

## CASE REPORT

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# Bizarre Impalement Fatalities—Where is the Implement?

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**ABSTRACT:** Two fatalities due to unusual impalement injuries are reported. (1) A large branch broken off during a storm had entered a passing car and perforated the chest of the driver and the back of the seat. The chest organs were grossly lacerated. The car was subsequently stopped by another tree and this second impact removed the wood from the body. (2) A man suffered anorectal impalement by the leg of a stool turned upside down. He had introduced one stool leg into his anus for sexual stimulation and fell onto it. This resulted in a wound channel 36 cm long including perforation of the rectum, urinary bladder, mesentery, transverse mesocolon and liver. Before autopsy, the mode of death was unclear because the man had removed the stool leg himself, his wife had hidden the stool from the scene, and there were no relevant external injuries. In both cases, a reliable reconstruction required investigation of the scene and consideration of extremely unlikely circumstances or of bizarre human activities.

**KEYWORDS:** forensic science, pathology, autopsy, impalement injury, car accident, anorectal injury

Extraordinary injuries or circumstances (1–3) can represent a challenge for the forensic investigation. Impalement by a rigid and blunt-shaped object is an uncommon type of injury. Clinical reports concentrate on “straddle” injuries in children from falls during play and on injuries to the oral cavity in infants (4–7). Reports of fatalities are very rare. A few cases of fatal anorectal injuries from sexual abuse of children (8) and from “fisting” or “handballing,” i.e., sexual penetration of the vagina or anus with a hand or fist (8,9) have been published. Falls of adults from a height onto posts, poles, or pipes (10–13) and impalement by stationary posts associated with traffic accidents (14–16) also occur infrequently. In addition, exceptional impaling objects such as a needlefish (17) or a golf club shaft (18) have been described. This is a report of two bizarre impalement injuries where the unusual objects had been removed from the wound prior to investigation.

### Case 1

After a heavy storm, a car (Skoda Felicia GLX 1.6) was found in the roadside ditch of a small country road. The 24-year-old driver

was sitting dead in his seat with a large laceration of the chest measuring 13 by 6 cm (Fig. 1). The skin of the chest showed large contusions and an additional perforation (Fig. 1). Several ribs and the sternum were fractured, and bone fragments were bent in an anterior to posterior direction. The chest wall showed a gaping 30 by 5 cm severance of the 3rd intercostal space including a fracture of the 3rd thoracic vertebra. A wide and irregular wound channel with numerous pieces of bark and wooden chips took a slightly descending course to the left and a 10 by 6 cm exit wound was located at the left side of the back (Fig. 2). The back of the seat had a corresponding 12 cm wide perforation defect covered with blood. The inferior lobe of the left lung, the heart, and the thoracic aorta showed gross lacerations; two large pieces of the heart were found in the right pleural cavity. The inferior lobe of the right lung, the liver, spleen, right kidney, and oesophagus were ruptured and glass fragment injuries were present at the face, neck, and hands. Signs of anemia were obvious; BAC was 0.0 g/L.

The shattered windscreens had originally been lying in front of the car and showed a large defect when “unfolded.” A fragment of a branch 50 cm long was found inside the car and a 210 cm fragment (Fig. 3b) was “enfolded” in the windscreens. The diameter of both bloody fragments was between 8 and 13 cm.

A reconstruction at the scene demonstrated that two impacts had occurred: 15 m behind the final position of the car, an old poplar tree showed a fresh damage where a branch 13 cm in diameter had broken off. A large fragment had penetrated the front window and perforated the chest and the back of the seat. The driver had immediately lost control over the car, came off to the right side, and was stopped by an oak tree. Due to the abrupt deceleration, this second impact hurled most of the wood and the shattered windscreens to the ground in front of the car while the driver remained fastened by the seat belt.

### Case 2

A 49-year-old prison officer was found dead in the cellar of his house by his wife. When the police arrived, he was lying on the floor completely dressed except for the pants. Bloodstains were present on the floor and a wall. External examination revealed only a trivial contusion of the occiput and a striped contusion at the left buttock (Fig. 4). At autopsy, however, a perforation of the anterior rectum was found. A contused wound channel 36 cm long subsequently traversed the urinary bladder (Fig. 5), peritoneum, mesentery, transverse mesocolon, bursa omentalis, and liver and ended just below the diaphragm. The serous membranes mostly showed

