

TECHNICAL NOTE

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Photography in Bite Mark and Patterned Injury Documentation—Part 2: A Case Study

REFERENCE: Wright FD. Photography in bite mark and patterned injury documentation-part 2: a case study. *J Forensic Sci* 1998;43(4):881–887.

ABSTRACT: A case involving multiple bite marks is presented. The bite marks were photographed over a 31-day period to document the injuries and preserve their evidentiary value. The evidence recovered at each photography session is discussed and photographs are presented for review. Suggestions concerning the need for more research are presented.

KEYWORDS: forensic science, forensic odontology, visible light photographs, ultraviolet light photographs, infrared photographs, bite mark, patterned injury

Photography can be utilized to record injuries in skin associated with bite marks and other patterned injuries. The techniques for this documentation are described in a comparison paper (Part 1, preceding). In this follow-up, a bite mark case will be reviewed utilizing the techniques previously described and showing what evidence was recovered.

Equipment

For all photography sessions, a Nikon N 6000 35mm SLR camera body, a Nikon Nikkor UV105 lens, a Nikon SB 140 Speed Flash and a tripod were utilized. The infrared photographs (IR) were taken with a Kodak 87 gel filter in front of the lens. The ultraviolet photographs (UV) were taken with a Kodak wratten 18A filter in front of the lens. Color photographs were taken with Kodak Royal Gold 100 film, black-and-white photographs were taken with Kodak TMAX 100 film, the IR photographs were taken with Kodak High Speed Infrared film and the UV photographs were taken with Kodak Plus X 125 film. Photographs containing a scale show the ABFO #2 scale.

Background

The victim in this case was a female. She was sexually assaulted and bitten three times during the assault. One of the bites was on her right scapula and the other was a double bite on the posterior

aspect of her right deltoid. The assault occurred early in the morning and police photographers took only color photographs at the time of the assault. The author was notified of the assault in the late afternoon of the same day. Proper consent from her parents was obtained for the injuries to be photographically recorded.

Day Zero Plus 8 Hours

The injuries associated with the assault were photographed, beyond the cursory photographs taken by the police at the time of the assault, approximately eight hours after they were inflicted. At the time of the photographic session, the injuries were readily visible to the unaided eye and recognizable as bite marks. The injuries were photographed in visible color (Kodak Royal Gold Plus ASA 100) and black and white (Kodak TMAX 100). They were also photographed in UV (Kodak X 125) and IR (Kodak High Speed Infrared, exposed at ASA 36). Each roll of film was taken for development, with instructions given to the technicians to push process the IR film at ASA 25, and to print on photographic paper.

The results showed varying degrees of evidence preservation. Visible light photographs captured the injuries with clear images that contained some evidentiary value (Figs. 1a, 1b). Individual markings associated with teeth could be identified. The UV photographs of all of the bite marks associated did not record the injuries with a great degree of evidentiary value (Figs. 2a, 2b). The IR photographs of the injury associated with the right posterior deltoid showed a clear pattern of two pairs of markings and faint images of the second associated bite to the area (Fig. 3a). IR photographs of the scapula captured an image of only very faint markings, not of any evidentiary value (Fig. 3b).

Day Eight

The injuries were re-photographed on the eighth day. While diffuse markings were still present, there was no clear evidence when the injuries were viewed under visible light; that is, there had been significant resolution of the injuries. No visible light photographs were taken. New photographs in both UV and IR were taken. The new UV photographs revealed notable detail of the injuries associated with the damage to the surface of the skin in the bite marks with delineated individual markings, detail not at all visible in normal room light (Figs. 2c, 2d). New IR photographs showed significantly less detail than the IR photographs taken the day of the assault (Figs. 3c, 3d).

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Received 20 June 1997; and in revised form 17 Oct. 1997; accepted 1 Dec. 1997.

