

## Case Report

# Using Fingerprint Powder to Record Friction Ridge Details from a Cadaver

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**Abstract:** This case demonstrates the use of black powder to provide distinct friction ridge detail in the photographed images of a cadaver hand.

## Background

A police call was received from a citizen who complained of a foul odor coming from the backyard of an unoccupied house in the neighborhood. Upon arrival, police found the body of a man wrapped in a blanket and bedspread that had been bound at both ends by nylon strapping. The body had been placed beneath a pile of vegetation.

During the autopsy, it became apparent that the deceased had been there for awhile. His skin was loose and detached from the soft tissue and skeleton underneath. The pathologist was able to remove the skin from both hands of the deceased.

Through police investigation, the identity of the victim had already been established. Our assignment was to obtain major case prints for elimination purposes if needed later in the investigation. When we arrived at the morgue, we were presented

with what looked like two latex gloves sitting on top of a gurney (Figure 1). Upon closer examination of the skin, we determined it had a good translucent quality and pliability.

Past articles have discussed various methods to record the friction ridge detail from the hands of cadavers [1-4]. These techniques involve using powder as a release agent for the recording of inked impressions, using powders and lifting the prints with tape, or using Mikrosil. The current case demonstrates the use of powder to provide contrast when photographing the friction ridges on a cadaver hand.

## Materials and Methods

We spread the skin out on a light table and turned the light on. In the process, we discovered the edges of the skin to be thin and fragile and subject to tearing, so it became obvious that rolling ink or sticky lifts would cause irreversible damage to the friction ridges. The minutiae from the fingers and palms showed remarkably well, so we digitally photographed the skin. Figure 2 shows the interdigital area of the left palm before dusting.

A scale was placed in each photograph to allow a 1:1 sizing. We used a white metric ruler. (The ruler appears as a black strip in Figures 2 and 4.)

Black fingerprint powder was applied lightly to the skin using a fiberglass dusting brush (Figure 3). While one person gently held the skin open, another person moved the brush lightly over the surface, using care to not apply too much powder. Figure 4 shows the same portion of the interdigital area as seen in Figure 2 after dust application. We photographed the fingers and both hands after the application of the fingerprint powder.

We downloaded our photographs, saving the original images and making copies to separate folders. The following are the steps we took in Adobe Photoshop (version 7) to prepare the ridges for latent print examination, making sure that the tools we used were accepted by SWGIT (Scientific Working Group on Imaging Technologies). All four steps were repeated and applied to every finger, joint, and palm on both the right and left hands. Every photograph was labeled as to which finger or hand it came from.

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Received August 8, 2008; accepted December 2, 2008

- Step 1 Position reversal. We flipped the canvas horizontally to correctly display the friction ridges as they normally would have appeared had the usual print methods been used.
- Step 2 Levels. We used the levels application to adjust the brightness and contrast of the print to create the best appearance of the minutiae.
- Step 3 Grayscale. To enable the latent print examiners to work with the prints in black and white, we discarded the color information and changed the mode to grayscale.
- Step 4 Ruler. Using the magic wand tool, we selected and outlined only the ruler portion. The brightness/contrast application was used to bring out the markings on the scale. (This step will not be necessary if a transparent ruler is used.)

The final enhanced image is shown in Figure 5.

## Discussion and Conclusion

Decomposing bodies present a unique situation for obtaining major case prints. Until we arrive on a scene or respond to the morgue, we do not know what challenges await us, and we often need to think outside the box to attain the best results. What works for one situation may not work for another.

In this particular case, the skin was detached from the soft tissue underneath, with the friction ridges still intact. A common practice in a situation such as this would be to slip the skin over your own gloved hand and wear it like a glove to roll the prints. However, the deceased's hands were much larger than our own, and that attempt was useless. Although this presented a challenge, we were able to achieve the desired outcome by using basic materials such as a light table, black powder, and a camera with a macro lens.

We outlined some basic and simple steps so someone else who may be faced with a similar situation can successfully duplicate our efforts. In our ever-changing field of forensics, we do not always need to look to the newest and latest technology. Sometimes by keeping it simple, thinking it through, and falling back on our original training, we can get effective results.

For further information, please contact:

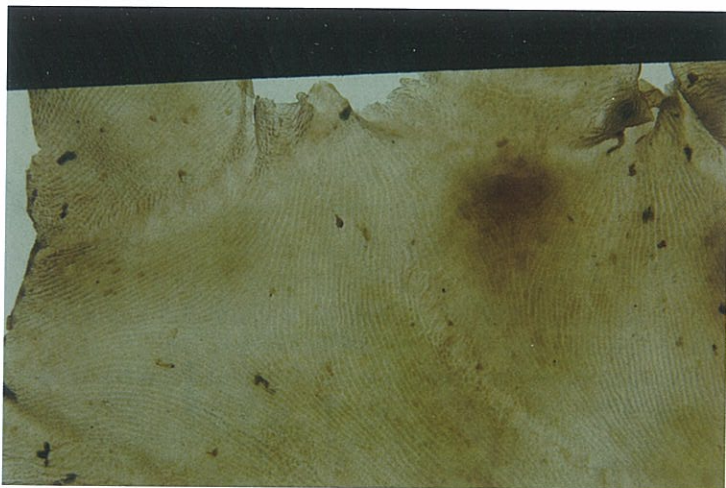
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## References

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Figure 1  
Skin prior to processing.



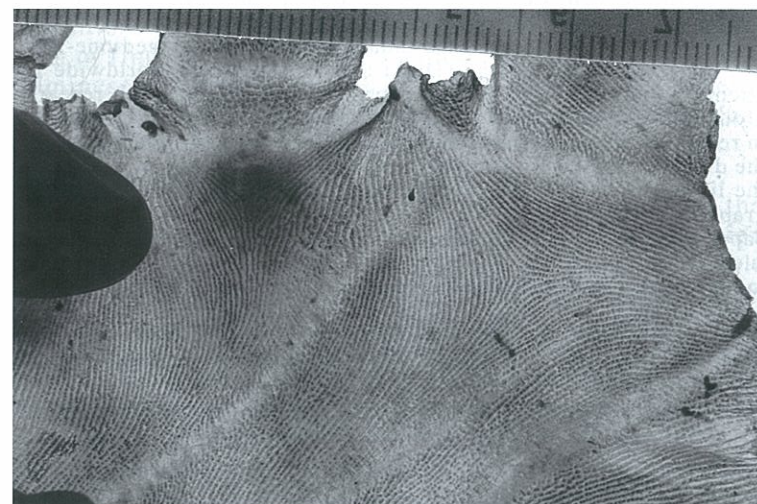
*Figure 2*  
*Interdigital area of left palm prior to dusting.*



*Figure 4*  
*Interdigital area of left palm after dusting.*



*Figure 3*  
*Dusting the skin from the right hand.*



*Figure 5*  
*Interdigital area of the left palm after enhancement.*