

CASE REPORT

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Fatal Fall of an Aircraft Stowaway: A Demonstration of the Importance of Death Scene Investigation

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ABSTRACT: Scene investigation is of paramount importance in forensic pathology. Many medical and coroner systems wisely and routinely evaluate the scene in homicides but do not routinely investigate traffic fatality scenes. This case originally was thought to be a pedestrian-automobile event, but, due to proper and prompt scene investigation, it was determined that the decedent was actually a wheel-well stowaway who fell from a commercial aircraft.

KEYWORDS: forensic science, stowaway, aircraft, scene investigation, falls

The Dade County Medical Examiner's office on-duty medical examiner was called to a scene of what was initially thought to be a pedestrian/motor vehicle incident on a weekday morning. They requested a prompt response in order to achieve a rapid cleanup of the scene since the incident had occurred in a residential neighborhood. A resident of the neighborhood had heard a loud bang about 6–6:30 a.m. The body was discovered sometime later and the police were notified. The medical examiner was at the scene examining the body approximately 2½ hours after the noise was heard.

Scene Investigation

Prior to the arrival of the medical examiner, steps were taken to conceal the body from nearby onlookers and the media by covering it with a sheet. The decedent lay under the sheet on a cement driveway on the north side of an asphalt west to eastbound residential street. Just to the east of the decedent's location, the street made a 90-deg turn to the right. Two automobiles were parked in the driveway in which the decedent lay. Just to the west of the body was a compact car facing west on the right side of the street (see Fig. 1). The automobiles were not involved in the incident. On the north side of the street, approximately 10 ft (3 m) to the east and south of the body, was a collection of blood and tissue, in essence, an unmistakable point of impact (see Fig. 2). Between this point of impact and the body were minimal tissue traces.

From the position of the body and the point of impact, it was initially thought that the decedent had been hit by a car as it traveled west on the residential street just after completing the previously described 90-deg turn (see Fig. 3). The traffic scenario appeared to be validated by the initial reports of tire marks on the body but it quickly became apparent from the scene and the body that this was not a typical motor vehicle/pedestrian incident.

A skull fragment was found on a front porch of a house located approximately 70 ft (21 m) from the body. Brain matter was found 6 ft (1.8 m) off the ground in a palm tree across the street from the body (40 ft (12 m) away). Other pieces of brain matter were found 60 ft (18 m) down the street (clearly coming from the impact site) and on a nearby mailbox (3 ft (0.9 m) off the ground). A piece of muscle with attached tendon was found on the driver's side mirror of one of the adjacent driveway automobiles and a piece of dura mater was found in the back of another nearby automobile (a pickup truck). Minute fragments of brain matter were found on nearby vegetation. These bone and tissue fragments were dispersed in all directions originating at the point of impact (see Fig. 4).

Inspection of the body found that the black marks originally thought to be tire marks were actually grease. The body was clad only in jeans and had cool skin yet warm internal organs (direct palpation of the internal organs was possible due to massive injuries). A single tennis shoe was at the scene near the body, but the other shoe was not located. No wallet or identification was on the body. The pockets contained an unopened condom and a torn picture depicting the bottom half of a person.

The body was extensively damaged with multiple fractures, partial evisceration, and an open cranium with absent brain. Brain matter and skull fragments were found at the point of impact 10 ft (3 m) from the body with minimal blood/tissue traces between this point of impact and the body. No bloody tire tracks were on the street.

Autopsy

The body was that of a normally developed white male in his late 20's to early 30's which had massive injuries including multiple fractures (spine, extremities, ribs, clavicles, pelvis, and skull). The skin showed minimal abrasions, with the typical abrasions and tire marks of a pedestrian/motor vehicle incident conspicuously absent (1). Acute striae were on the inguinal areas, anterior left arm, and mid-thighs. An 8 × 2 cm laceration was on the right shoulder ex-

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FIG. 1—Scene of the incident with point of impact and body under sheet.

tending into the right axilla. Pulpified liver tissue was present within the defect. The scalp was open and the brain absent. The internal organs were extensively lacerated and/or pulpified. Toxicology was negative.

