G30 Open Fractures in Pedestrians Mimicking Gunshot Wounds

Melissa A. Brassell, MD, Mary G. Ripple, MD, and David R. Fowler, MD, Office of the Chief Medical Examiner, State of Maryland, 111 Penn Street, Baltimore, MD 21201*

After attending this presentation, attendees will understand the similarities and differences in the appearance of pedestrian injuries and gunshot wounds and the implications of non-forensic trained health care professionals confusing these types of injuries on initial inspection.

This presentation will impact the forensic community and/or humanity by emphasizing the need for continuing education and a close working relationship between medical examiner/coroner's offices and health care professionals.

In February and April 2006, autopsies were performed on two pedestrians that were thought to have sustained gunshot wounds. While it was clear that the individuals had been struck by a motor vehicle, there was concern in both instances based on initial external examination at the scene by emergency personnel and at the hospital emergency department, that they had sustained gunshot wounds prior to being struck.

The first case was a 27-year-old male who was struck by a Chrysler 300 as he ran across the intersection of a local street. Information obtained from paramedics following a preliminary external examination at the scene was that the individual sustained a gunshot wound to the right thigh prior to being struck. An investigation was begun by police into the probable shooting. At autopsy, there was an open right femur fracture with an associated ½" x 5/8" irregular laceration with a surrounding irregular, contiguous abrasion located on the inner right thigh. In addition, there was a curvilinear, 3" x 4" laceration on the lateral thigh with associated extension lacerations, abrasions, and protrusion of the quadriceps muscle. Postmortem radiographs and dissection of the thigh showed no beveling and no bullet fragments or distinct wound path. Thus, the findings were not consistent with a gunshot wound. The second case was a 25-year-old female who was struck by a Nissan Maxima as she crossed a busy expressway at approximately 6:00 a.m. She was taken to the nearest hospital, where physicians interpreted injuries of the left eyebrow and right temporal region as a possible through and through gunshot wound. Because of suspicion of a gunshot wound, her hands were bagged for preservation of evidence. A homicide investigation was begun. At autopsy, a 3" curvilinear abrasion and adjacent 1" laceration with skin avulsion was present on the right temple and a ½" laceration with a contiguous curvilinear abrasion was present lateral to the left eyebrow. Autopsy, including radiographs showed linear and diastatic skull fractures, no beveled skull defects, no wound track, and no bullet fragments. Thus, the findings were not consistent with a gunshot wound.

Open fractures of long bones sustained as a pedestrian struck by a motor vehicle primarily mimic gunshot wound defects at the skin surface. The overlying skin surface can show a full thickness laceration produced by the blunt trauma. Some of these lacerations are roughly circular to irregular with contiguous abrasions similar to that of an atypical entrance gunshot wound with its surrounding abrasion collar. Closer external examination of these wounds shows that the edges can be re- approximated, unlike that seen in an entrance gunshot wound. In addition, internal dissection and radiography reveal typical compound fractures with distinct linear edges, no bone dust or minute bone fragments, no beveling, no wound track and no bullet fragments.

Since open fractures can mimic gunshot wounds, close inspection of the external wound and evaluation of the internal injury both by dissection and radiography are essential in determining whether the injuries were caused by a gunshot. This presentation emphasizes the need for educating health care professionals, especially first responders and emergency room staff, in injury patterns in order to prevent an unnecessary homicide investigation.

Gunshot Wound, Pedestrian, Laceration

 ** Presenting Author*