

## CASE REPORT

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### Identification of the Murder Weapon by Intricate Patterned Injury Measurements

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**REFERENCE:** Zugibe, F. T. and Costello, J. T., "Identification of the Murder Weapon by Intricate Patterned Injury Measurements," *Journal of Forensic Sciences*, JFSCA, Vol. 31, No. 2, April 1986, pp. 773-777.

**ABSTRACT:** Critical studies of an intricate blunt force injury pattern in a brutal homicide led to the identification of the murder weapon. A 50-year-old male was bludgeoned to death in his apartment during a robbery allegedly engineered by his daughter. Careful measurements and overlay construction of the wounds relative to the magazine catch, lanyard ring, magazine chamber, and butt of a 32-caliber Eistegui Hermanos fibar (España) automatic pistol led to the conclusion that either the alleged weapon or one identical to it caused the fatal injuries.

**KEYWORDS:** criminalistics, homicide, injuries, impressions

Careful examination of a body frequently reveals the presence of well-known patterned injuries and nontraumatic impressions that prove to be extremely important in the reconstruction of a crime or accident. In addition, the more complex patterns of bite mark injuries studied by forensic odontologists have successfully led to the identification of perpetrators of vicious homicides. It is the purpose of this paper to show how critical studies of an intricate blunt force injury pattern in a brutal murder led to the identification of the murder weapon.

#### Case History

A 51-year-old man and his 47-year-old wife were found murdered in their home by neighbors. The man had been brutally beaten about the head and the woman drowned in the bathtub. The man's entire face was saturated with dried blood and brain tissue extruded through lacerations on his head. An autopsy revealed multiple lacerations and contusions about the face and top and sides of the head, including the occipital area. Small pieces of bone were protruding through a large transverse laceration of the frontal region. Brain tissue extruded from the frontal laceration. A large cephalohematoma extended from the frontal area to the occipital area and included the temporoparietal areas, bilaterally. There were

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comminuted fractures of the entire maxilla, left zygomatic arch, right supraorbital area, frontal bone, and nasal bone. The brain was markedly contused and lacerated over the frontal and parietal regions and the ventricles were filled with blood. The frontal bone and the anterior fossa were fractured in comminuted fashion like an eggshell. Both orbits were severely fractured, and the greater wing of the sphenoid on the right contained several comminuted fractures. The cause of death was determined to be due to multiple head injuries caused by blunt trauma. Several days later, police authorities charged the 23-year-old daughter and her two male companions with the murder. All three people were involved in drugs, together, and purportedly needed money.

### Patterned Injury Investigations

A 32-caliber Eistegui Hermanos fibar (España) automatic pistol (Fig. 1), without a magazine clip, found in the possession of one of the men was submitted to the Medical Examiner's Office to determine if this weapon was capable of causing the head injuries of the deceased man. During our investigations of the gun, it became apparent that the gun possessed certain features that immediately made it suspect in causing specific patterned injuries on the head of the deceased. To test this hypothesis, a series of one-to-one photographs, both of the wounds and of the gun (Figs. 2 and 3), were carefully compared, and a series of careful measurements were made relative to the magazine catch, lanyard ring, magazine chamber, and butt.

One-to-one photographic overlays of the magazine area of the gun were made on transparent acetate film and compared to various components of the lacerations. The laceration below the left eye had a peculiar H shape (Fig. 2 ABC), with the cross piece of the H showing striations (Fig. 2A) that matched the striations on the magazine catch (Fig. 2 MC in the inset). The length (20.0 mm) and width (12.0 mm) of the magazine catch were identical to the length and width of the cross piece (Fig. 2A) and to each vertical arm (Fig. 2B and C) of the H. The width of each arm of the two parallel impressions of the laceration above the left eye (Fig. 2D and F) were identical to the width of the side bars of the magazine chamber (Fig. 2, bar in inset). These each measured 3.5 mm.

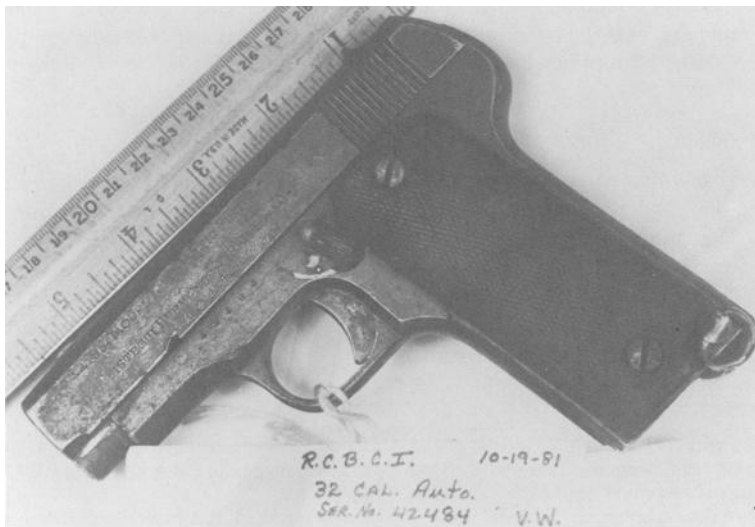


FIG. 1.—The suspect 32-caliber Eistegui Hermanos fibar (España) automatic pistol.



