

Why Is The Crime Scene Photographed? There Is Not A Single Answer!

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Abstract

Forensic photography resulted from the modernization of criminal justice systems and the power of photographic realism. Perhaps no aspect of crime scene documentation is more important and more demonstrable than photography. Affirmatively, photography is one of the most important applied protocols of forensic dentistry. The demands on the photographer can be great, especially in situations where an injury is the only evidence tying a suspect to the crime. While often frustrating and time consuming, when done properly the results yield good evidence, bringing with it a sense of accomplishment and satisfaction that the forensic dentist has made a significant contribution to the case. This review has emphasised the role of dentist as a forensic expertise in bringing significant contribution towards the law and justice.

INTRODUCTION

Photography is widely acknowledged as the most accurate way of documenting evidence, though; it was not until key developments in the late 19th century that it came to be accepted as an essential forensic means of identification.^{1,2} Forensic photography resulted from the modernization of criminal justice systems and the power of photographic realism. It encompasses documenting both suspected and convicted criminals, and also the crime scenes, victims, autopsies and other evidences needed to make conviction.² Hence, it supports the forensic science, toxicology and medical examiner's departments.³

Forensic photography (sometimes referred to as forensic imaging or crime scene photography) is the art of producing an accurate reproduction of a crime scene or an accident scene for the benefit of a court or to aid in the investigation. It is part of the process of evidence collecting. It provides investigators with photos of bodies, places and items involved in the crime.¹⁵

In many cases, people other than the forensic dentist will originate the crime scene photography. Photography is vitally important since the original evidence in homicide cases is eventually lost due to postmortem changes, burial and cremation.^{5,6} In live patients, injuries heal and will fade from sight. Recent advances like alternate light photography, ultraviolet and infrared photography, digital imaging technologies; greatly improve many aspects of forensic

photography, therefore, not to miss even minute details. The photographic evidences are then presented in the court to sum up the case and aid in justice.³

NEED OF DENTAL FORENSIC PHOTOGRAPHY

Identifying unknown human remains by dental science is second in effectiveness only to fingerprints. The validity and reliability are based on the numerous combinations and permutations in the patterns of decayed, missing and filled teeth. Almost invariably, dental identifications become essential when visual means and fingerprints are obliterated by decomposition, burning, mutilation and skeletization. Even the intact body may require dental confirmation of identity if foul play or litigations are considerations, or if finger print records are not available.⁵

Dental photography mainly shows dental remains and features bite marks. Police photographers are not trained enough to do forensic dental photography.⁸ Moreover, bite mark analysis requires specific dimensional control of the objects being photographed because the dentist takes life – sized models of a suspect's teeth and superimposes them onto the crime scene evidence.^{6,7} Therefore, forensic dentist should standardize his technique to allow reproducibility rather than concentrate on artistic beauty.⁷

After intense fire, carbonization of the anterior teeth renders them so fragile that they may crumble at the slightest touch. Any attempt to remove the jaws may leave the dentition in

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ashes. An initial photograph maintains this data if damage occurs later.⁵

In rare court cases, in which victim's identity is in question, the forensic dentist may be subpoenaed and challenge to demonstrate the technique upon which he based his conclusions. A photographic series could serve to corroborate and strengthen the written record.⁵

Figure 1

Photo 1a - Bite mark located on abdomen of deceased victim using normal full-flash photography.

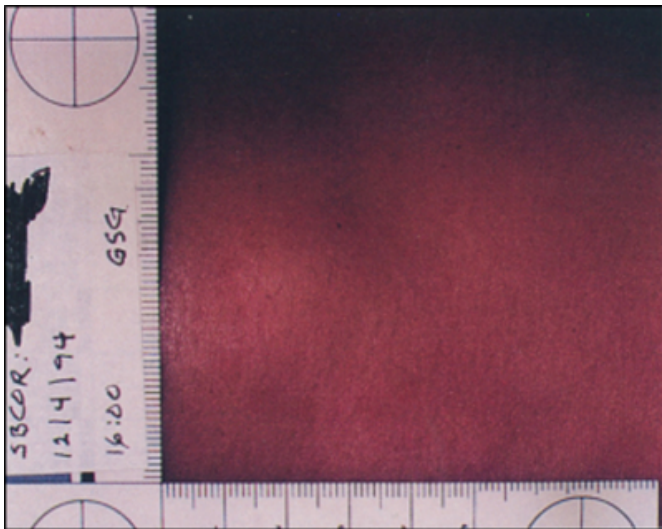


Figure 2

Photo 1b- Same view using alternate light imaging technique (ALI) individual "tooth prints" are now visible.

