



### H104 Forensic Imaging in Two Cases of Survived Car Surfing in Zurich, Switzerland

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**Learning Overview:** The goal of this presentation is to demonstrate the use of clinical Computed Tomography (CT) in forensic reconstruction of car surfing and in the differentiation of the presented injuries in the overall context containing different possibilities for injury causation.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by enabling attendees to appreciate the power of dedicated forensically reconstructed CT images based on clinical CT images in conjunction of conventional photographic documentation in the specific context of car surfing.

**Proposition:** That clinical CT is highly relevant in the forensic reconstruction of survived car surfing victims.

**Introduction:** Car surfing describes the ride that a person experiences or performs when holding onto the outside of a passenger car, which is not legally approved on public roads. The discrimination of injuries as consequence of car surfing appear to be of particular legal, and therefore forensic relevance, not only because of injury severity but also the risk that has to be considered and assessed. With the insight and experience of the Virtopsy project, which now overlooks a time span of 25 years with forensic Postmortem Computed Tomography (PMCT), applying that knowledge based on forensic postmortem imaging to clinical cases is an increasing focus in forensic medicine.

**Cases:** This case series contains two cases of car surfing that were investigated by this study. In both cases, forensic physicians from the Zurich Institute of Forensic Medicine performed a physical examination of the victim with a forensic scientist. The examination was supplemented with a retrospectively added forensic assessment of high-resolution CT images that had been acquired in the respective emergency departments where the victims had been admitted.

**Results:** The two unrelated cases both featured male car surfers in their early thirties, found riding on the hood of a car. Both car rides appeared to have been escalations of a preceding verbal and physical argument. In the first case, forensic examination was performed approximately six hours after the event. The driver of the car was an enraged taxi driver, and the car surfing ride was alleged to have reached up to 125kmph (77mph). In the second case, forensic examination took place 13 hours after the event. There, the driver was an allegedly petrified escort girl, in which the driving speed was not known but the glass of the windshield had sustained fractures. In both cases, the individuals were severely injured after they had fallen off the hood. They had to be brought to the local hospital emergency departments. In the first case, with the head, torso, and extremities injured, the most severe trauma was to the feet, with a very significantly abraded left great toe. Two lacerations on the head had to be surgically treated with stitches. The second case featured several fractures to the skull, and the clinical course was primarily defined by the severe blunt head trauma. There also were abrasions to the upper extremities typical for finger nails. Forensic questions into both cases contained differentiation between injuries sustained from a physical fight, from those sustained while car surfing, from those sustained as consequence of falling from the car.

**Conclusions:** In both cases, CT imaging was relevant from a forensic point of view for event reconstruction. The victim in the first case sustained a relatively serious toe injury and two lacerations of the head that required surgical repair. In particular, the second case benefited both from extensive visualization of the skull fracture patterns that were interpreted and with comparison against the forensic photographs of the car. In this presentation, both cases will be presented with extensive images of both CT and ancillary photography.

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#### Virtopsy, Car Surfing, Forensic Imaging