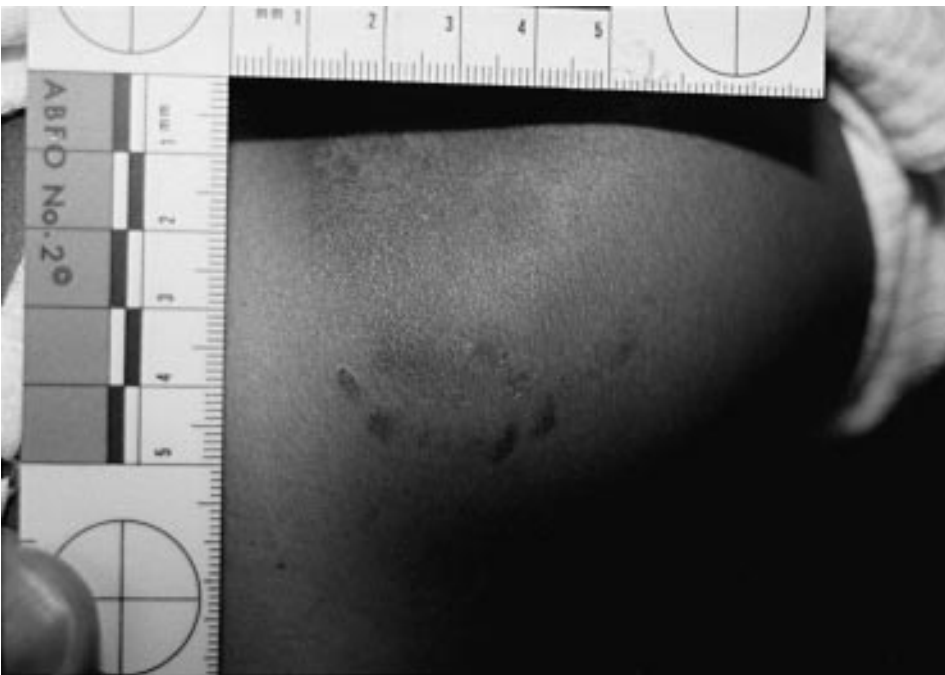
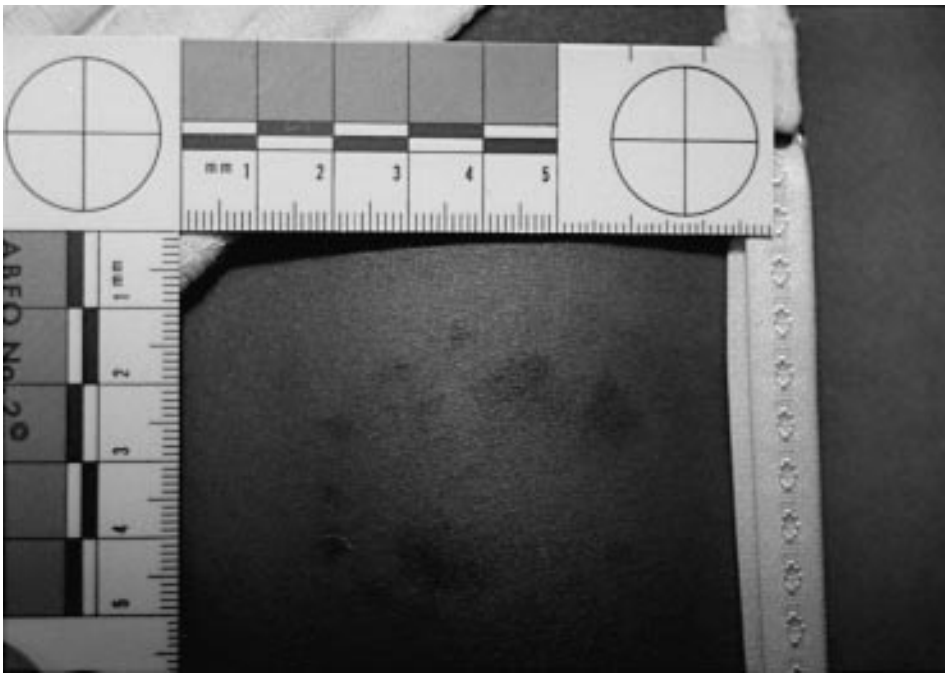


FIG. 1a—Black-and-white photograph of right scapula area taken approximately 8 h after the assault.
FIG. 1b—Black-and-white photograph of right posterior deltoid area taken approximately 8 h after the assault.

