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Case Report

A case of alleged discharge of a firearm within a vehicle[☆]

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ABSTRACT

A road-rage altercation occurred between two vehicle drivers. The driver of vehicle 1 stopped and allegedly fired two shots from within his vehicle over the heads of the driver and passenger of vehicle 2 when they were out of their vehicle. The driver of vehicle 2, an off-duty police officer, fired his .45 calibre pistol at the driver of vehicle 1. The bullet went through the windshield and lodged in the instrument panel. Eight gunshot residue (GSR) samples were taken from the interior of vehicle 1 and analysed by automated scanning electron microscopy/energy dispersive x-ray spectroscopy. The results show for vehicle 1 that a firearm discharged with its breach or cylinder gap within the vehicle was unlikely to have occurred and the .45 calibre bullet which impacted five surfaces of vehicle 1 was accompanied by GSR throughout its travel. A recreational shooter is shown in this study to transfer GSR to the seat of his car. The driver of vehicle 1 visited a recreational gun range prior to the altercation, which would explain the significant GSR contamination of the driver's seat of his vehicle.

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1. Introduction

In a road-rage confrontation the driver (defendant) of vehicle 1, which had stopped, allegedly twice discharged a firearm out the partially open driver-side window. The shots were claimed to have been fired over the heads of the other driver and his passenger, both had exited vehicle 2. The passenger of vehicle 2 noted, "... the driver side window [of vehicle 1] was slightly rolled down. The driver [defendant] brandished a black firearm, with the barrel at an upward angle." The breach of the firearm upon its alleged discharge was within vehicle 1 in close proximity to the driver's head, left neck and shoulder. Immediately after the shooting, vehicle 1 left the scene. The alleged firearm was not found by the police nor were casings found in a search of the vehicle. The defendant, as well as his passenger claimed no shots were fired from their vehicle.

Vehicle 1, the defendant's vehicle, was a Nissan Versa (Fig. 1A), which was hit in the windshield with a .45 calibre bullet fired by the driver of vehicle 2, who was an off-duty police officer. The defendant claimed the shot to his vehicle was fired 4–5 m from him while he was sitting in the driver's seat. The .45 calibre bullet hit

the windshield wiper base (Fig. 1B), went through the windshield (Fig. 1B), skidded on the dashboard (Fig. 1C) penetrated the dashboard behind the instrument panel (Fig. 1C) and came to a stop within the instrument panel (Fig. 2).

The gunshot residue (GSR) evidence produced by the involved crime lab of the alleged firearm discharge in the defendant's vehicle (vehicle 1) was inconclusive:

1. The defendant's shirt, worn during the alleged shooting and put into evidence, was not sampled for GSR.
2. The dashboard of the defendant's vehicle was improperly sampled by using the same sampler that was applied to the steering wheel.
3. The dashboard of the defendant's vehicle should have been exclusively sampled by one or more samplers [1].

Could the GSR particles found on the samplers from the defendant's vehicle have a source or sources other than from a firearm discharge within that vehicle? The interpretation of samples from the interior of a vehicle must consider the potential of GSR on surfaces that could have been transferred [2] prior to the shooting at issue (e.g., secondary transfer by a recreational shooter) or entered the vehicle accompanying a bullet through the windshield [3]. This article will show that sampling different surfaces from within a vehicle that is suspected of a discharge of a firearm from within can provide evidence if this did or did not occur.

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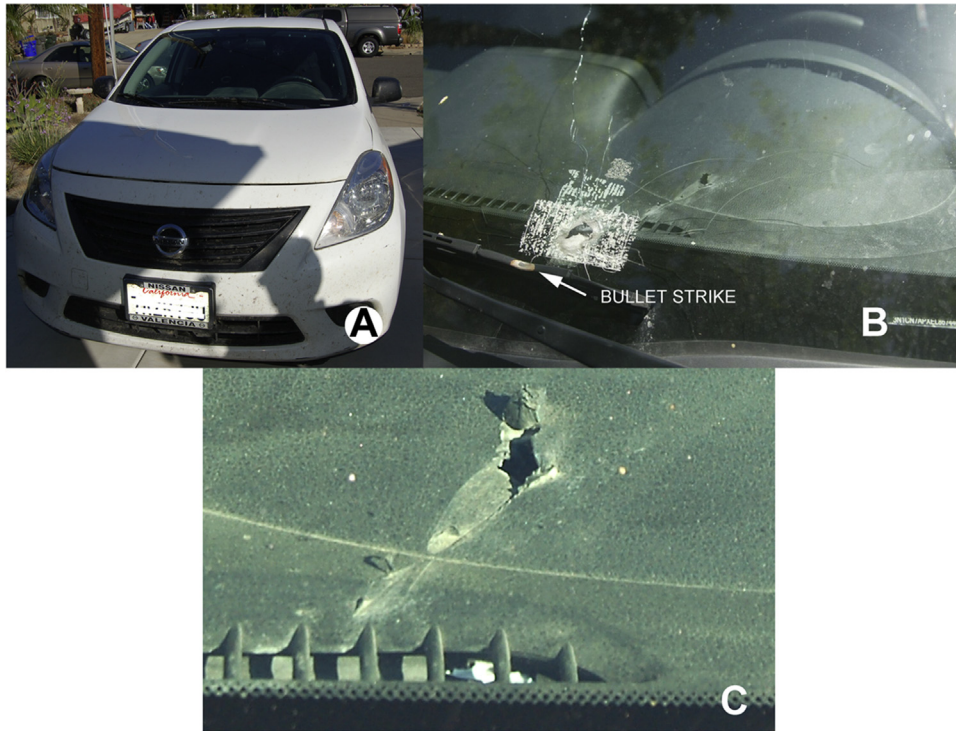


