E56 Forensic Podiatric Science and Practice in Crime Scene Investigation

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Learning Overview: After attending this presentation, attendees will understand the value of an important and emerging subdiscipline of forensic science, forensic podiatry, which deals with the examination, interpretation, and evaluation of pedal evidence encountered at crime scenes.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by presenting the utility of a comparatively new subsection of forensic science that is concerned with the inspection of pedal evidence at crime scenes. This may motivate young forensic scientists to take up this discipline for research and practice.

Forensic podiatry is comparatively a new scientific subdiscipline of forensic science that deals with the examination of pedal evidence generally encountered at crime scenes. It is defined as the application of sound and researched podiatric knowledge and experience in forensic investigations to show the association of an individual with a scene of crime or to answer any other legal question concerned with the foot or footwear that requires knowledge of the functioning foot.[1] Forensic podiatrists contribute to the personal identification in crime scene investigations whenever foot-related evidence is recovered from the crime scene. The need to establish the identity of dismembered remains may arise in cases of mass fatality incidents such as terrorist attacks, mass murders, transport accidents, tsunamis, floods, and earthquakes. Dismembered and mutilated remains are usually encountered in these mass fatality incidents. There is an increased likelihood of the recovery of feet (often enclosed in shoes), separated from the body in mass disasters such as high-power explosions and bomb blasts, airplane crashes, and other high-impact transportation accidents. In this regard, forensic podiatrists can collect the evidence related to feet and help in the identification of the individuals from the foot and its parts. Furthermore, forensic podiatrists conduct the examination of footprints generally recovered at the crime scene. Footprints are commonly recovered at every crime scene in the form of bare footprints, socked footprints, or shoe prints.

There are many ways in which footprints can be used to establish personal identification in forensic podiatry. The analysis of bare footprints involves identification based upon class, intermediate class, and individual characteristics of the footprints. For example, features such as corns, pits, ridges, humps, creases, hammertoe deformity, an extra toe, missing toe in the foot impression, and flat footedness are characteristics of the footprints that can be utilized as forensic evidence in establishing personal identification. This type of physical evidence can positively link a suspect to a crime, or it can prove one's innocence. By using different anthropometric methods, the stature, sex, and body weight can also be estimated from the footprints recovered at the crime scene. As stature and body weight can provide an idea about the size of the individual, so can they provide useful clues to a forensic scientist in a criminal investigation. Apart from this evidence in forensic podiatry, gait analysis and step/stride length analysis can also furnish some indication about the criminals involved in a particular case.

This presentation will discuss various methods of personal identification related to the pedal evidence which is usually recovered from the crime scene or scene of occurrence in the form of mutilated/dismembered remains, footprints, or questioned footwear.

Reference(s):

1. DiMaggio J.A., Vernon W. *Forensic Podiatry—Principles and Methods.* CRC Press, Taylor and Francis Group, Boca Raton, Florida 2017.

Forensic Podiatry, Crime Scene Investigation, Personal Identification