

CASE REPORT

Jeffrey M. Jentzen,¹ M.D.; Monty Lutz,² B.S.; and Reginald Templin²

Tandem Bullet Versus Multiple Gunshot Wounds

REFERENCE: Jentzen, J. M., Lutz, M., and Templin, R., "Tandem Bullet Versus Multiple Gunshot Wounds," *Journal of Forensic Sciences*, JFSCA, Vol. 40, No. 5, September 1995, pp. 893-895.

ABSTRACT: The differentiation of tandem bullets fired simultaneously versus multiple bullets fired separately entering through a single entrance wound may present difficulty in wound interpretation for the forensic pathologist. The authors present a case report of three separate projectiles entering through a single perforation. The differentiation of projectiles fired in tandem and multiple single projectiles is discussed.

KEYWORDS: pathology and biology, tandem bullets, multiple gunshot wounds, atypical entrance wounds

The presence of multiple bullets simultaneously perforating through a single entrance wound has been reported [1]. In rare instances, bullets and/or weapons may malfunction resulting in a failure of the projectile to exit the end of the barrel of the weapon. Subsequently a second bullet then propels the first projectile through the barrel in "tandem." Bullets fired in this manner will demonstrate a typical "piggyback" compact arrangement (Fig. 1). The initial bullet tip will appear normal, however, the base of the bullet will have a thin, concave almost knife edge appearance retaining the shape of a conical indentation of the succeeding bullet (Fig. 2). The second bullet tip is then deformed and loses its normal elongated appearance. These bullets then form a tightly packed single projectile mass and may be propelled through a single perforation. This type of wound may appear as close or distant in range. Depending on the load characteristics of the projectile, the weapon may explode in cases of tandem bullets. The corollary of the tandem bullet is the rare instance of multiple projectiles entering through an apparent single wound of entrance. This paper will discuss one such case.

Case Report

A female homicide victim was shot multiple times by two assailants. One assailant used a .22 caliber Rohm Valor handgun, and the second a .22 caliber rifle. Four bullets recovered in the head area originated from two apparent entrance wounds. These four

Received for publication 20 May 1995; revised manuscript received 19 Oct. and 22 Dec. 1994; accepted for publication 19 Jan. 1995.

This paper was presented at the Annual Meeting of the American Academy of Forensic Sciences, San Antonio, Texas, February, 1994.

¹Associate Professor, Department of Pathology, Medical College of Wisconsin, Medical Examiner, Milwaukee County, WI.

²Firearms Section, Wisconsin State Crime Laboratory, Milwaukee, WI.

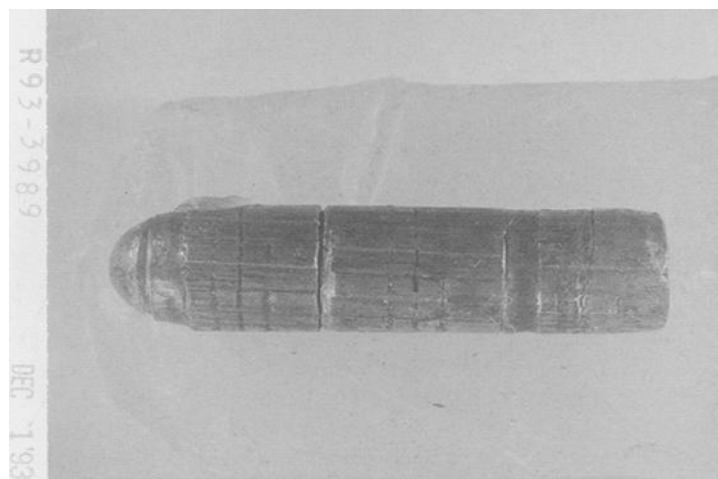


FIG. 1—The .22 caliber CB bullets and "piggyback" compact arrangement recovered from gelatin.

bullets all consisted of nonjacketed .22 caliber short/long projectiles. One bullet recovered from the right jaw area originated from an entrance wound through the nose. The second wound was an apparent single gunshot wound to the right temple area (Fig. 3). This wound had a pattern of soot deposition surrounding the perforation.

