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## Inappropriate Use of .38 Special Ammunition in .30-30 Rifles

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**ABSTRACT:** Modern firearms are designed to fire ammunition of a specific caliber. We report two gunshot fatalities where .38 Special handgun ammunition was used inappropriately in .30-30 Winchester lever-action rifles. In both cases the recovered wad-cutter bullets were abnormally elongated and unusually striated. In one instance, the cartridge case was expanded and split. Ballistic tests using .38 Special ammunition in a .30-30 Winchester rifle created deformed bullets similar to those recovered from the body. The test fired cartridge cases expanded and jammed in the chamber. While the .30-30 rifle chamber configuration accepts .38 Special wad-cutter ammunition, its narrower barrel squeezes larger caliber lead bullets out like toothpaste.

It behooves forensic pathologists to not make hasty determinations of the caliber and weapon type based on a casual inspection of the recovered bullet.

Several weapons will chamber and fire ammunition of a type other than that for which they were designed. Most well known are the .32-caliber revolver that will accept the .32 ACP cartridge and the .38-caliber Enfield revolver that will accept 9-mm. Luger ammunition [1]. In addition, a .380 ACP bullet can be fired from a 9mm Luger gun [2]. We report two instances where ammunition of a larger caliber, designed for a revolver, was fired through a smaller caliber rifle creating fatal wounds. This mismatch caused unusual characteristics to be imparted to both the bullet and the cartridge.

### Case 1

A young woman was shot twice in the head by an assailant using a .30-30 rifle loaded with .38 caliber ammunition. One gunshot wound was of intermediate range with an entrance and exit through the right hand and re-entry through the right upper cheek. The bullet passed into the cranial vault. A lateral radiograph of the head showed an unusually elongated bullet of indeterminate caliber (Fig. 1). A second entrance wound of the right parietal scalp was associated with an elongated, abraded, shored exit wound on the right cheek (Fig. 2).

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A deformed bullet similar to the one recovered from the brain, was found entangled in the decedent's hair.

The recovered 148 grain, unjacketed, lead bullets were uncharacteristically elongated and had prominent, widely spaced land and groove striations. Test firing of the .30-30 Winchester lever action rifle loaded with similar .38 Special ammunition produced bullets similar to those recovered at autopsy (Fig. 3). To be fired, the .38 Special cartridge had to be hand chambered and the cartridge cases manually extracted after firing. The test fired bullets ballistically matched the bullets recovered at autopsy.

## Case 2

A 21-year-old man was found dead with a .30-30 Winchester lever action rifle next to his body. He reportedly suffered chronic migraine headaches and had told friends that he was "tired of life."

A single contact range gunshot wound was present in the posterior oropharynx. An elongated, deeply striated, unjacketed, 134 grain lead bullet was recovered from the left occipital scalp (Fig. 4). Jammed within the rifle chamber was a split .38 Special cartridge case (Fig. 5).

## Materials and Methods

Test firing was conducted using the following ammunition: Winchester .38 Special and Winchester .38 Special + P, 158 grain semi-wad cutter; Winchester .357 magnum, 158 grain semi-wad cutter; Winchester .357 magnum, 110 grain semi-jacketed hollow point; Winchester .357 magnum, 158 grain full jacketed round nose; Remington-Peters .38 Special, 158 grain lead roundnose; Remington-Peters .38 Special + P, 110 grain semi-jacketed hollow point; and Federal .38 Special 158 grain Nyclud bullets. Several rounds of each

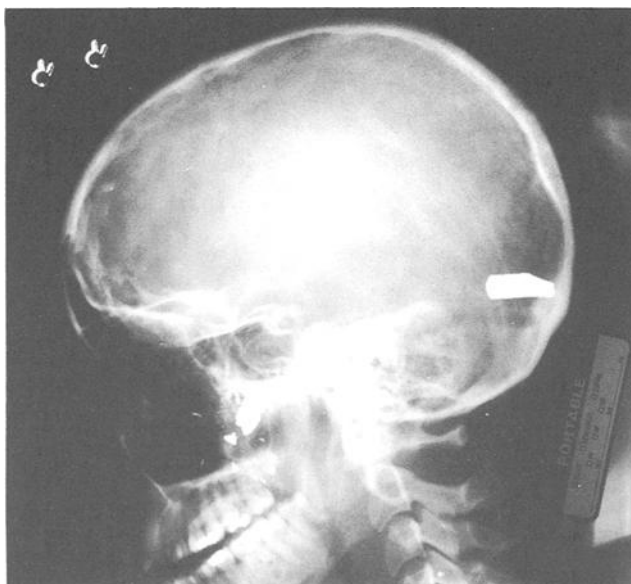


FIG. 1—Lateral radiograph showing an elongated, deformed, bullet within the posterior parietal brain.