Identification of the decedent was never achieved. Several tattoos were on the decedent, including a badge/shield-like tattoo with the word "Racing" which likely represents an Argentinian football team from the city of Avellaneda (Club Atletico Racing of Avellaneda). A similarly named football team is located in Uruguay. The torn picture in the decedent's pocket was consistent with an individual wearing a football (soccer) uniform. The condom in the decedent's pocket was from the Dominican Republic.

Discussion

The massive injuries of the body could have been sustained in a high-speed motor vehicle/pedestrian incident or possibly a low-speed rollover by a large motor vehicle such as a truck. It appeared highly unlikely that any vehicle with the necessary speed to inflict such massive injuries could have navigated the corner. Also, the decedent's position from the point of impact was only 10 ft (3 m), which is inconsistent with a high-speed motor vehicle impact. Coupling this with the lack of tire marks, skid marks, tire tracks, and motor vehicle debris made the pedestrian/motor vehicle scenario highly unlikely. The lack of tire marks on the body or bloody tire



FIG. 2—Point of impact with nearby body.

tracks at the scene made the possibility of a low-speed large vehicle incident unlikely (1,2).

It was noted that the scene was located in the flight path of nearby Miami International Airport. Indeed, while the scene investigation was still ongoing, several commercial jets flew overhead with landing gear lowered or lowering. Noting the complete lack of tall buildings in the area, it was theorized that the decedent could have fallen from an aircraft, and he could possibly have been a wheel-well stowaway. According to air traffic control at Miami International Airport, commercial jets lower their landing gear at an altitude of 1500 ft (457 m) at about 170 knots. This altitude would be sufficient for the body to achieve terminal velocity (3). The landing gear is usually lowered 6 to 7 miles (9.5 to 11 km) from the

airport. This is consistent with the location of the scene in relation to the airport.

The massive head injuries coupled with the thoracic, pelvic, and massive visceral injuries are more consistent with a fall from a height of greater than 100 ft (18 m) (4,5). Indeed, the injuries are similar to those described in fatal parachute accidents (6). The impact is indeed consistent with an impact at terminal velocity (approximately 60 m/s (197 ft/s) for a falling human body) (3). A fall from a great height also accounts for the multidirectional aspect of the brain and tissue cast off from the decedent at the time of impact. The great distances these tissue fragments traveled attest to the energy of the impact. The impact site showed several gouge marks in the asphalt street. The gouge marks were surrounded by blood, but