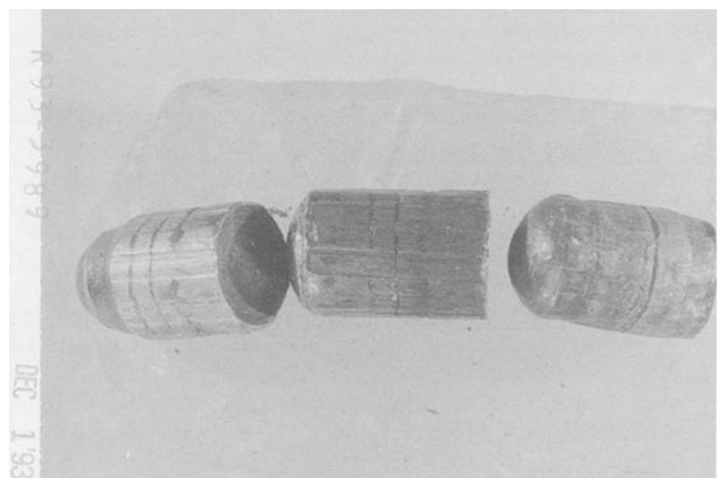


FIG. 2—The .22 caliber CB short bullets separated to reveal thin concave knife edge appearance of the projectile with rounded point characteristic of "piggyback" arrangement.

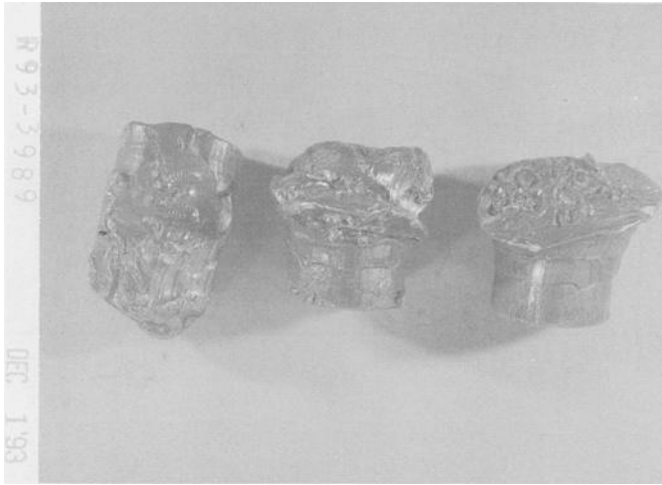


FIG. 3—The three projectiles recovered from the right temporal skull entering in order of right to left.

ration measuring approximately 3.0 cm in diameter. Radiographs taken prior to the autopsy and the subsequent dissection documented the three projectiles in sequential linear arrangement (Fig. 4) subjacent to the entrance wound of the right temple.

Additionally, three Remington .22 caliber long rifle projectiles, later determined to have been fired from the rifle, were recovered from the chest and abdomen of the decedent.

Of the three bullets recovered from the head the first was located in the superficial edge of the right temporal lobe, penetrating less than 2.0 cm. It had an intact tip with an intact, non-impacted base. A second bullet was wedged within the inner and outer tables of the right temporal skull and demonstrated a “splitting” of the tip of the projectile with an intact base. A third projectile was completely retained within the right temporalis muscle and did not penetrate the skull. This bullet showed a marked flattening and distortion of the tip with an intact base. It appeared that this third projectile may have impacted the lateral aspect of the second projectile (Fig. 5). There was a small fragment of a bullet located in proximity to the two latter projectiles. All of the projectiles were subsequently identified as .22 caliber CB Cap Long/Short Rounds. The base of each of the bullets was intact and did not reveal the typical inverse conical appearance of a tandem bullet.

On inspection, the weapon used consisted of a .22 caliber Rohm Valor handgun, a German produced revolver with a 1 3/4" barrel. This weapon was examined by one of the authors (Lutz) and found to be intact and in good working order (Fig. 5).

Method

Test firing (Templin) of three unfired rounds recovered from the revolver revealed chronometer velocities of between 350/fps and 445/fps. Test firing of similar CB-Long projectiles from the files of the State Crime Laboratory firearms section demonstrated velocities of 349/fps to 359/fps. Three .22 caliber CB Long bullets were placed in the 3" barrel of a Rohm Valor revolver handgun in an attempt to reproduce the bullet pattern present in this case. Upon firing, two of the bullets failed to exit the end of the barrel.