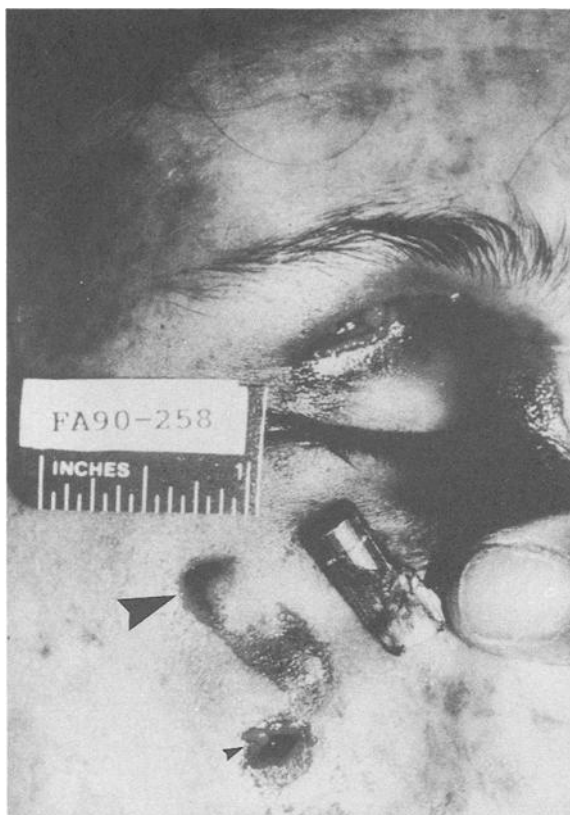


FIG. 2—Right cheek of decedent (Case 1) showing shored exit wound with elongate abrasion and bullet recovered from hair (large arrow). Separate entrance gunshot wound to right cheek in lower portion of photograph (small arrow).

ammunition were remotely fired into a vertical water tank through a Winchester Model 94, .30-30 rifle.

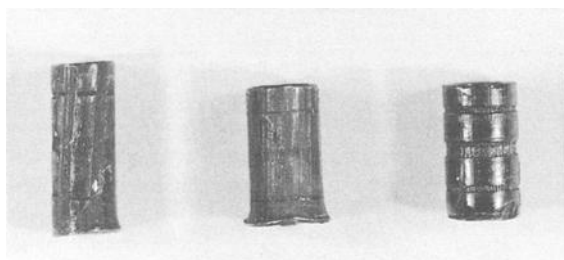


FIG. 3—Comparison of .38 Special wad-cutters, one unfired (right), one properly fired (center), and one fired inappropriately through a .30-30 rifle (left).



FIG. 4—Elongated and deeply striated, unjacketed lead bullet recovered from occipital scalp (Case 2).

### Results and Discussion

The .38 Special wad-cutter cartridge will fit into a .30-30 rifle chamber (Table 1, Fig. 6). However, when fired, the smaller diameter forward portion of the chamber funnels the larger bullet into the narrower diameter rifle barrel. This process elongates and reduces the diameter of the bullets and imparts prominent land and groove striations. The 0.417 inch diameter .30-30 chamber base is slightly larger than the 0.372 inch diameter .38 Special cartridge [3]. This difference can result in the cartridge case expanding, splitting, and jamming in the chamber. However, the dimensions of the cartridge and chamber, as well as the configuration of the rim of the cartridge are sufficiently similar to allow proper primer and firing pin alignment.

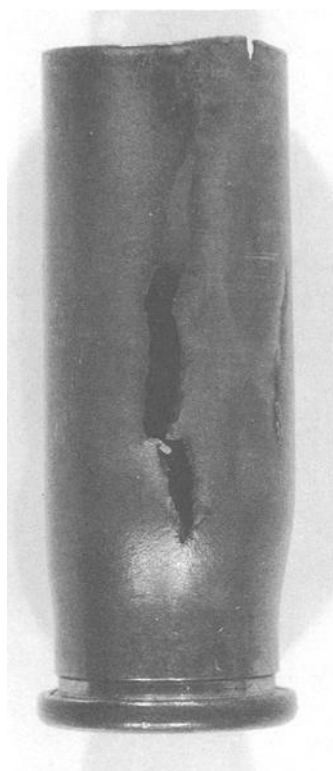


FIG. 5—Split .38 Special cartridge case recovered from .30-30 rifle (Case 2).