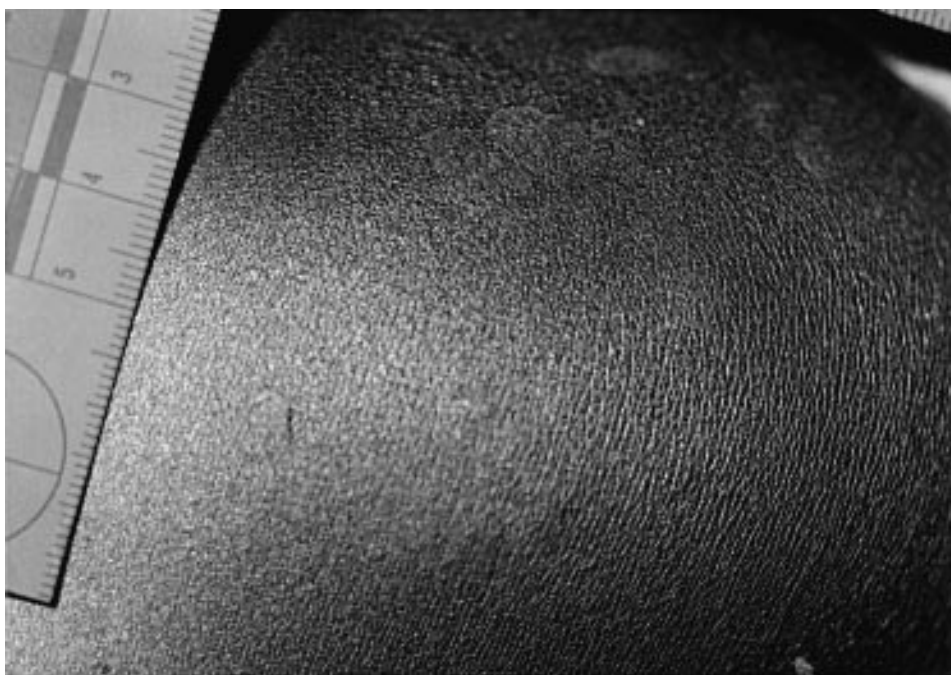
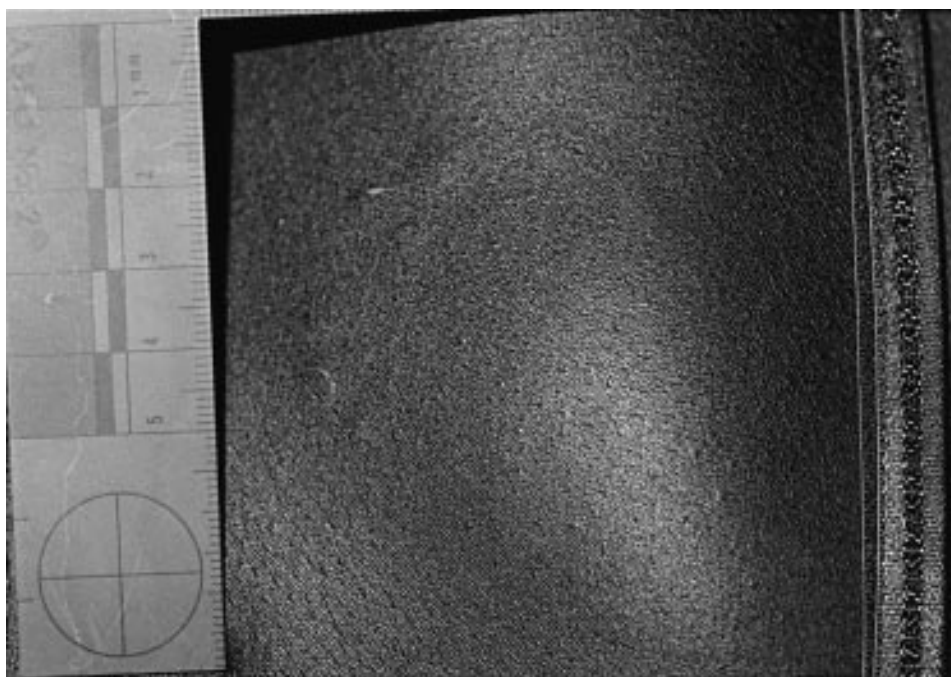


