



D3 Railway Fatalities: The Importance of the Autopsy for the Reconstruction of Railway Accidents

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Learning Overview: After attending this presentation, attendees will better understand the possibility of reconstructing the dynamics of a railway accident through a multidisciplinary approach.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by explaining the multidisciplinary approach of reconstructing a railway accident, in particular by observing and studying, during the external examination of the cadaver, the specific physical imprint abrasions, by inspecting the railway vehicle and the areas surrounding the railway track and, in some cases, through autopsy, which can reveal multiple lesions and injuries not found only by external examination of the cadaver. This presentation, showing two unusual railway accidents, will also impact the forensic science community by enhancing knowledge of the reconstruction of a train accident (rail accident or train crash).

The train accidents involved heavy vehicles with metal wheels and prescribed tracks on rails (trains, subway, or underground, tram, etc.), which cause serious and complicated injuries achieved during the phases of impact from knocking down and sometimes running over a person, almost always having fatal detrimental effects.

Method: Two railway accident cases are presented here. The first deals with a 30-year-old man, found in a prone position, along the ballast of the inter-track section of the Bari-Lecce railway route. During the cadaverous external examination of the victim, a circular ecchymotic-excoriate with a diameter of 13.5cm was observed in the left posterior dorsal region that corresponded in morphology and dimensions to the right buffer of the railway locomotive, previously examined during the inspection. The injury was characterized by a large laceration caused by the skin being stretched as a result of the full-scale impact. That was sufficient to establish that the victim, at the moment of the adverse event, had his back toward the locomotive.

The second case deals with a 39-year-old man, found in a supine position along the ballast adjacent to the railway track of the Bari-Lecce route who, while fleeing from a robbery, jumped over a protective wall of the Ferrovie dello Stato Italiano (Railroad of the Italian State), and fatally collided with a railway convoy, causing injuries that at the first external examination appeared to be caused solely by falling from the top of the wall. Later, however, the autopsy showed very serious injuries to the head, characterized by a wide fracture and complete detachment of the brain from the brain stem, the ribs, including several rib fractures, and lesions of the left lung, the abdominal, with right hepatic and renal laceration, and the limbs, including a fracture of the head of the left humerus and multi-fragmentary fracture of the left femur. This injury could be caused by a violent impact against protruding parts of the convoy and by the body being thrown toward fixed surrounding structures as can be seen from the frontal part of the cranium where the presence of an ecchymotic and excoriate rectangular lesion of 10 x 16cm with a series of imprint abrasions close together inside it was identified, with thin even dots like a “barcode,” all attributable to the morphology and size of a bump against the stem of an old track located on the ballast where the body of the victim was found.

For a reconstruction of the dynamics, a careful external examination of the cadaver and an inspection of the railways were insufficient in the first case; in the second case, it was necessary to consider the autopsy assessment.

This study revealed the significant impact of the multiple injuries related to the rail accidents. The goal of this presentation is to show that linking together the inspection of the railway vehicle, the surrounding areas, the external examination of the cadaver, the observation of typical imprint abrasions to the body, and the autopsy is extremely important for reconstructing the dynamics of the train accident.

Rail Accidents, Physical Imprint Abrasions, Train Collision