FIG. 2—Blunt trauma wounds of the left face and photo of the magazine end of the gun shown in Fig. 1 (inset). Both photographs are at the same magnification. The wound below the eye reveals an H pattern. The crosspiece of the H pattern (A) is serrated. This matches the serrated pattern of the magazine clip (MC) shown on the inset. The vertical sides of the H pattern, (B) and (C) and the crosspiece (A) all have the same length and width as the magazine clip. The parallel marks (D) and (E) on left forehead wound are the same width as the bars on the magazine chamber (bar). The space in between (F) corresponds to the magazine chamber (C).

The disparity in width between space located inbetween the parallel impressions (Fig. 2F) and the width of the magazine chamber (Fig. 2C in the inset) is readily explained by the angle of impact: one of the side bars of the magazine chamber (Fig. 2, bar of inset) struck the skull before the other bar. In order for this presumption to hold true, the skull would have to show a depressed or comminuted fracture below the impression. The skull was in fact completely fractured into small comminuted fragments under this area with several displaced segments of bone. The laceration above the right eye (Fig. 3, small white arrows) showed an impression corresponding to the lanyard ring (Fig. 3L, inset). The two arc patterns located inferomedial (eyelid) and superomedial (forehead) to this wound (Fig. 3, black and white arrows) correspond to the exact arc dimension of the magazine side of the butt of the gun (Fig. 2, large white arrows in inset). The top and occipital scalp also contained similar arcs.

## Discussion

The conclusion derived from these investigations indicated that either the gun submitted for examination or one identical to it caused the fatal injuries. These findings were presented

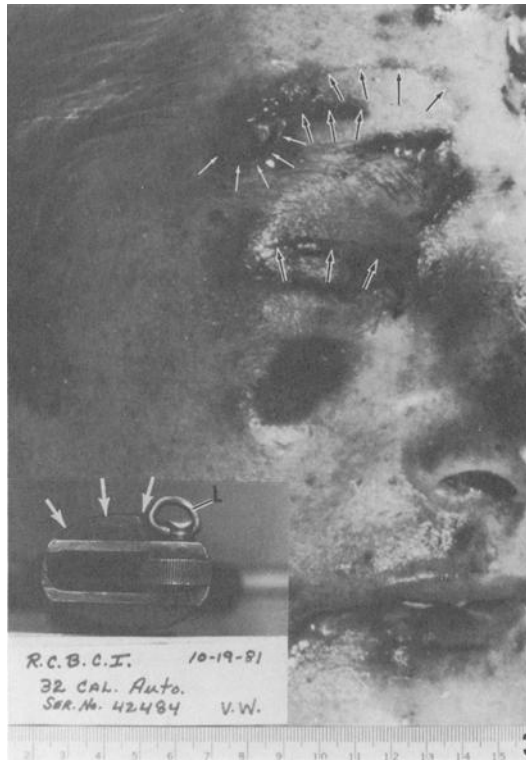


FIG. 3—Blunt trauma wounds of the right face and photo of the magazine end of the gun shown in Fig. 1 (inset). Both photographs are at the same magnification. The laceration above the right eye (small white arrows) corresponds to the lanyard ring (inset L). The two arc patterns designated by the black-and-white arrows correspond to the exact arc dimension of the magazine side of the butt of the gun (inset, large white arrows).

in court and withstood cross examination and rebuttal testimony. The three defendants were all convicted of murder.

In most instances, if patterned injuries readily known to forensic pathologists are not present, or if the wounds appear complex without apparent patterns, the usual opinion rendered is that the injuries were caused by a blunt instrument "per se."

During court testimony, the forensic pathologist may actually list several instruments that in his opinion may have caused the wounds. This case demonstrates that careful examination of all complex blunt force injuries for the presence of patterns, which may not be readily apparent, should always be attempted.

Another successful case in point, where careful investigation definitively identified the instrument of death and aided in the conviction of the killer, involved the brutal beating of a 42-year-old man with a jack column [1]. A cast of the top of the jack column made a perfect fit with a peculiar double-peaked pattern comprising part of the lethal wound.

We are hereby proposing that a routine protocol be initiated requiring that multiple one-to-one photographs be taken at the time of autopsy of all wounds in blunt trauma cases whether a suspected weapon has been found or not. One-to-one photographs of all suspected weapons should also be taken in multiple projection and acetate overlays made. The overlays can then be placed over the wounds shown on the photographs to determine if any unique patterns are present. This procedure is even valuable in nonspecific wounds to determine whether certain suspect weapons are capable of causing such injuries.

**Reference**

- [1] Zugibe, F. T. and Costello, J. T., "Identification of a Murder Weapon by a Peculiar Blunt Force Injury Pattern and Histochemical Analysis," *Journal of Forensic Sciences*, Vol. 30, No. 1, Jan. 1985, pp. 239-242.

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