A .30-30 Winchester rifle was test fired with .38 Special round nose, semi-wad cutter and Nyclad bullets, .38 Special + P non-jacketed hollow point, and .357 magnum semi-wad cutter bullets. All of these bullets were also elongated after firing. All cartridge cases split and most jammed, requiring manual extraction. The full and partially jacketed .357 magnum rounds test fired passed through the rifle barrel with similar changes imparted to the bullets (Fig. 7). However, the partially jacketed .38 Special, and .38 Special + P rounds entered the rifle barrel but only passed half-way before being wedged in the barrel, requiring

TABLE 1—Comparison of dimensions of .38 Special wad-cutter, .38 Special roundnose, and .30-30 caliber bullets.<sup>3</sup> All measurements in inches (SWC = semi-wad cutter, SRN = smooth round nose, WIN = .30-30 Winchester, 150 grain).

	.38 SWC	.38 SRN	.30-30 WIN
Rim	.434	.434	.505
Head	.372	.372	.417
Shoulder	—	—	.388
Bullet diameter	.357	.357	.302
Length (base to shoulder)			1.425
Length (overall)	1.155	1.544	2.545
Units in inches			

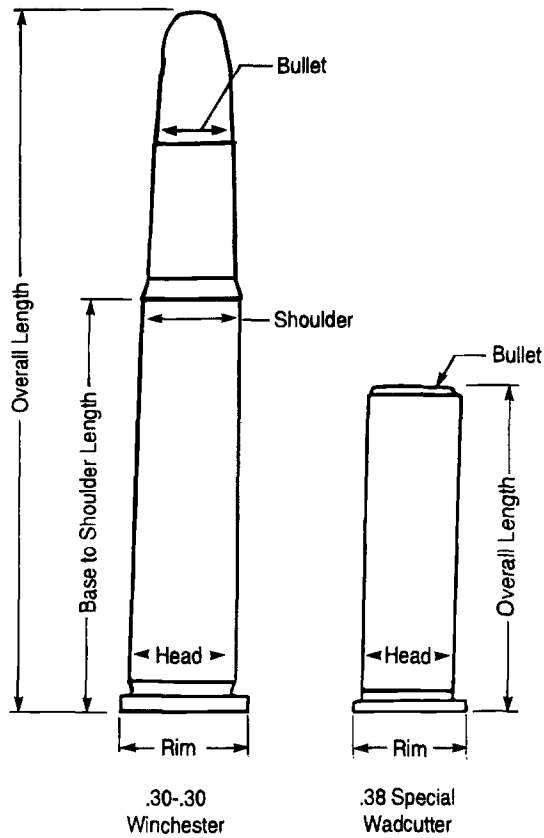


FIG. 6—Outline of a .38 Special wadcutter cartridge and a .30-30 rifle cartridge. Proportionate to scale.



FIG. 7—Comparisons of .357 magnum partially jacketed hollow point bullets, one unfired (center) and two fired through a .30-30 rifle into water tank. One elongated and mushroomed (left), and one elongated (right).

manual extraction. In no instance did the test fired jacketed rounds display any separation between the copper jacket and lead core.

Atypical or unusual ammunition frequently has a characteristic radiographic appearance. These include the Hydra-Shok bullet [4], the Glaser Safety Slug [5], the .25 ACP "expanding" bullet [6], and the tubular "Cookie Cutter" bullet [7]. Similarly, radiographs of wounds created by .38 Special and .357 magnum ammunition fired through a .30 caliber rifle can show uniquely elongated bullets. This feature may only be apparent when the bullet is radiographed in lateral profile as in Case One. Shored exit wounds may also take on an elongated abrasion replicating the unique bullet deformation.

Casual inspection and measurement of the recovered bullets in these cases could result in erroneous determination of the bullet caliber. Forensic pathologists should be aware of the potential for mismatch between guns and ammunition, which may lead to misinterpretation of radiographs, wounds, and of the recovered bullets.

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