FIG. 2a—Ultraviolet photograph of right scapula area taken approximately 8 h after the assault.
FIG. 2b—Ultraviolet photograph of right posterior deltoid area taken approximately 8 h after the assault.

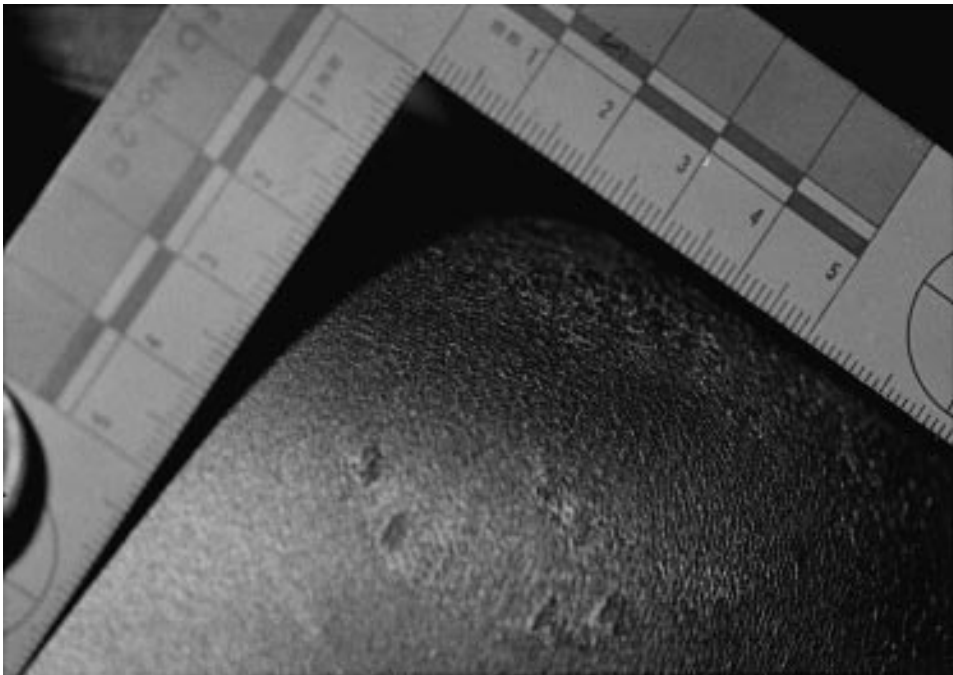
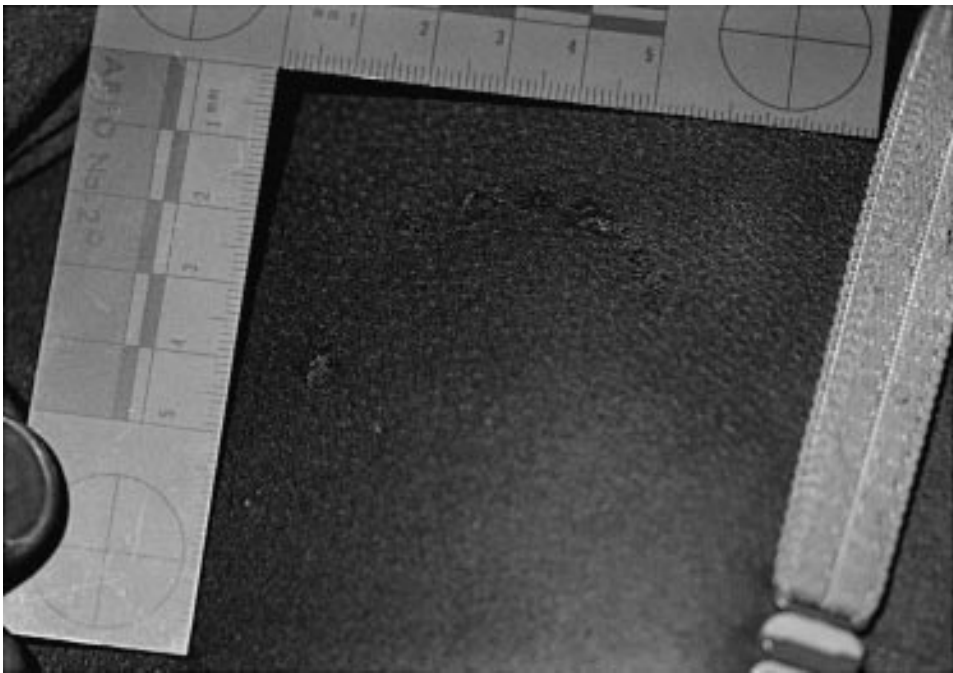


