

CASE REPORT

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Tempered Plate Glass as an Intermediate Target and Its Effects on Gunshot Wound Characteristics

REFERENCE: Dixon, D. S., "Tempered Plate Glass as an Intermediate Target and Its Effects on Gunshot Wound Characteristics," *Journal of Forensic Sciences*, JFSCA, Vol. 27, No. 1, Jan. 1982, pp. 205-208.

ABSTRACT: Gunshot entrance wounds may be markedly atypical when an intermediate object alters the behavior of a projectile. There may be confusion about weapon caliber, weapon type, and range of fire. A case demonstrating the effects of an intermediate glass target on a wound is presented.

KEYWORDS: pathology and biology, wound ballistics, ballistics, intermediate target

It has been shown in a previous experimental study [1] that the appearance of an entrance wound is affected by material interposed between the weapon and the skin at the entry site. Specifically, such an entrance may have an unusually large wound diameter approximating that of a typical close-range shotgun entrance defect and may have a wide marginal abrasion. Occasionally, there may be radiating lacerations imparting to the wound a stellate configuration, which suggests a contact range of fire. If the intermediate target shatters on bullet impact, fragments of the material may reach the skin and cause additional injuries not directly related to projectile impact with the skin. A case confirming these experimental observations is detailed below.

Case Report

A 15-year-old white male was a passenger in the cab of a pickup truck stopped at an intersection. An automobile stopped next to the passenger side of the truck, and the driver fired a single shot through the door window (Fig. 1). The bullet struck the head of the passenger and killed him. No motive for the homicide has been determined.

The tempered plate glass window acted as an intermediate target. The distance between the window and the skin was 20.3 to 25.4 cm (8 to 10 in.), and the distance between the tip of the weapon's barrel and the skin was approximately 1.2 m (4 ft).

The autopsy revealed a very large entrance wound in the right temple (Fig. 2), measuring 2.5 by 1.9 cm (1 by $\frac{3}{4}$ in.). The margin of the defect was scalloped, and there was an abrasion measuring 0.3 cm ($\frac{1}{8}$ in.) in width around the defect. A single 0.3-cm ($\frac{1}{8}$ -in.) laceration was noted radiating outward from the central defect. No smoke or gunpowder residue was detected on the skin.

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FIG. 1—Tempered plate glass window of door on passenger side of pickup truck with defect caused by bullet fired from large caliber handgun.

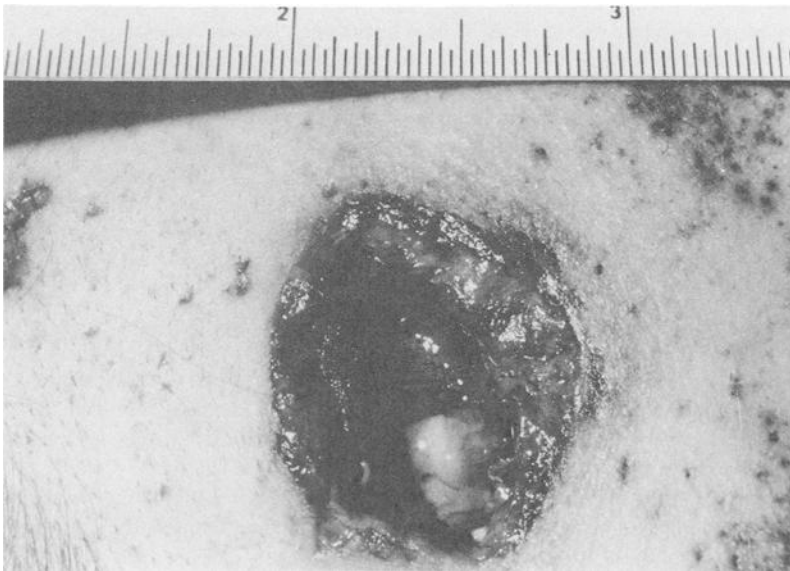


FIG. 2—Large entry wound of right temple, showing marginal abrasion, scalloped circumference, and small radiating laceration (Case 80-11-939).

In addition, there were multiple punctate lacerations and abrasions in an area measuring 12.7 by 14 cm (5 by 5½ in.) localized to the right side of the face (Fig. 3). Fragments of shattered plate glass were noted in some of the skin lacerations as well as on the seat and floor of the pickup truck. The skin was free of the gray powder from pulverized glass previously described by Stahl et al [2] and by Dixon [3] to be present in certain shored entry wounds.



FIG. 3—Right side of face showing large entrance wound and area of punctate abrasions and lacerations from shattered plate glass. Note two circular defects in the center of the photograph formed by fragments of the projectile shaved off during passage through the glass window (Case 80-11-939).

Two small satellite wounds, each measuring 0.6 cm ($\frac{1}{4}$ in.) in diameter, were noted within the area on the right side of the face. These entrance defects were formed by fragments of lead shaved off the projectile as it passed through the glass window; the lead fragments penetrated the skin and were located by X-ray examination at the terminations of the superficial wound tracks.

The bony defect underlying the entrance wound was heart-shaped, measured 3.8 cm ($1\frac{1}{4}$ in.) in diameter, and demonstrated bevelling of the inner table of the skull. The bullet perforated and contused the right frontal lobe, right temporal lobe, corpus callosum, and left occipital lobe; the brain stem was also contused. Two distorted lead fragments and a separated copper jacket were recovered from the left occipital lobe and were identified as being consistent with a Luger 9-mm jacketed hollow-point round.

Toxicological analysis at autopsy indicated the absence of ethanol or other drugs.

Summary

A case involving a projectile discharged through an intermediate target of tempered plate glass is reported. The wound configuration was markedly altered, as predicted experimentally [1]; the large size and scalloped margin of the defect and radiating marginal lacerations suggested that a weapon such as a rifle or shotgun was used to inflict the injury. That was not the case. There may also be confusion regarding the range of fire. Secondary lacerations and abrasions caused by material from an intermediate target and satellite entrances from bullets fragmented by the intervening material may provide the only clues to a correct interpretation of an atypical wound configuration and range of fire.

References

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- [2] Stahl, C. J., Jones, S. R., Johnson, F. B., and Luke, J. L., "The Effect of Glass as an Intermediate Target on Bullets: Experimental Studies and Report of a Case," *Journal of Forensic Sciences*, Vol. 24, No. 1, Jan. 1979, pp. 6-17.
- [3] Dixon, D. S., "Characteristics of Shored Exit Wounds," *Journal of Forensic Sciences*, Vol. 26, No. 4, Oct. 1981, pp. 691-698.

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