A tandem bullet pattern was reproduced by placing two previously unfired .22 caliber CB Long bullets within the end of the barrel of a 1 3/4" Rohm Valor model revolver and firing the tandem pack into a 10% gelatin block. The “tandem mass” bullet had a

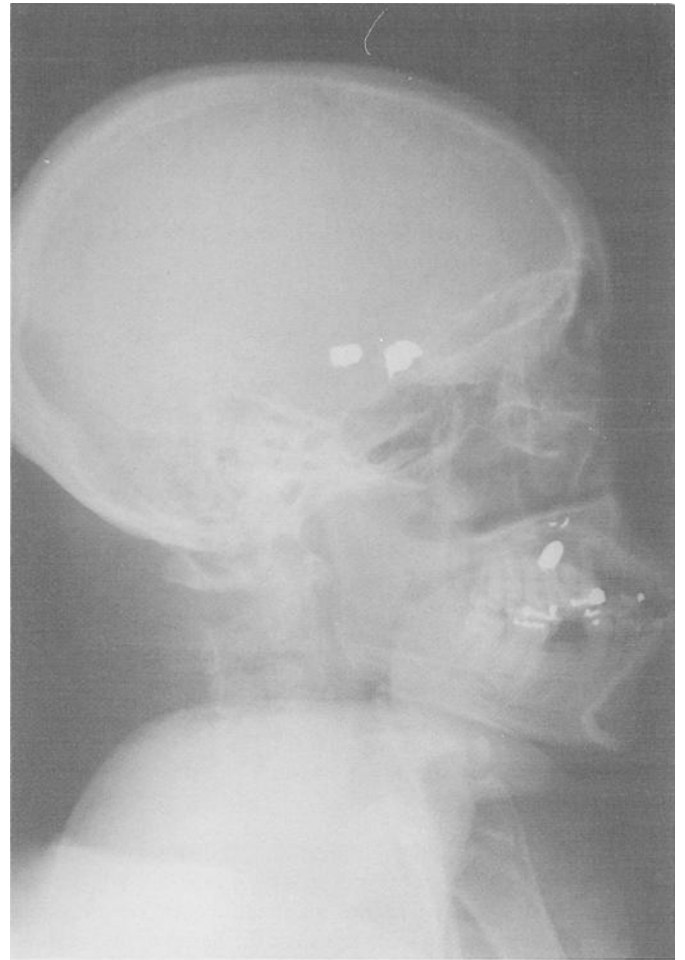


FIG. 4—Radiograph demonstrating three projectiles in the right temporal area and an additional projectile in the upper maxilla.

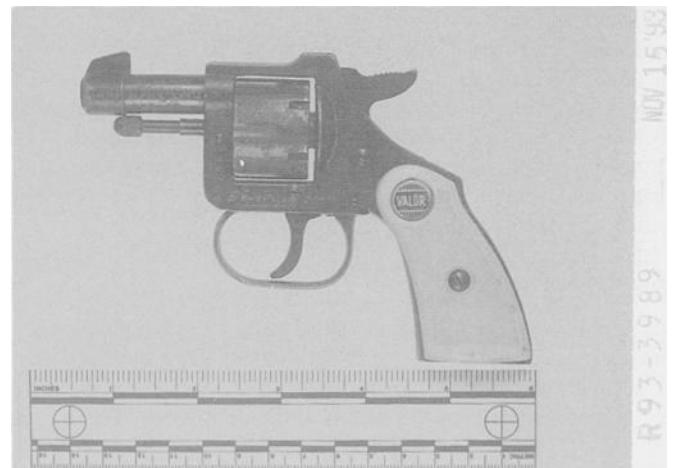


FIG. 5—The .22 caliber Rohm Valor handgun with 1 3/4" barrel.