FIG. 2c—Ultraviolet photograph of right scapula area taken 8 days after the assault.
FIG. 2d—Ultraviolet photograph of right posterior deltoid area taken 8 days after the assault.

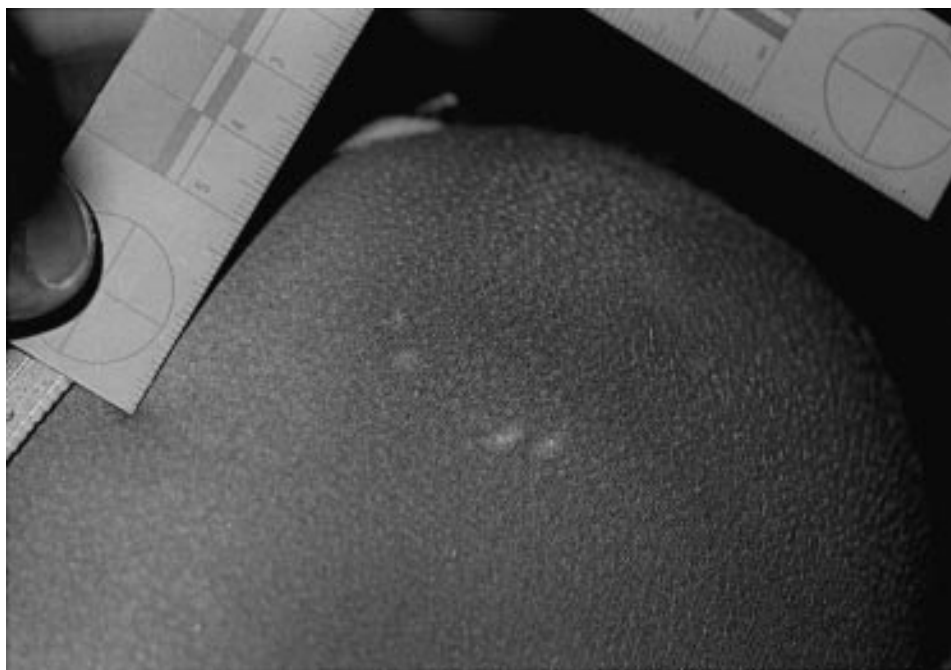
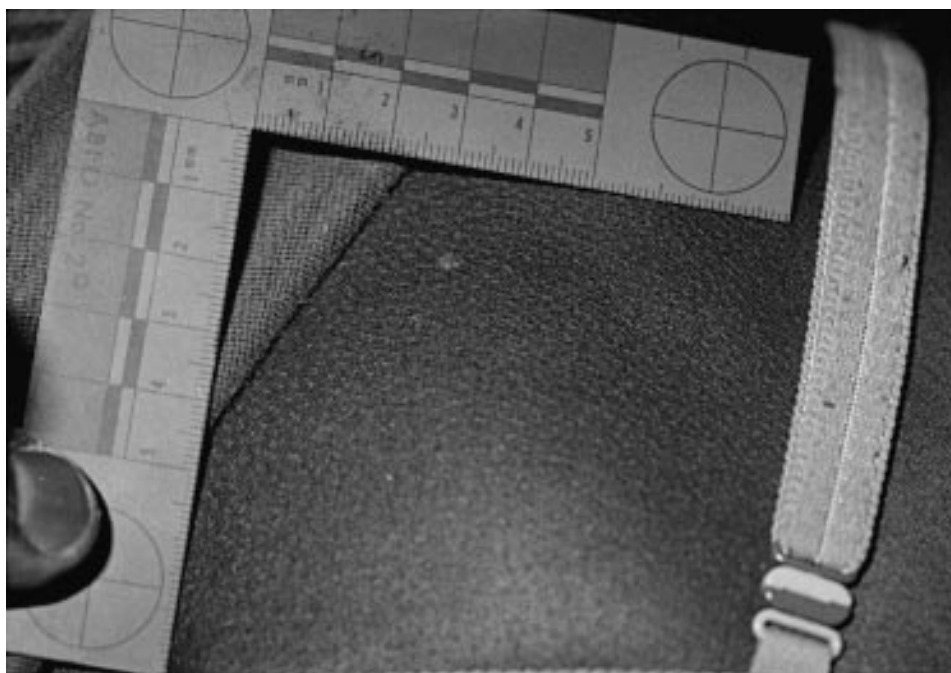