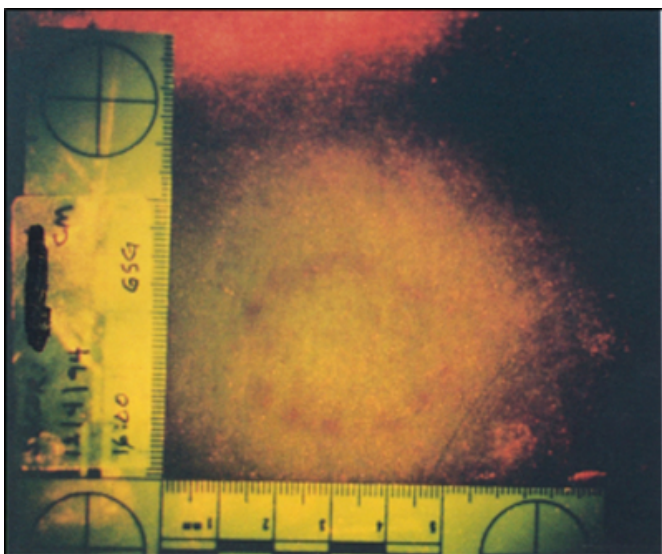


Figure 3

Photo 2- Fluorescence of gunshot residue around a central bullet hole in fabric using ALI.

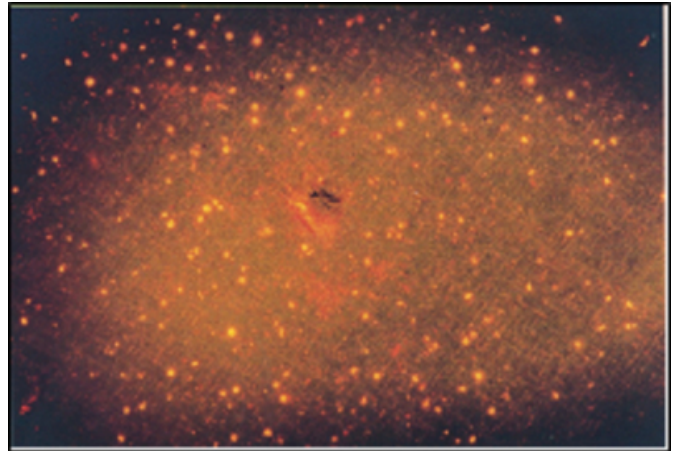


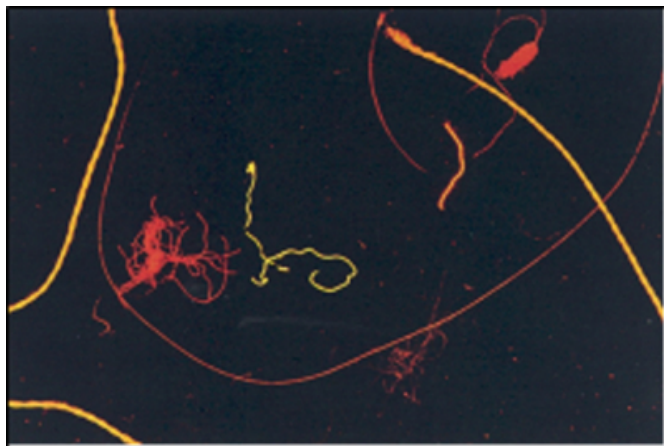
Figure 14

Photo 13- The physical change produced by the lab assistant holding the breast creates a serious distortion problem. In this situation, the breast should be photographed in as many natural and assisted positions as possible. These photographs should then be digitally analyzed to consider how much shape change occurs between the various positions.