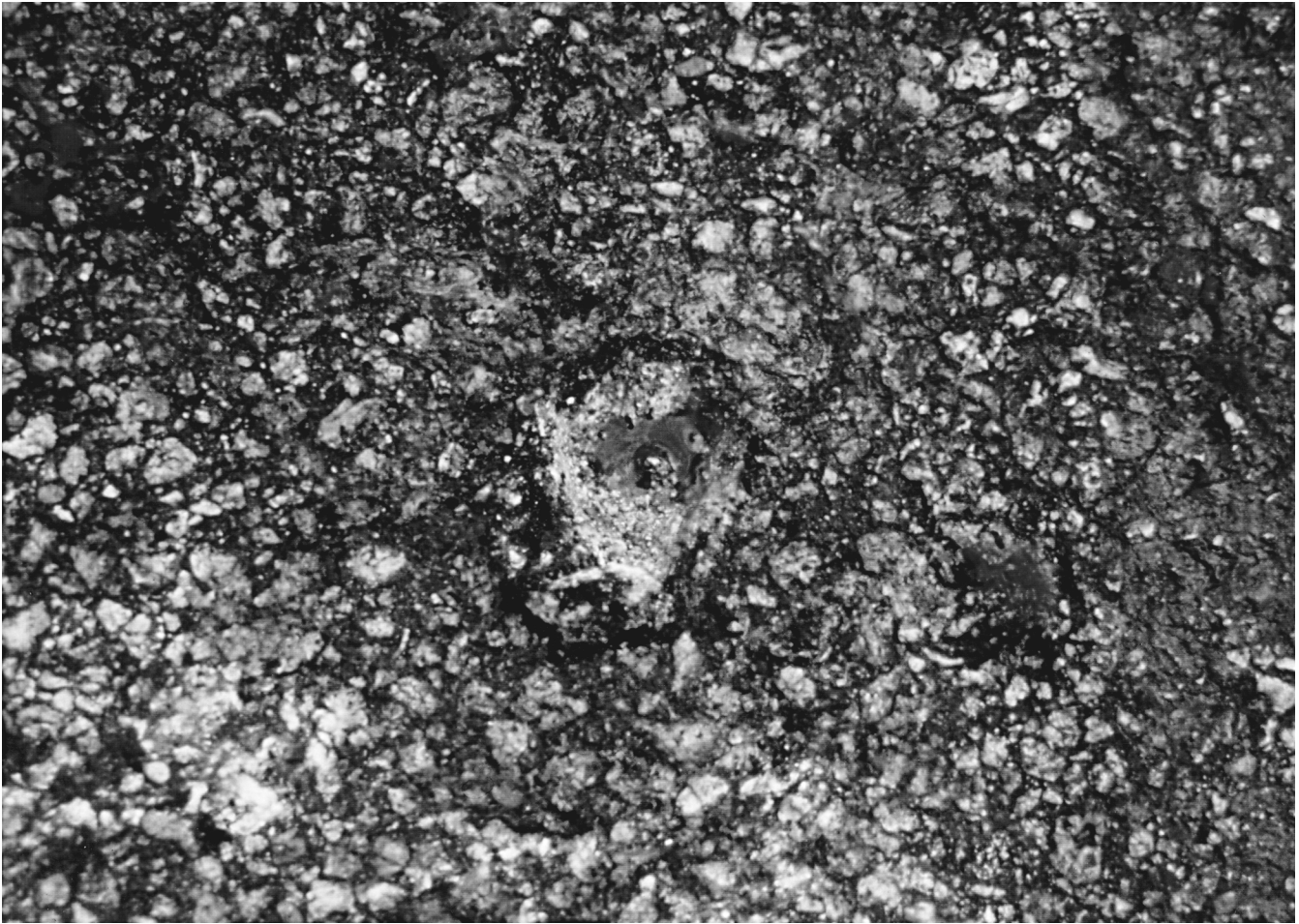


FIG. 3—Close-up of impact site with crater devoid of blood staining (liquid in crater is rainwater).

the gouge marks themselves were free of blood. It was theorized that the gouge marks were produced by bony portions of the body hitting the pavement at the same instant that the body, particularly the head, hit the ground and partially disintegrated (Fig. 3). The minimal blood traces between the site of impact and the body is inconsistent with a traffic incident and more consistent with a fall and subsequent "bounce."

Wheel-well stowaways have been described in the literature. A review of such cases by Veronneau (7) describes the environmental conditions of the wheel-well of a commercial airliner and the sequelae of such a trip on a human body. This review showed that it is common for them to fall to their deaths on aircraft takeoff and landing. International commercial jet flights typically reach an altitude of over 30,000 ft (9144 m) with temperatures plummeting to minus 45°C and partial pressures of oxygen at below 47 mm Hg. The unpressurized wheel-well is a hostile environment with hypoxia and hypothermia becoming an expected outcome of such a trip. Frostbite and fatal freezing were found to be common. The hazards of decompression sickness and being crushed by the retracting landing gear are also significant.

Close proximity to landing gear and hydraulics is typical during a wheel-well trip, and this may explain the grease found on the body. No frost was noted on the body, but the day was warm and rainy, and, again, at least 2½ hours had passed between the incident and initial examination of the body.

It is interesting to note that commercial airliners at Miami Inter-

national Airport depart and land against the prevailing winds. The winds were from the east on the day of the incident, resulting in an approach from the west (over land). Had the winds been from the west, the approach pattern would have been from the east, and the body would have likely fallen over the Atlantic Ocean. An ocean ejection would have greatly impeded proper classification of the case. One can easily imagine the difficulties presented if the body had landed on a busy roadway with discovery of the body only after one or multiple motor vehicle impacts or if the body had fallen into a remote area only to be discovered days, weeks, or years later. Conversely, a fall onto a roof or into a backyard of one of the neighborhood homes would have greatly eased proper classification. The fact that the body fell onto a residential street did result in initial confusion, but it was fortunate that traffic volume was minimal (at least at 6:30 a.m.), resulting in no motor vehicle artifacts. However, without proper death scene investigation, this case could have been easily misclassified as a traffic incident.