FIG. 2e—Ultraviolet photograph of right scapula area taken 31 days after the assault.
FIG. 2f—Ultraviolet photograph of right posterior deltoid area taken 31 days after the assault.

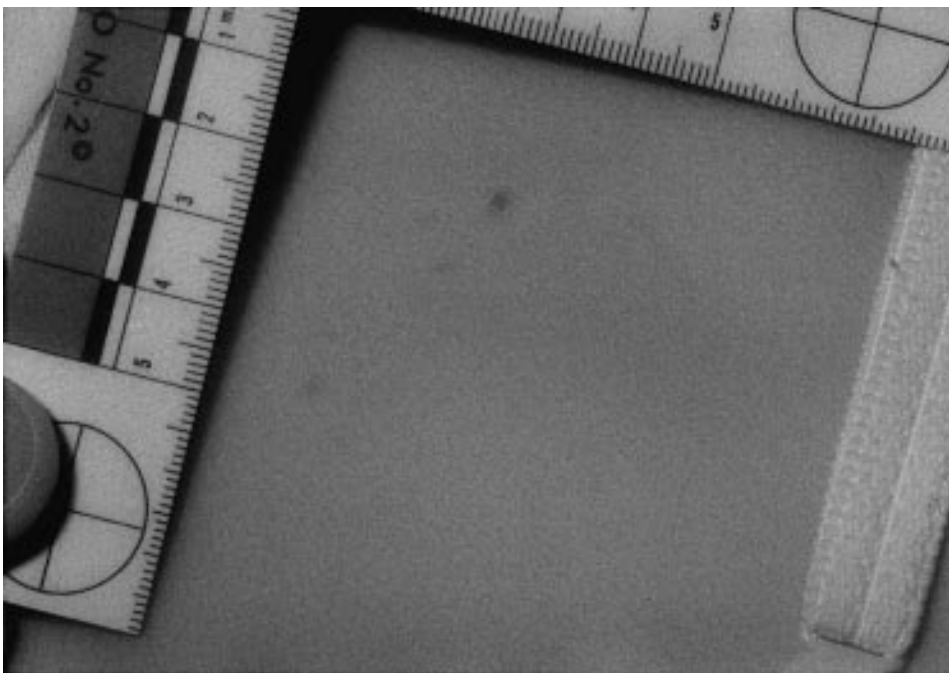
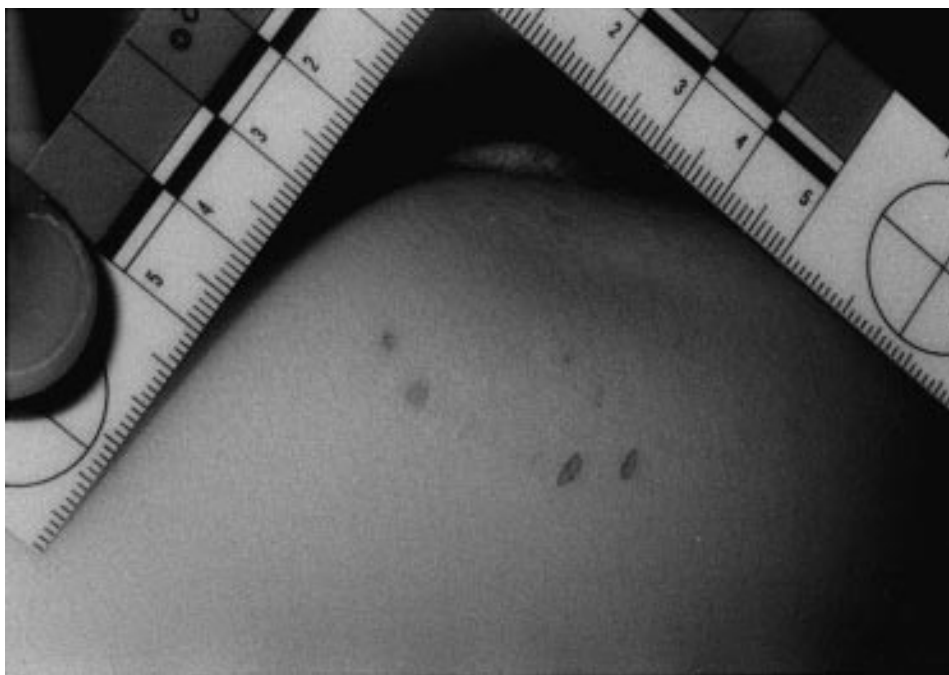


