



E78 Digital Photography of Decomposed Fingertips for Postmortem Fingerprint Identification

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Learning Overview: After attending this presentation, attendees will understand a method using digital photography and enhancing software to obtain postmortem fingerprints of decomposed decedents who are otherwise unidentifiable and traditional ink/digital fingerprint methods are ineffective.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by introducing a cost-effective and non-destructive postmortem digital photography fingerprint method to identify decomposed decedents in the medical examiner field.

In many medical examiner offices, the primary means of decedent identification is through fingerprints using ink or digital technologies. However, some decedents are too decomposed to utilize these technologies. When a decedent is desiccated or macerated, the fingertips are often dried, hard, and wrinkled or too moist to use standard ink/digital methods. In these cases, medical examiner offices must rely on alternate identification methods, such as radiograph/dental comparison, fingertip rehydration techniques, or DNA. These alternate methods can be labor intensive, costly, and destructive, and at times are ineffective. Radiograph/dental comparison and DNA often require the decedent to be tentatively identified. As a result, a method for capturing fingerprints of desiccated and macerated decedents is needed.

An improved method using digital photography and enhancing software, Adobe® Photoshop®, was developed to obtain suitable fingerprints from decomposed bodies for identification. The method requires a digital single-lens reflex camera, a macro-enabled lens, a tri-pod, and a suitable light source to photograph each fingertip. Each fingertip is photographed with a one-inch ruler held in plane with the fingertip. The ruler must be labeled to identify the fingertip (e.g., RI, RII, etc.) and ideally the case number. All images are captured in JPEG, for viewing purposes and RAW file formats. The RAW images are imported into Adobe® Photoshop® and are adjusted to mimic a fingertip that has been captured with ink. The workflow includes converting the image to black and white, rotating the image to the correct position, inverting the image so the ridge detail is black, flipping the image, and adjusting the image to a 1:1 ratio using the ruler. Minor non-destructive enhancing techniques, such as contrast, brightness, and dodging/burning, are used to enhance the ridge detail further. Each image is placed onto the corresponding location on a digital ten-print card and the card is submitted digitally to the Federal Bureau of Investigation (FBI) for analysis.

The method has resulted in the positive identification of several decedents. Ten-print cards have been successfully entered into the Automated Fingerprint Identification System (AFIS) by the FBI Special Processing Center as well as analyzed by the Latent Print Unit. Several tips have been learned during method development that ensures the best possible fingerprint image is captured. These case studies and lessons learned will be presented.

Fingerprints, Photography, Postmortem Decomposition