17 POST MORTEM RECORDING OF FRICTION RIDGE SKIN

17.1 INTRODUCTION

Deceased persons are identified by various methods ranging from visual examination to dental or bone radiographs. Fingerprint identification of deceased individuals is often used when accidental or deliberate damage to facial features occurs, when decomposition affects appearance, when mass disasters can prohibit individual identity, when criminal death is involved, or when an identification is questionable. Generally, post mortem fingerprint recording is done by investigators and the latent print examiner may be involved only in the comparison of the post mortem prints to previously recorded standards or latent impressions developed from personal articles associated to the suspected deceased. Actual recording of inked prints at a morgue may be rare but each examiner should be familiar with the procedure. More likely, requests for post mortem recording will occur when efforts to obtain usable fingerprints have failed due to extensive damage or advanced decomposition. Rather than a scene procedure, the best results are generally achieved in the laboratory examining the hands severed from the deceased. Various methods have been designed to obtain satisfactory recorded impressions, and no one method is applicable to the possible conditions encountered. Method of death, environmental conditions, and degree of decomposition can alter the effectiveness of techniques. Those described in this section shall deal with the premise of submitted severed hands, although adaptation to a morgue visitation is easily accomplished. Individuals with a suspected identity and for which inked standards are available require only a recording of sufficient friction ridge skin area to confirm an identification. Those whose identity is completely unknown, those with no fingerprints on file and those eliminated from suspected identity require a full, ten finger recording for classification and/or AFIS searching.

17.2 PREPARATION

No specific preparations are required for this procedure.

17.3 MINIMUM STANDARDS & CONTROLS

The minimum standards and controls for the recording of post mortem standards requires the inspection of each area recorded to determine if the detail present is a clear and accurate depiction of the area that is being recorded.

17.4 PROCEDURE OR ANALYSIS

17.4.1 Inked Fingerprint Recording

Fingerprint ink is applied to the finger using a direct roller application or using a detached glass plate previously coated with ink. If the glass plate is utilized, it is moved around the finger to insure even application. The recording is made by using an especially designed spatula or spoon with finger block strips or a standard fingerprint card specifically folded for post mortem printing. The spatula device, available from most fingerprint supply firms, is a curved instrument with slot-type guides to hold a strip of white card stock in place. Once the finger is inked, the spatula is pressed up against the finger. Usually the concave surface of the spoon affords ample contact between the strip and the digit to record the area of a normal rolled print with minimum movement. An alternate method simply uses a folded fingerprint card which is rolled around the deceased's inked finger. The recorder uses his or her hand to support and guide the card from the back. Either method requires care and patience to produce a full legible impression from each digit. Numerous retries may be required before a full set of acceptable prints is obtained.

17.4.2 Powder Processing

Standard black latent print processing powder may be used to obtain remarkably clear and legible post mortem impressions. One method requires the application of a very light coating of glycerine to the fingers and rolling a folded fingerprint card around the treated digit. The card is then processed with standard black powder to develop the impression. Lifting tape is then applied to the developed impression to prevent damage. An easier method is the direct application of standard black powder to the finger. A piece of lifting material is then pressed against the powdered finger and a lift is made. Opaque lifting material reveals an impression in true position. Transparent

materials produce a true position impression on the adhesive side and must be covered with another piece of transparent tape, adhesive to adhesive, for protection.

17.4.3 Silicone Rubber Casting

Silicone rubber casting material may be used to produce extremely accurate recordings of friction ridge skin areas. However, casts yield reproductions which are inverted to the skin formations, that is, the furrows appear as raised areas and the ridges as depressions. Thin casts can be flattened between glass slides and photographed using backlighting. If the casts are too thick to permit proper light transmission, the casts may be used as molds for a second generation cast. A light spray of window cleaner, such as Windex, is applied to the cast and additional silicone rubber material poured into these molds. The resulting positive cast may be photographed using oblique lighting, inked or powdered and lifted.

17.4.4 Epidermal Gloving

Certain stages of decomposition will cause a separation of the epidermis and dermis to an extent that the epidermis can be slipped off intact from the underlying tissue. An incision around the middle joint area may ease the removal of the skin to produce a section similar to a portion of a glove. This skin can be placed over the examiner's gloved finger and inked and printed as if it were his or her own.

17.4.5 Dermal Photography

Advanced stages of decomposition which have destroyed the epidermis or destruction to the epidermis from heat or chemicals may require recording the dermal structure. Efforts to record inked impressions of the dermis are very difficult and produce a double row, broken outline of the papillae that support each ridge that appears in the epidermis. Photographic recording generally gives better results, especially with oblique lighting.

If photography of the dermis attached to the digit is unsuccessful, the dermis may be removed with careful incisions, gently scraped on the underneath side to clear away as much attached flesh as possible, placed between glass slides and photographed with transmitted lighting.

17.4.6 Special Skin Conditions

Water soaked skin often wrinkles to the extent that any of the above methods will fail to produce adequate recording of the friction ridge skin areas needed for classification. Lesser amounts of wrinkling may be corrected merely by pulling the skin tight over the pattern areas while recording the finger. If this is unsatisfactory, the finger may be inflated using fluid provided the skin appears unlikely to rupture or tear. Hot water, glycerine, or a commercially available tissue builder may be used, although hot water is more difficult to use properly. A hypodermic syringe is used to inject the fluid by inserting the needle tip below the skin to an area in the proximal joint. The fluid is slowly injected until the finger bulb inflates sufficiently to eliminate most wrinkles. Hot water tends to seep out quickly once the needle is removed although a string tightly secured above the injection point may retard or reduce the seepage. Tissue builder tends to thicken once injected. Badly wrinkled fingers may require multiple injections before the area can be adequately recorded, but too much fluid can produce a rupture, especially if decomposition has begun.

Dehydrated or mummified fingers often result in skin too hard and inflexible for complete recording.
Use a dish washing liquid such as Palmolive to re-hydrate and soften the skin. The hands or fingers are soaked in the dish washing liquid until they become pliable. A high lanolin content hand lotion is worked into the skin and removed immediately before recording also may be beneficial. Alternatively, Restoration of near normal pliancy can be accomplished by soaking the skin in a 3% potassium hydroxide in warm water solution. The skin is checked periodically until soft enough for recording purposes, then rinsed in distilled water and dried.

17.5 INTERPRETATION OF RESULTS

The wide possible conditions affecting post mortem recording precludes predictable results of any method, but with care and patience, adequate friction ridge detail is usually obtainable. Laboratory examination with access to materials and equipment, including proper photography, generally produces satisfactory results when attempts at the morgue are not successful.

17.6 REFERENCES

1. F.B.I. The Science of Fingerprints.

2. Olson, Robert. *Scott's Fingerprint Mechanics*; Charles C. Thomas Publisher: Springfield, IL, 1978.

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