FIG. 3a—Infrared photograph of right posterior deltoid area taken approximately 8 h after the assault.

FIG. 3b—Infrared photograph of right scapula area taken approximately 8 h after the assault.

Day Thirty-one

Review of the areas where the bite mark injuries occurred revealed no signs of the injuries when viewed in visible light. Therefore, no visible or IR photographs were taken at this time. The new UV photographs still recorded injury patterns in the areas of both bite marks, although there was less significant detail recorded (Figs. 2e, 2f).

Attempts were made to re-record the injuries beyond day 31; however, by this time, the victim indicated that she had had enough photographs taken and declined requests for additional photographs. No further photographs were ever taken in this case.

Conclusions

Through the review of this case, the evidentiary value of bite mark injuries recorded over time and in three different wavelengths of light is illustrated. This case demonstrates the difficulty of attempting to record images in nonvisible light, specifically the UV photographs of the injuries on the day of the assault. There was no problem with the technique or the equipment utilized in taking the UV photographs on the day the injuries occurred, yet the evidence existed, as recorded in UV photographs taken on days 8 and 31. The surface of the skin associated with the bite marks was not organized enough to show the patterns associated with the

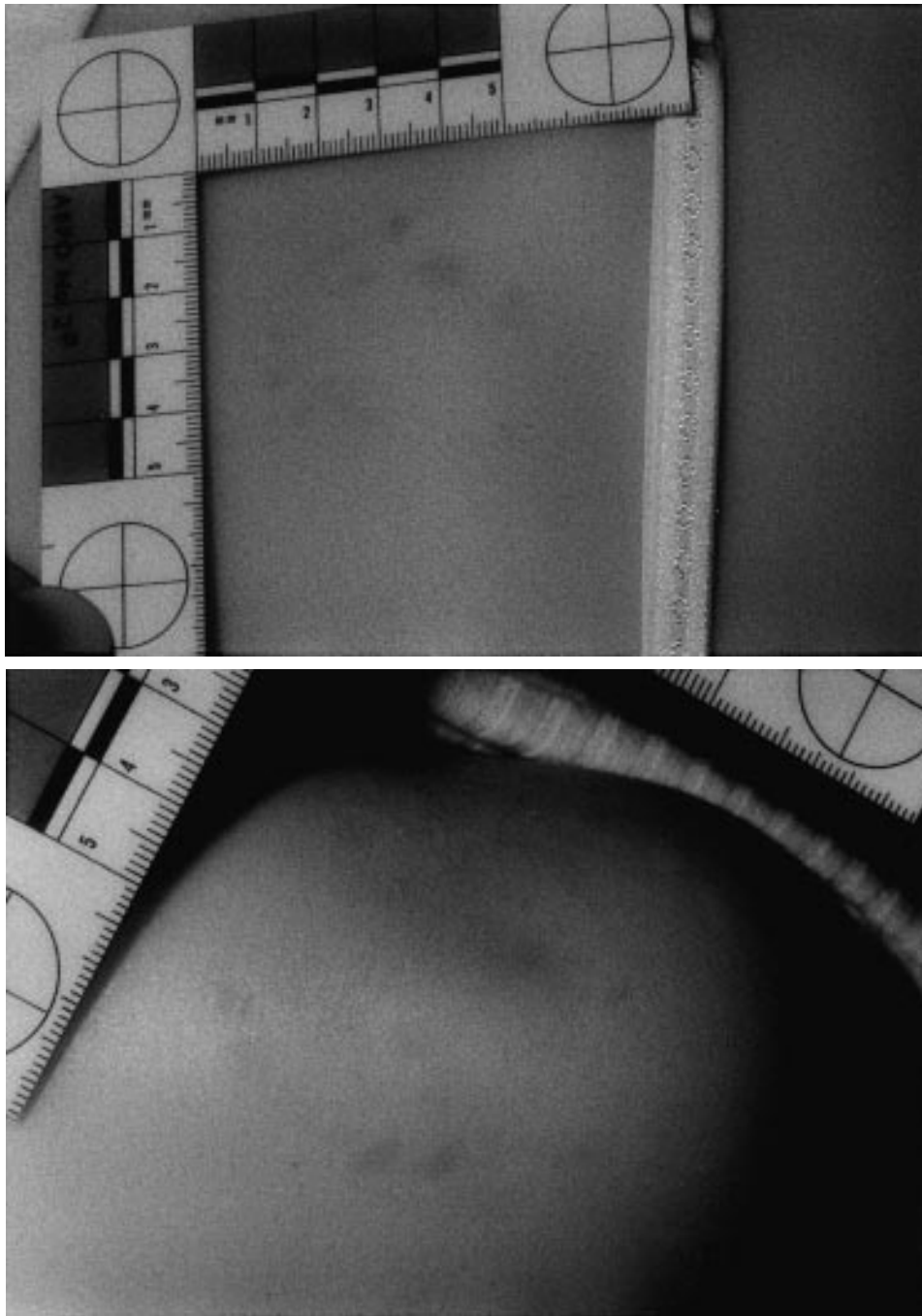


FIG. 3c—*Infrared photograph of right scapula area taken 8 days after the assault.*
 FIG. 3d—*Infrared photograph of right posterior deltoid area taken 8 days after the assault.*

bite at that time. The details did become “visible” in the UV photographs on or before day 8 and remained “visible” through day 31, as recorded at those times.

The review of this case demonstrates the value of photography in the recovery and preservation of bite mark and patterned injuries as the means of documentation for evidentiary purposes in future legal proceedings. The value of this preservation of the associated evidence cannot be overstated. More research is needed to better understand how long and to what degree this type of evidence can

be documented in different parts of the body and how to better predict the best timing to photographically record the evidence. The future use of digital imaging systems will facilitate more rapid review of the injury patterns and needs to be developed in the areas of nonvisible light photo-documentation.

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