G67 Color Me Guilty: The Role of Paint Transfer in Weapon Linkage

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After attending this presentation, attendees will be alerted to examine for the presence of paint transfer onto bone as a means of weapon linkage, and be prepared to modify their specimen preparation techniques accordingly.

This presentation will impact the forensic community and/or humanity by demonstrating how paint transfer is commonly used for forensic linkage in vehicle related cases, although it may be overlooked in analyzing bone trauma.

Transfer evidence can be an important part of an investigation. Transfer evidence may relate to transfer of blood from one object to another, often leaving a distinctive contact transfer pattern that may be linked to a specific weapon.

Paint transfer also yields valuable information. Paint transfer usually relates to paint chips/fragments transferred from one vehicle to another (or onto a victim or structure) during a collision. This information aids in identifying a vehicle model and year based on analysis of the paint. It may even identify a specific vehicle.

Hair and fibers are transferred from one person or place to another – evidence of contact. DNA is transferred from a person to an object or another person. Fingerprints are transferred from one individual to another individual or an object.

Two cases will be presented involving paint transfer onto human bone through blunt force: in one case blue paint from a baseball bat and in the other the black surface (under flaking paint) of an old metal railing. Both cases involve severe blunt force trauma to the head. This is a phenomenon that had not been noted previously.

Case 1: In 1995 a 65-year-old male was found dead, the victim of a severe beating by an assailant who "came in like a raging bull with a baseball bat" (according to the Detective). At autopsy, Diane ScalaBarnett, MD, Deputy Coroner of Lucas County, Ohio, requested that Julie Saul, Director of the Forensic Anthropology Laboratory in that office, reconstruct the fragmented skull and determine what could be learned from the resulting fracture pattern. Blue paint chips and wood splinters were found in the soft tissue at wound edges of the mouth and scalp.

Traces of blue paint were noted on a few small fragments; therefore, initial cleaning was accomplished using only warm water in order to preserve pigment. Ultimately, five fragments were found to have blue paint embedded in the surface. Other bone fragments were cleaned and degreased using normal procedures.

Thirty-six fragments were reassembled. The fracture pattern indicated that the skull had been shattered with one blow, probably administered while the right side of the victim's head was against a hard surface – likely to be the floor. This was confirmed by bloodstain evidence at the scene.

The five bone fragments with embedded blue paint lined up together at one edge of the single impact area, located approximately on the left parietal eminence. The force of the blow at that point had driven blue paint from the baseball bat into the fracture edges.

Case 2: In 2004 a 40-year-old woman was found dead of severe blunt force injuries to the head. At autopsy, several distinctive patterned scalp lacerations were noted, along with bruises on the neck, face, chest and abdomen. A bitemark was present on the left breast. Retraction of the scalp revealed distinctive patterns on the skull beneath the scalp lacerations. These contact transfer patterns (not fractures) were formed by embedded black pigment, and corresponded well to the overlying scalp lacerations.

In this case, the instrument was not a broad, smooth object such as the baseball bat used in the earlier case, but a portion of an old iron fence railing with shapes that corresponded to both the lacerations and pigment contact transfer patterns.

In both cases, transfer of color (and/or pattern) onto cranial bone through blunt force yielded valuable information regarding the instrument used.

Although paint transfer is commonly used for forensic linkage in vehicle related cases, it may be overlooked in analyzing bone trauma.

Blunt Force, Paint Transfer, Trace Evidence

 ** Presenting Author*