Figure 5

Photo 4- Fluorescence of fibers using ALI.



ORIENTATION SHOT

Before approaching any photographic subject for close-up documentation of either a injury pattern or tool mark, remember to take an orientation shot.^{1,6} For example, in photographing a bite mark, typically a few preliminary photos would be taken at a distance which includes the location and orientation of the bite mark relative to its position on the body.(Photo 7a) This is to communicate to subsequent observers exactly where the injury occurred and its positional orientation.¹

FINAL SHOT

Numerous close-up photographs using a macro lens should be taken, both with and without a scale in place.(Photo 7b) Be certain the scale is in the same focal plane of the object being photographed before exposing the film.² This photo will be used for forensic comparison and must accurately detail the color and contrasting black and white features of the physical evidence. The important step is to avoid “burning out” the bite mark with excessive direct light, flash exposure, and reflections. The use of oblique lighting (light at 45° to surface) is particularly important to allow three-dimensional (having depth) features to be highlighted as areas of light and shadow.⁶

PROPER USE OF SCALES AND MEASURING DEVICES FOR CLOSE UP PHOTOGRAPHY

The placement, next to the evidence, of a scale, measuring tape, or ruler is very important for subsequent use of the photograph in forensic comparisons.⁶ The scale has to be in the same focal plane of the object being photographed before exposing the film.¹ The two-dimensional detail and proper size of the evidence item is dependent on the scale's ability to clearly show its linear markings and circular reference

targets. The alignment of the scale to the skin or bitten object is critical.⁶

Suggested photographs of deceased body -

a. In situ full body photographs-(photo 7c)

-are usually made by police.⁵ During autopsy, this would be a picture showing the entire body, unwashed and therefore untouched.⁶ These views could be extremely important since they provide a version of untampered evidence^{5,6} and ensure that any subsequent manipulation has not concealed or destroyed information. These photographs are of great concern when one attempts to construct mass disaster and bite mark cases.⁵ The viewable body is also photographed for possible visual identification by family.⁶ Only later should a picture with a case card or number be placed in the frame.⁵

b. Full Face and Profile Photographs

These photographs would be useful in instances in which the body is well preserved and is potentially identifiable visually.⁵ The front view of the deceased's face should be photographed before the autopsy commences.⁶

c. Photographs Of Anterior Teeth

Close-up photographs of the exposed anterior teeth are important in case the only antemortem record that materializes is a photograph of the victim smiling.⁵ In burn cases and decomposition cases, the facial muscles have to be dissected away. The teeth may be so carbonized that later removal during the autopsy may destroy them.⁶ Also, postmortem photographs are useful where carbonization of anterior teeth threatens their preservation.⁵

d. Intraoral photographs -

If rigor has made the jaws of a viewable body impossible to open wide, waiting 12-24 hr rather than dissecting away tissue is recommended. Intraoral pictures may be taken after the jaw muscles relax or, after dissection, the jaws should be independently pictured.⁵ (photo 5)

Figure 6

Photo 5: An example of the comparison of postmortem and antemortem radiographs to determine identity. The pattern, shapes and sizes of individual dental treatments present in one record are compared with similar traits and characteristics in the other record. In this case it was determined that the records originated from the same person. This established a positive identification. Note that there are several discrepancies present, (eg endodontic treatment of teeth 45 and 46 in the postmortem record) but these can be explained as a result of the time interval between the two records and the additional dental treatments performed during this period



e. Photographs of Resected Jaw Specimens or Skeletonized Jaws⁵-

If jaws are removed, the following series should be made: view of all recovered portions of the maxilla and mandible should be taken.⁵

f. Photographs of Antermortem Radiographs⁵

These photographs are helpful when radiographic duplicates are unavailable or when originals cannot be retained by the forensic dentist. Photographs of antemortem and postmortem radiograph mounted in tandem on the same exposure provide an effective tool to demonstrate concordance in the court.

