

## D36 The 1921 Death of Nino Martoglio, Pirandello's Mentor: A Cold Case and Literature Review

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**Learning Overview:** The objective of this presentation is to establish the cause of death of a man who lived 100 years ago through a multidisciplinary approach of forensic pathologists, anthropologists, and software engineers.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by showing the importance of an analytical and scientific method that can change the cause of death even in a case from 100 years ago. Anthropological investigations, forensic radiology, and engineering informatic study could reconstruct the bone lesions and the possible kinematics of the fall.

Forensic pathologists who deal with blunt force injuries to the head are often asked to determine whether the trauma is related to a fall or induced by blows. This is a challenge for forensic pathologists that have to discriminate falls and blows in blunt head trauma. A recent and 1800s literature review was performed. Guyomarc'h, Pierre et al. demonstrated that in the discrimination of falls versus blows, the Hat Brim Line (HBL) rule is one of the most useful single criteria.<sup>1</sup> According to this rule, an injury located at the level where the brim of a hat would lie is more likely the result of a fall, while a blow would generally produce a wound above this line. According to Petaros et al., falls from lower heights (<3.5m) are characterized by occipital, temporal, and parietal fractures and produce lesions like scalp lacerations and linear or radial fractures of the skull.<sup>2</sup> In the height group (4–10m and 10.5–30m), there is a more generalized distribution with fractures localized in the upper/middle body, lower body, and throughout the whole body. Unlike falls, blunt trauma often causes injury above the HBL and depressed fractures (type IV according to Guyomarc'h, Pierre et al.) that reproduce the shape of the used object.<sup>1</sup> Lacerations at the injured site and defensive lesions at the level of the hands are present as well. A review of 3D models for simulating head impact biomechanics was performed, too. O'Riordain, K. et al. thought MADYMO software (Mathematical Dynamic Models-TNO, 1999) established that fall from the lower height of <3m caused a right frontal linear skull fracture, right frontal extradural hematoma, left posterior temporal basal contusion.<sup>3</sup>

**Case Report:** The case reported happened nearly 100 years ago. Antonino Martoglio is a Sicilian historical figure, a famous poet, writer, one of the first film directors, and Pirandello's mentor who died in mysterious circumstances. The morning of September 16, 1921, the cadaver of the well-known Sicilian poet was found in the lift shaft of the hospital. The night before, he left the room where his son was hospitalized, and went to an isolated under-construction area of the same building. The lift shaft was 3.35 meters high and measured 1.80x1.30 meters. With the approval of the prosecutor's officer, an engineer inspected the building and an external examination was conducted by the local medical examiner. The medical examiner reported an extended medial-frontal bruise with an irregular lacerated-contusion wound and a depressed fracture of the frontal bone. The medical examiner established that the death was due to a violent frontal trauma resulting from a fall from a low height (<3.5m); for this reason, he established it was not necessary to proceed with an autopsy. An 1800s literature review about falls from different heights and related lesions support the hypothesis that those injuries reported can exclude a 3.35m precipitation of a corpse and an autopsy.<sup>4</sup> Moreover, depressed fractures were described exclusively in blunt traumas. The data that emerged from the review were sent to computer scientists who performed an engineering informatic study. Through computer software, informatic engineers evaluated all the possible injuries involved by a fall of 3.35m and established that the most affected region was the head. The 3D computer simulation will be presented.

### Reference(s):

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2. Petaros, A., Slaus, M., Coklo, M., Sosa, I., Cengija, M., and Bosnar, A. (2013). Retrospective analysis of free-fall fractures with regard to height and cause of fall. *Forensic Science International*, 226(1-3), 290-295.
3. O'Riordain, K., Thomas, P.M., Philips, J.P. and Gilchrist, M.D., Modelling and accident reconstruction of real world head injury accidents resulting from falls using multibody dynamics, *Journal of Clinical Biomechanics*, 18, 2003, 590–600.
4. *Lezioni di Medicina Legale - Francesco Puccinotti - Seconda Edizione Napoletana - 1858.*

### Fall From a Height-Blunt Trauma, Engineering Informatic Study, Literature Review