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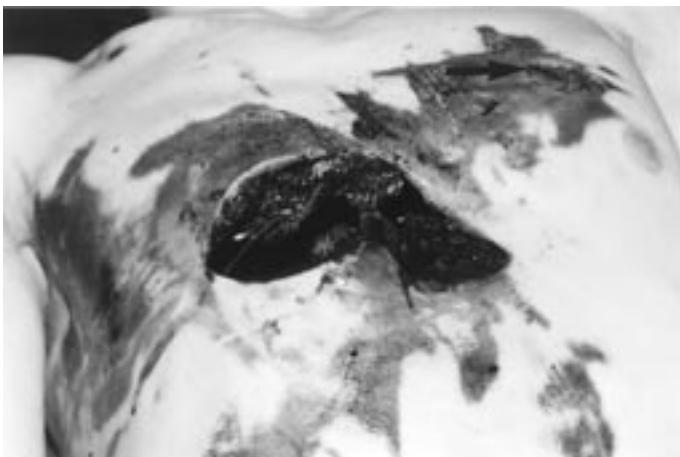


FIG. 1—The chest of the driver in Case 1. In addition to the 13 by 6 cm entrance defect, large contusions and a smaller perforation of the skin above the left nipple (arrow) are present. This indicates a nonperpendicular impact of the branch.

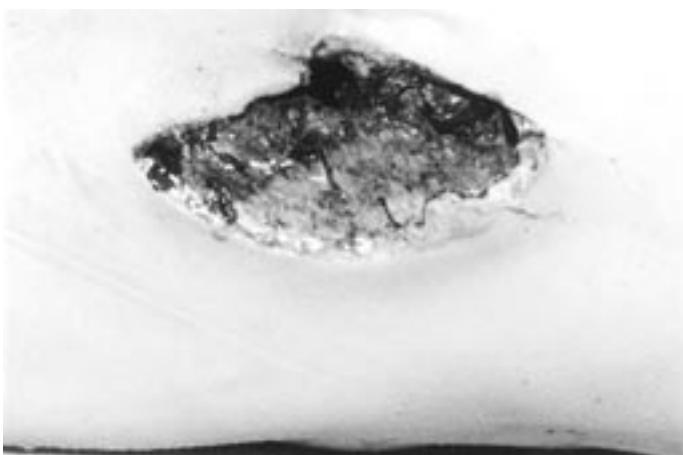


FIG. 2—The 10 by 6 cm exit wound at the left side of the back in Case 1.

slit-like defects, while the wound tract in the soft tissues and liver was irregular and showed hemorrhage. A hemoperitoneum (2100 mL) and severe signs of anemia were present; blood alcohol level was 1.52 g/L.

Anorectal impalement injury was diagnosed and attention directed to objects with a long and rather thin shape. The wife then admitted that she had hidden a stool from the scene before she had notified the police because she was embarrassed by the activities of her husband, which she called "a bad habit." The metal legs of the stool were 2.8 cm in diameter and 44 cm in length (Fig. 3a). One leg showed abundant bloodstains including flow patterns directed from the lower part to the seat, and the underside of the seat was also bloody. Attaching hairs, fecal material, and a few epithelial cells were found in addition. DNA analysis demonstrated that the blood and hairs came from the victim.

The reconstruction showed that the man had introduced the stool leg into his anus for sexual stimulation when he had lost balance and fell onto the stool leg. The wife later stated that she had found him dead at a distance of several meters from the stool. This distance and the presence of blood stains at the floor and wall indicated that the victim had pulled the stool leg out of his body himself and that he was able to move after the incident.

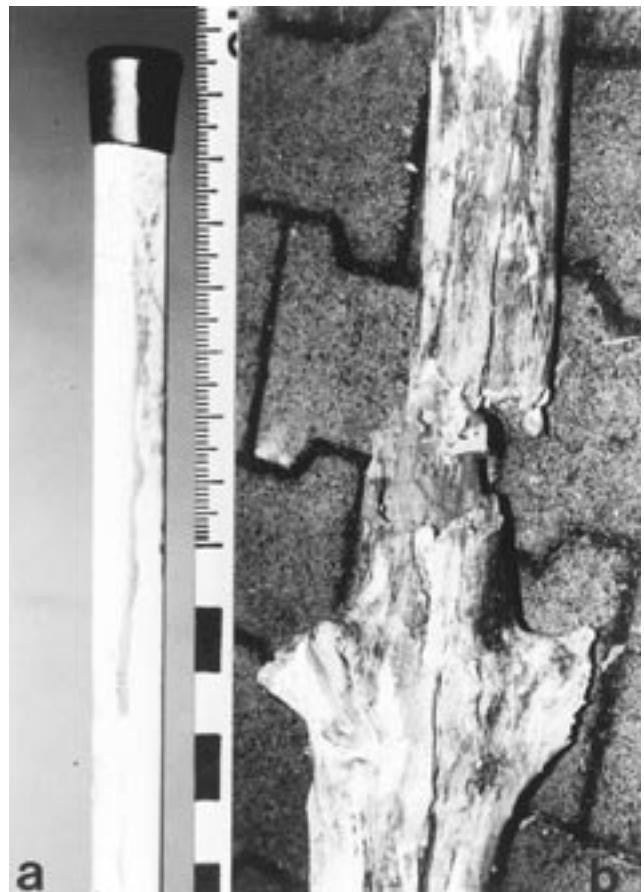


FIG. 3—The impaling objects: (a) Case 1. The lower region of the stool leg turned upside down with a plastic cap and blood flow patterns. The distance between 2 marks on the scale represents 2 mm. (b) Case 2. Reconstruction of the breaking point of the branch. Below: the 210 cm fragment (diameter up to 13 cm) from outside the car. Above: the 50 cm fragment (diameter up to 8 cm) located inside the car. Abundant blood deposits do not contrast with the wood.