Conclusion

This case showed injuries consistent with a fall from a great height. The massive injuries displayed could also be produced by a large or high-speed motor vehicle/pedestrian incident, yet the scene and findings are otherwise inconsistent with this. The circumstances indicate that the most likely explanation is that the decedent was a stowaway in the wheel-well of a commercial airliner who,

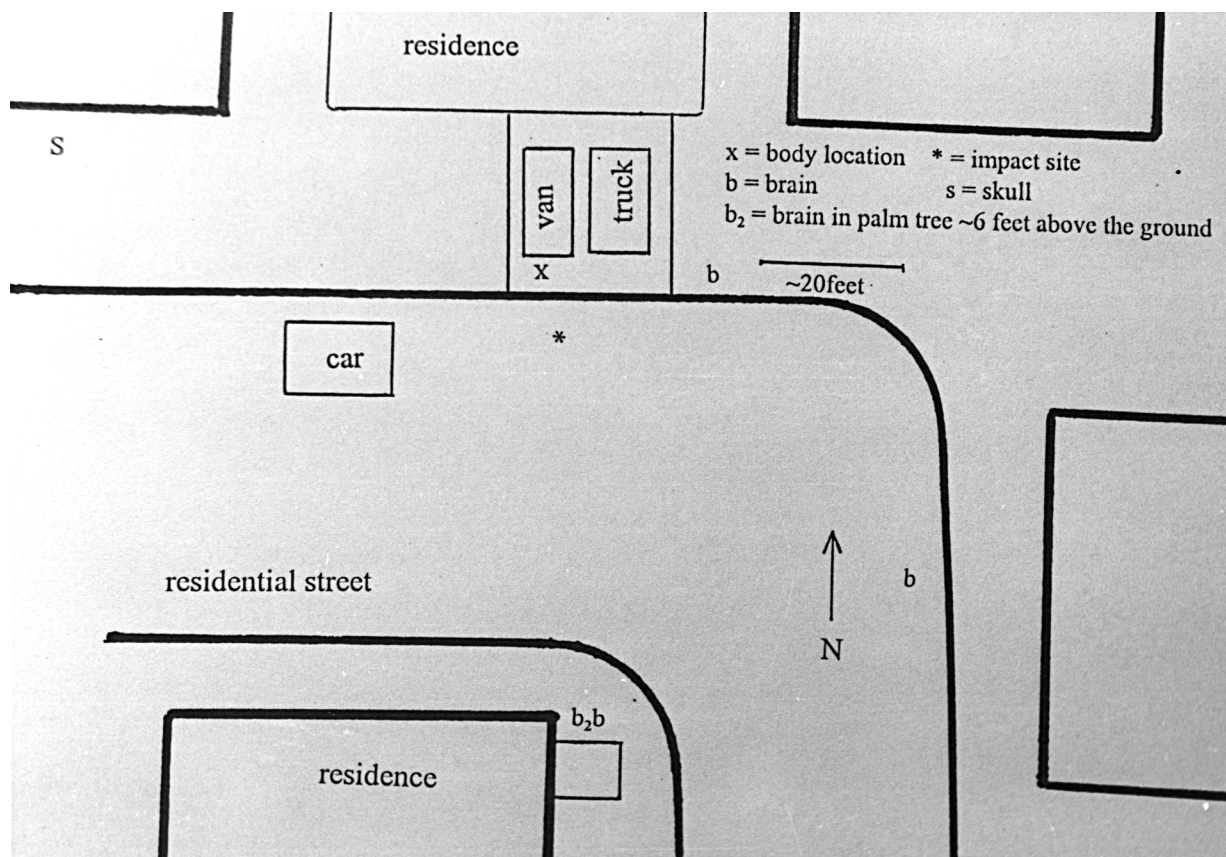


FIG. 4—Schematic diagram of street, surrounding structures, point of impact, and body location (scale approximate).

possibly due to hypoxia or hypothermia from altitude, fell from the airliner when the landing gear was lowered on final approach to the airport. This case clearly demonstrates the importance of thorough death scene investigation.

Acknowledgment

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