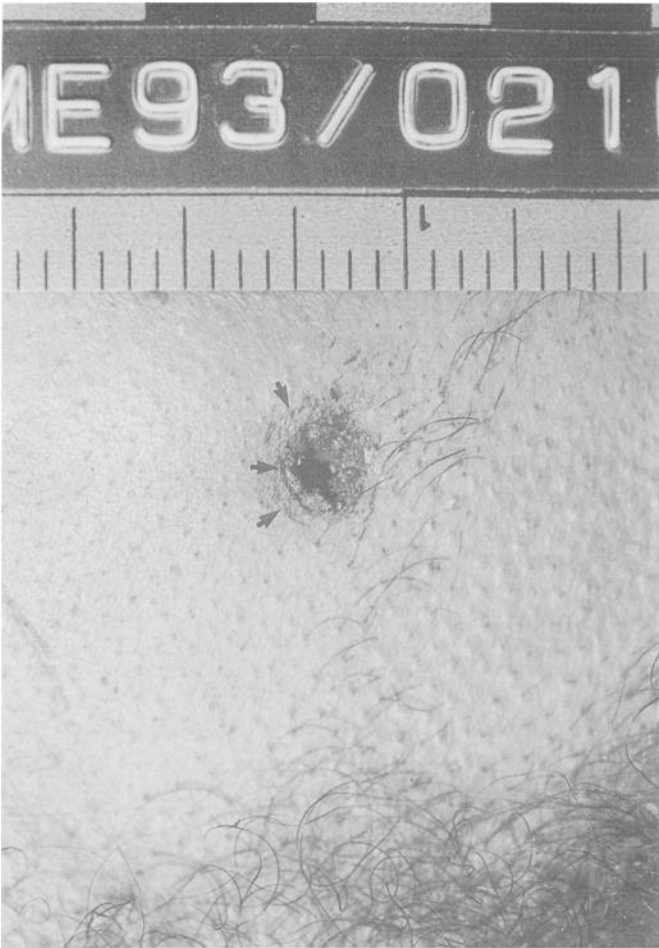


FIG. 6—Close up view of the entrance wound to the right temple demonstrating three distinct overlapping muzzle imprint abrasions (arrows). Soot has been previously washed from the wound. (Courtesy of Jim Yogurtian, Racine Police Department).

maximum penetration of 5.5 cm into the gelatin block. The tandem mass was recovered intact and demonstrated the typical “piggyback appearance” (Fig. 2).

Discussion

The .22 caliber CB cap (“Conical Bullet Cap”) was specifically designed for low velocity applications, e.g., indoor, gallery and pest control. This projectile resembles the .22 caliber BB Cap bullet. Bullets in BB and CB Cap cartridges produced by the German manufacturer RWS/Dynamit weigh 16 grains. The BB Cap projectile is round and the CB is cylindrical with a pointed nose [2]. CCI loadings consist of .22 caliber, 29 grain bullets in

either .22 short or .22 long/long rifle cases and have reported velocities of 727/fps to 830/fps [3].

The three projectiles were most consistent with having been fired independently (three times), entering the single entrance while the muzzle was held in light contact to the skin. Reexamination of the photograph of the wound gives the impression of three faint muzzle imprints (Fig. 6), thus corroborating the presence of three separate contact entrance wounds. Projectiles entering through a single gunshot wound would require light support of the barrel on the skin. The lack of more obvious contact imprint is probably due to the small amount of energy produced by these rounds.

This particular weapon would not be expected to be damaged from the firing of tandem bullets because of the low pressure developed by the powder loads during firing. Also, the design of revolver-type handguns allows for the dissipation of most of the gases from repeated firing. Handguns of poor quality may contain irregular fits due to poor tolerance of the barrel grooves with the projectile, which allows for the dissipation of the gas, powder and energy of the fired round both posterior and anterior to the load. These mechanisms play a role in protecting the weapon from exploding during firing.

Conclusions

We present a case of three separate bullets entering through an apparent single entrance wound. Examination of the projectiles, the weapon and the wound confirmed the presence of three separate gunshot discharges through an apparent single perforation. The presence of a “tandem bullet” was effectively eliminated. In cases where multiple projectiles are located in single perforations, the occurrence of a tandem bullet needs to be effectively eliminated as part of the examination by the forensic pathologist and ballistic experts.

Acknowledgments

The authors wish to acknowledge the contributions of Pamela Voss in the preparation of this manuscript; Larry Ventura for the photographic assistance; and John Esayian, Racine County Medical Examiner’s Office, Racine, Wisconsin.

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Address requests for reprints or additional information to
 Jeffrey M. Jentzen, M.D.
 Medical Examiner Office
 933 West Highland Avenue
 Milwaukee, WI 53223