FIG. 4—The left buttock and the anal cleft (to the right) of the man in Case 2. This streaky contusion 11 cm in length was the only external injury associated with the traumatic cause of death.

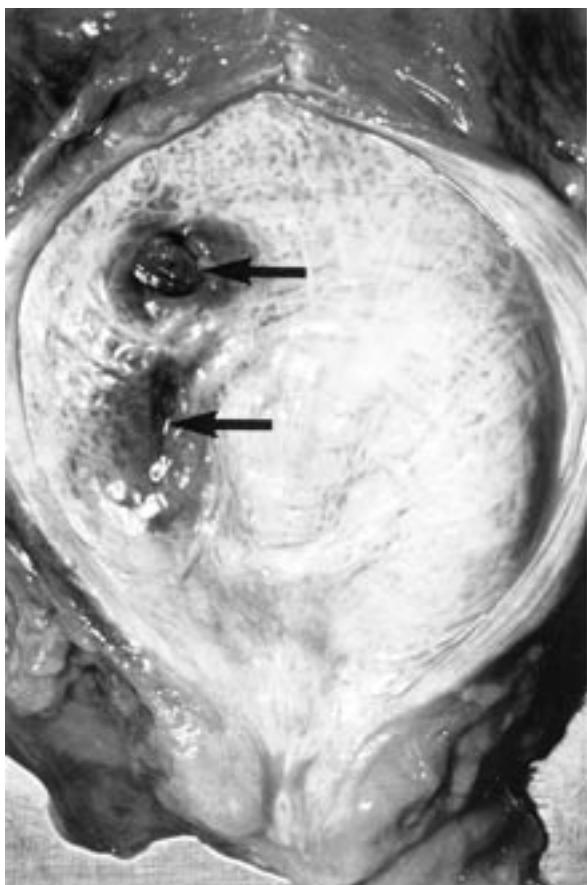


FIG. 5—The posterior wall of the urinary bladder (Case 2) shows two defects (arrows) located in line. The 2 cm wide perforations are surrounded by bleedings. The neck of the bladder is to the bottom.

## Discussion

Case 1 can be compared to a modern combination of the famous cases of Ödön von Horvath and Phineas Gage. The former, an Austrian pre-WWII writer ("Glaube, Liebe, Hoffnung"), was killed by a branch falling down while he strolled along Champs Elysee in Paris. The latter, a railroad worker 150 years ago, suffered a perforating craniocerebral impalement injury from a heavy metal rod accelerated by a premature industrial detonation and survived for 12 years despite the limited surgical possibilities at that time (19). The modern aspect of Case 1 is the source of the velocity, which was provided mainly by the car of the victim.

Deliberate anal (self)penetration with lengthy objects for sexual stimulation can result in impalement if a mishap occurs but the reaction of the person (or a partner) to the pain commonly prevents this. Rectal injuries from anal intercourse therefore occur infrequently (20) but the uncommon object in Case 2 was driven into the body so forcefully that a wound channel 36 cm in length resulted. The source of this force was gravitation acting on a 96 kg body, which cannot be stopped by instinctive reaction.

Impalement injuries can be bizarre due to unusual impaling objects or due to extraordinary wounding mechanisms. A reliable reconstruction commonly requires a detailed investigation of the scene. This is especially true if the impaling object has been removed by the events or another person. In Case 2, the manipulation of the scene together with the hidden location of the injury in a body orifice made it difficult even to diagnose the traumatic cause of death at the scene. Possible methods to confirm the wounding

agent are the recovery or demonstration of foreign material from the wound and the recovery of biological or other evidence from objects in the vicinity of the victim. In Case 1, foreign material was present in the wound and the branches showed abundant blood deposits. In Case 2, various biological materials were present at the stool leg. In addition, the demonstration of tiny particles of paint in the wound by direct X-ray magnification may have been possible (21). A reliable reconstruction is also necessary to exclude the involvement of another person because homicidal impalement injuries have been published (22,23). Finally, the forensic investigation of extraordinary impalement incidents benefits from consideration of the possibility of unlucky and highly unlikely circumstances (Case 1) and keeping an open mind regarding the type of activities of which human beings are capable (Case 2).

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