" spread of five projectiles at 100 yards (2). The Brenneke<sup>®</sup> SuperSabot slug is one of the most expensive rounds on the market. It is designed for use in a 12-gauge shotgun, but has only a 20-gauge diameter, fitted into a sabot to facilitate its use in the 12-gauge barrel. It is a lead-free projectile composed of three parts: the T-shaped axle, the cylindrical shaped bushing (both of which are made of brass), and the aluminium tip. The projectile and sabot are loaded into cartridges, either 12-gauge 2 3/4" or 3".

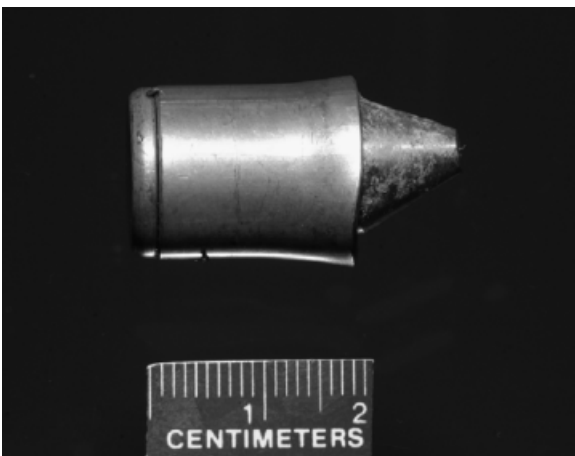


FIG. 2—Brenneke<sup>®</sup> SuperSabot shotgun slug recovered from within decedent's clothing. Note the lack of deformity and preservation of the overall shape of the slug.

(Wilhelm (2004) *Re: SuperSabot Slug*, e-mail to Amy Tharp (atharp@wfubmc.edu), December 12 [accessed December 13, 2004].) The sabot is designed to separate from the projectile after exiting the muzzle, falling to the ground within 15 m (17 yards) from the shooter. The SuperSabot is designed for use in rifled barrels only. If the sabot is recovered at the scene, rifling markings will be present on the sabot if fired from a rifled barrel. If fired from a smooth bore barrel, the projectile will be destabilized and will begin tumbling immediately upon exiting the muzzle. This would create an irregular entrance wound as the slug struck the body at an angle instead of traveling straight. (Wilhelm (2004) *Re: SuperSabot Slug*, e-mail to Amy Tharp (atharp@wfubmc.edu), November 30 [accessed November 30, 2004].) In addition, during its passage through the body it would continue to tumble, as shown by gelatin studies performed by Brenneke<sup>®</sup>, according to customer service representatives contacted for additional information. The slug is 0.63 caliber but, if functioning appropriately, the rim of the bushing will mushroom up to 1" in diameter once it impacts tissue. (Wilhelm (2004) *Re: SuperSabot Slug*, e-mail to Amy Tharp (atharp@wfubmc.edu), December 12 [accessed December 13, 2004].)

Typically, upon striking tissue, the aluminum-tip mushrooms up to 1" (2.5 cm). However, in this case, the projectile tip remained intact, possibly from interference from the decedent's clothing. Figure 3 shows the projectile in four stages. The top-most item is the slug in the sabot before being loaded into a cartridge. The second item is a cut away view of a loaded cartridge. As you can see the bushing is in its forward position.

As the slug/sabot combination accelerates after ignition, the bushing slides backwards on the axle. The reason for this design is to dampen the recoil, allowing for the use of more powder with resultant higher velocities. A hundred pounds of pressure is required for this to occur and this happens within the first inch of movement in the chamber. The third item shows how the sabot opens after clearing the muzzle due to the air resistance. The fourth item shows how the slug should react as it hits tissue,

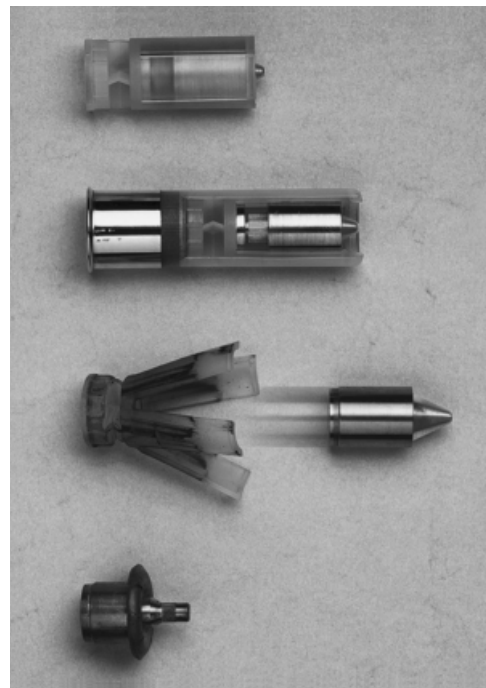


FIG. 3—Brenneke<sup>®</sup> SuperSabot shotgun slug in four stages of use.

mushrooming to create a larger diameter, which is purported to create clean, circular entrance perforations. This projectile is designed for big game. The thinner the skin, the more regular the flight path and the more likely to create a regular exit wound as well as entrance. This has been reported by comparison between its use on wild boars as compared with deer.

Shotgun slug injuries are severe, largely secondary to the size and mass when compared with handgun ammunition. The entrance wounds are typically round and regular with abraded edges comparable with bullet entrances (1). However, irregular entrances caused by yawing of a sabot slug in flight have been reported (3). Internal damage is often significant and have been compared with those caused by high-velocity rifle wounds (1,4,5). The American Foster slug is designed to flatten out, often fragmenting and remaining within the body and thereby transferring all of its kinetic energy to the tissues involved (1,5). Their ability to bring down game quickly is one of the reasons they are favored with hunters.

Both suicides and homicides have been reported involving the original Brenneke® shotgun slug (6,7). The case report by Rao and Rao (6) also describes a "drive-by" style homicide in which the Brenneke® original shotgun slug was used. In the case of the original design, however, a sabot is not present. In addition, the felt wadding and screw may be recovered at the scene or within the body at the time of autopsy, both items which are lacking in the new SuperSabot design. The wounds produced by the Brenneke® SuperSabot are comparable with those of other slugs on the market today and without recovering the slug itself may not be distinguished from other sabot slug wounds.

This case illustrates the importance of thorough scene investigation and postmortem examination to identify all of the weapons and projectiles used to commit a homicide. By careful examination of both the scene and the victim's clothing, the Brenneke®

SuperSabot slug was recovered, providing a significant clue to investigating authorities. As it is a rare and expensive projectile, the locations at which it might be purchased were limited, allowing a good place to start looking for suspects or additional evidence to use in the prosecution of suspects. In addition, manufacturers can be a vital source of information on any projectile unfamiliar to the pathologist or investigator.

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Additional information and reprint requests:

Amy M Tharp, M.D.  
Department of Pathology  
Wake Forest University Baptist Medical Center  
Medical Center Blvd.  
Winston-Salem, NC 27157  
E-mail: atharp@wfubmc.edu