

## CASE REPORT

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### Finding of a Bullet in the Cervical Column of a Body Hit by a Train

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**REFERENCE:** Navarro, J. A., Cortés, E., Sanz, C. L., and Pellicer, M. A., "Finding of a Bullet in the Cervical Column of a Body Hit by a Train," *Journal of Forensic Sciences*, JFSCA, Vol. 36, No. 2, March 1991, pp. 602-606.

**ABSTRACT:** This case is about the finding of a body of an unidentified male of approximately 70 years of age who was hit by a train. During the carrying out of the corresponding autopsy and after the radiological tests for posterior odontological identification, a foreign body of a cylindrical-cone shape, identical to that of a bullet, was found lodged between the first and second cervical vertebrae. During dissection of the neck, a bullet was found. When the ballistic test was carried out, it was ascertained that the bullet was from a cartridge of 7.92 by 57-mm Mauser caliber, manufactured in Spain in 1936. This ammunition corresponds to that used during the Civil War in Spain (1936-1939). After the identification of the body, it was proved that the bullet was the result of a war wound. However, the victim had been unaware of the existence of the bullet, which had remained in his body for 50 years.

**KEYWORDS:** forensic science, pathology and biology, ballistics, wound ballistics, radiology, forensic pathology, human identification, criminalistics

#### Finding and Removal of the Body

At around 10:30 p.m. on an evening in June 1988, a man fell or threw himself onto a railway line and was hit by a train.

Ninety minutes later, the judicial commission removed the body, which was found some hundred metres from the railway line. After the remains of the body had been gathered up and examined at the scene of the incident, they were taken to the Forensic Institute, in Zaragoza, Spain, where the autopsy was carried out.

Received for publication 7 March 1990; revised manuscript received 5 May 1990; accepted for publication 7 May 1990.

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## Autopsy Findings

The autopsy revealed that the body was that of an unidentified white male of between 60 and 70 years of age. The body suffered the destruction and loss of an important part of its anatomical features. The different anatomical features are described below:

*Skull*—The following osseous features were lost from the skull: the parietals, occipital area, and right temporal area. There was also an important loss of encephalic mass.

*Trunk*—The upper part of the trunk, joined to the cranial remains previously described, reached the inframammary region. Inside, there were remains of the lungs and of the heart, which were partially crushed.

The abdominal viscera were separated from the body; some remains of viscera were found around the pelvis area and the lower extremities, which are described below.

*Upper Extremities*—The right arm was almost severed from the thorax and was held in place by cutaneous strands attached to the part of the skull and trunk described previously. Only three fingers remained on the right hand: the thumb, the forefinger, and the middle finger.

The left arm was severed at the elbow. The forearm and left hand were completely severed from the body.

*Lower Extremities*—The lower extremities were found joined to the pelvis and other pelvic abdominal remains. The length of the lower left extremity, from the iliac spine to the heel, was 90 cm.

The lower left extremity had an open fracture of the tibia and fibula.

The lower right extremity was severed between halfway and one third of the way up the tibia and the fibula.

## Complementary Tests

### *Radiological Test*

Since the body was unidentified, cranial radiography was carried out for odontological identification (Fig. 1). On the radiographical plate, a foreign body opaque to X-rays was observed. It was 35 mm long, had a diameter of 8.10 mm, was shaped like a bullet, and was subsequently located in the jawbone. Another lateral radiograph was made, which showed the same image, located between the first and second cervical vertebrae, with an upward, forward, and outward trajectory (Fig. 2).

Anatomical dissection on the region was carried out. The projectile was located in the vertebral space between the first and second cervical vertebrae but did not affect the spinal medulla. As soon as the bullet was extracted, it was sent to the ballistics laboratory for tests.

### *Ballistic Test*

As soon as the autopsy and the radiological tests were completed, the extracted bullet was handed over to the police ballistics laboratory (Fig. 3).

Tests revealed that it was an aerodynamic projectile which was jacketed and grooved. It weighed 10.50 g, measured 35 mm, and had a diameter of 8.10 mm. Four markings were produced in a gun barrel, with four grooves spiraling to the right; each groove was approximately 2 mm wide.

According to its dimensions, weight, and form, the bullet belonged to a 7.92 by 57-mm cartridge, Type "S" (Spitzer, sharp-pointed), also known as an "8-mm Mauser," manufactured in Spain in 1936. The dimensions of this type of projectile were 35-mm in



FIG. 1—*Frontal view of the skull with the bullet.*



FIG. 2—*Lateral view of the skull with the bullet.*



FIG. 3—*The bullet extracted and cleaned.*

length with a maximum diameter of 8.20 mm. It weighed 12.70 g, and had a firing speed of 740 m/s [1].

According to the number, direction of swing, size of the grooves, and diameter of the bullet, it must have been fired by a Mauser Gewehr 98 gun, or a reproduction of it [2].

### Discussion

While these tests were being carried out, the body was identified using conventional techniques. The family of the identified man related that approximately two years previously, during a routine checkup at work, an X-ray of the skull and cervical region had revealed the presence of a foreign body.

This foreign body was identified by the victim as a result of a wound he had suffered in the neck during the Spanish Civil War. The wound had been subsequently treated and stitched up, but no diagnosis had been made of a firearm wound.

The fact that the wound occurred during the Spanish Civil War meant that the cartridge the projectile belonged to could not have been fired by a gun manufactured in Spain, since the Mauser Español gun (Mosquetón), was manufactured with chambers specifically designed for 7 by 57-mm cartridges. The 1941 model, more commonly known as the "Mosquetón Coruña," designed for the 7.92 cartridge, was not manufactured until 1941 [3].

During the Spanish conflict, the Mauser guns used were the previously mentioned Gewehr 98 model, manufactured in Germany, or the 24 model, manufactured in Czechoslovakia by Zbrojovka Brno; these models appeared in Spain in 1936 as an international aid to the Republican Government.

The 7.92 by 57-mm, or 8-mm Mauser, is a cartridge that was made in Germany in 1888 and being manufactured at present by the majority of ammunition makers. It has excellent ballistic properties, which no other present-day cartridge can improve upon. It was used as a regulation firearm in Germany and in several other countries in the two world wars.

Given its high velocity (740 m/s) and its energy (approximately 400 kg at the gun muzzle), it is a cartridge which can be lethal at a distance of up to 2 km. Thus, in order for it to have remained lodged in the cervical vertebrae, the distance from which it was fired must have been greater than 2 km.

This case illustrates, once again, the importance of radiological tests in general and particularly of other complementary tests carried out during an autopsy.

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