

CASE REPORT

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Automobile Cigarette Lighter Burns

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ABSTRACT: Recognition and interpretation of patterned wounds are fundamental in medico-legal work. The construction of automobile cigarette lighters results in a unique burn pattern. A homicide case involving such injury is described. The differences between lighters in various American automobiles are pointed out and categorized.

KEY WORDS: pathology and biology, burns (injuries), automobiles

The forensic pathologist in his search for patterned injuries can differentiate certain types of body burns as having been deliberately inflicted rather than having been sustained accidentally. The identification of such burns as evidence of torture can effectively assist law enforcement investigators in reconstructing events surrounding a homicide.

Burns may be identified as part of a pattern of fatal child abuse. Such burns may result from scalding by hot liquids, forcing a child into contact with hot objects, or using lighted objects such as cigarettes. Similarly, lighted or heated objects may be used in the sadistic killing of adults.

The following is an unusual case involving injuries that could be identified as having been produced by an automobile cigarette lighter.

Case Report

A nude young adult male was found dead several days after having left a party 65 km (40 miles) from where the body was found. Marks on the body, apparently inflicted for the purpose of torture, included an irregular pattern of superficial burns, multiple cuts of the legs, and numerous "coil-shaped" burns suggestive of a cigarette lighter. The death was a homicide and additional details are not pertinent to this paper.

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The question of identifying the origin of the cigarette lighter used in producing these burns led to a search of the literature, which provided no information regarding this type of injury. We proceeded to examine various American automobile cigarette lighters available to the public (Table 1).

Auto cigarette lighters are classified as having either a retractable or a solid shroud. The lighter face consists of three parts: the central coil, a fixed sleeve, and the outer shroud. The coiled heating element is 1.4 cm in diameter in each of the models contained in Table 1. The element is surrounded by a fixed inner sleeve, 1.6 cm in diameter, which projects 1 mm beyond the coil. The outer shroud is 2 cm in diameter and, when retracted, it allows the recessed heating element to move forward (Fig. 1). The distance the shroud can move is, on the average, 6 mm. Moving the shroud would allow coil-shaped burns to be produced. This

TABLE 1—Cigarette lighters in American-made automobiles.

Manufacturer	Retractable	Solid Shroud
American Motors, all lines	X	
Chrysler Corp., all lines	X	
Ford Motor Co., all lines	X	
General Motors		
Buick (large models like Electra)	X	
Buick (smaller models)		X
Cadillac (all models)	X	
Chevrolet (about 50-50 distribution)	X	X
Oldsmobile (all models)		X
Pontiac (all models)		X

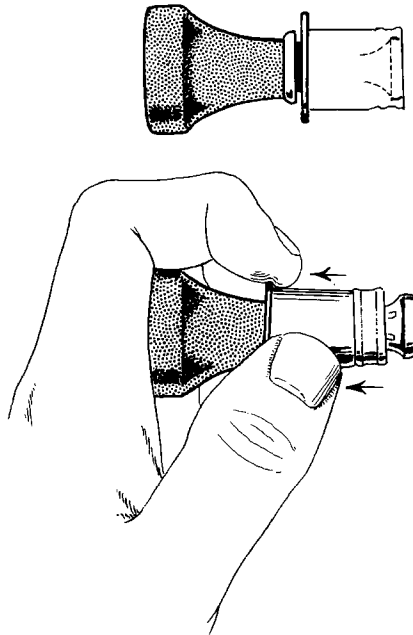


FIG. 1—Retraction of the outer shroud of a cigarette lighter allows the central coil, surrounded by the fixed sleeve, to move forward.

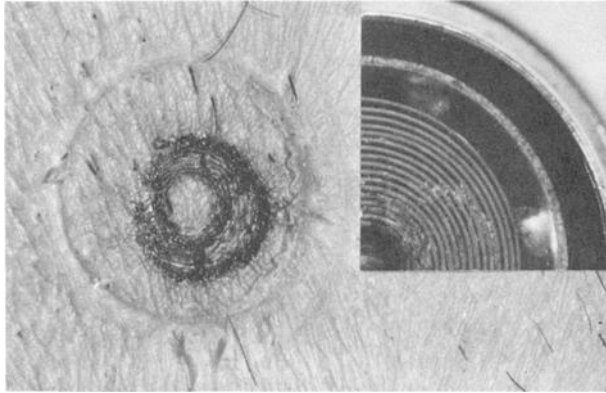


FIG. 2—Cigarette lighter burns produced experimentally with the lighter from a 1976 Buick Century. (Inset) A close-up view of a segment of the heating element of the lighter used.

would not occur if the lighter had a solid shroud. Figure 2 illustrates the pattern of the burn produced experimentally with the lighter from a 1976 Buick Century. The concentric pattern of the burn is analogous to the pattern of the heating element (inset).

Lighters with retractable shrouds are produced by Casco Manufacturing Co., formerly Cueneo Electric, or Wagner Electric. The filaments are interchangeable and replacements can be obtained at many retail outlets. Solid-shroud lighters are manufactured by Rochester Products, a division of General Motors. In some cars in which these are original equipment, it is possible to replace them with the retractable type. Chevrolet uses both types in an approximate 50-50 distribution.

Since the pattern of the heating element is virtually the same in all American auto lighters, it would be impossible to state what make of auto the lighter came from. However, it would be possible to state that a certain burn was produced by a lighter with a retractable shroud, thereby eliminating other suspected items.

Acknowledgments

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Addendum

While this manuscript was being printed, we examined a homicide victim who exhibited multiple circular burns. Please refer to the Letter to the Editor, p. 704 of this issue, for further details.

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