Fig. 1. (A) The defendant's vehicle (vehicle 1) that was shot in the windshield with a .45 calibre bullet; the windshield had been replaced when this image was taken. (B) The bullet struck the base of the windshield wiper and then fractured windshield; the window bullet hole had been taped. Adhesive remained after the tape's removal to expose the bullet's entrance hole. (C) Image after the windshield replacement showing the bullet skid on the dash and entrance hole into the instrument panel; just above the hole a small portion was later pushed out. This likely occurred when the instrument panel was replaced.

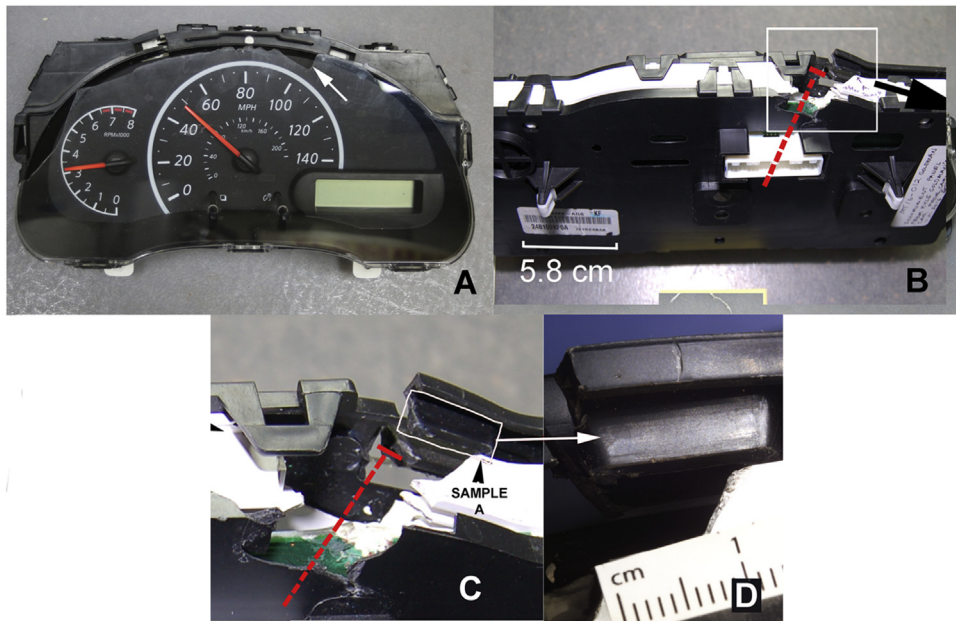


Fig. 2. The instrument panel from the defendant's vehicle that was hit with a .45 calibre bullet. (A) The front of the instrument panel after removal; the top of the clear plastic face (arrow) was broken by the bullet impact prior to the instrument panel removal. Gunshot residue that accompanied the .45 calibre bullet likely entered the vehicle between the windshield and the dash penetration as well as through the broken clear plastic instrument face. (B) The rear of the instrument panel showing the bullet tract (red dashed line); the short red line perpendicular to the dashed line marks the approximate anterior position of the bullet where it stopped. The area within the rectangle is enlarged in C. (C) Enlargement of B at the area of the bullet strike; GSR sampling was on the small (1.6 × 0.5 cm) plastic platform area (rectangle). (D) Enlargement of the small plastic platform away from where the bullet stopped; the GSR sample A was taken here (10 sampler dabs).

It has been shown GSR particles travel with a bullet long distances [4,5] (bullet drafting) as well as GSR coating a bullet when it leaves the firearm bore [6] have been identified as a source of GSR particles associated with a bullet. Could the GSR

particle morphologies on bullet wipes [7] identify the origin GSR particles (drafted or from the bullet surface) that entering the defendant's vehicle's instrument panel with the .45 calibre bullet?

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