HANDLING AND DOCUMENTATION OF PHOTOGRAPHIC EVIDENCE

The courtroom use of photographs requires each document to be considered “accurate and representative” of the crime scene.⁶ They form the chain of evidence. This requires an accountability as to what individuals had possession of the evidence from the time it was collected until it was marked and introduced into the legal system.¹ Proof of the photographs’ authenticity starts at the crime scene itself.⁶ Under no circumstances should both the negatives and prints be out of the possession of the photographer.¹

PHOTOGRAPHIC ASPECTS OF PHYSICAL INJURIES AND FATALITIES: LEGAL CONSIDERATIONS

Photography In Bite Mark Cases^{8,5}

Human bite marks in skin occasionally accompany homicides, s e x u a l assault, and child abuse. Rarely, a perpetrator may be bitten in self-defense by a victim. In any event, a dental “fingerprint” is recorded and serves as potential evidence to identify the assailant. The size, shape, color, depth of indentations, and three dimensional contours should be preserved.

Photographs can record the first three, whereas dental impressions show the last two,Ultimately, the photographs will be enlarged to life-size and compared with life-sized representations of the suspect's teeth.

L e g a l Considerations⁶

Because photographs of bite marks can be used as incriminatory evidence in felony crimes, they are subject to intense scrutiny in court, and their technical handling must be performed fastidiously. All photographs intended as evidence should be labeled with the location, date, time, subject, and photographers name and may include such information as camera, lens, film, lens aperture, subject distance, shutter speed, or flash setting used.

For an unbroken chain of evidence, film should change hands as infrequently as possible. With each transfer, the signature of an au-thorized recipient should be affixed to a detailed list of the materials received, including date, time, and place. Courts usually accept film sent for Kodak processing via first Class mail as an unbroken chain of custody.

Procedural Aspects for Victims^{8,5}

In Situ Photographs.

After the police have photographed the crime scene, the dentist may begin processing the bite mark. Photographs of the bitten area, both in black and white and color, precede any other intervention, including cleaning, touching and labeling,

With black and white print film, a series of photographs should illustrate the bite mark at various reproductions. Some pho-tographs should include anatomic landmarks for orientation; others may be close-ups.

The wound must be photographed parallel to the film plane or else the bite mark will be distorted relative to itself and the depth of field would also be in jeopardy. Where bite marks have been inflicted on markedly curved surfaces, each arch may have to be pho-tographed separately to fulfill

these requirements, and a second flexible ruler should be applied to the skin surface in conformity to the same curvature as the lesion.

If the position of the bitten area at the time of biting cannot be determined, several plausible positions may be photographed,

By photographing the range of positional possibilities and supplementing photography with adjunctive techniques, error can be minimized.

The visibility of a bite mark is based upon its discoloration, reflecting cutaneous hemorrhage or epidermal disruption and indentations, which impart shading. Enhancement of these shadows accentuate subtle depressions and can be achieved by strong side lighting.

The developed prints will be enlarged to life-size by using the flat ruler in the photograph as a guide. The detail rendered by black and white prints is sharper than with color photographs. (Photo 7b).

PROCEDURAL ASPECTS FOR SUSPECTS

At some point after the processing of the bite mark, the alleged perpetrator will be located. Impressions of his teeth will be made, and stone casts poured for comparison to the bite mark. At this time, intraoral photographs of the anterior teeth in centric and protrusive relationship as well as incisal/occlusal views of the maxillary and mandibular anterior teeth are to be made. Legally, it is important to obtain informed consent duly witnessed, or a court order.

Otherwise, the dentist could violate due process, thereby invalidating his evidence and subjecting himself to assault charges.

Photographs for Comparison

The cuspal and incisal edges of the suspect's study casts are carefully outlined with a black, permanent, nonsmudging marker. Occlusal views of each cast are photographed with black and white print film, again positioning the film plane parallel to the occlusal plane in which ruler has been placed non obstructively. The resulting prints are enlarged to life-size.⁶

ACCIDENTAL INJURIES

In most cases, the victims will still be alive. They may also be in shock and/or a great deal of pain. Photographing of the injuries takes a backseat to emergency medical treatment. Although photography may not seem of paramount

importance to the victim, relatives, or emergency personnel, photographs of the extrication process or the precarious position of the victim may prove extremely important in future court proceedings.

One should be careful when using auxiliary lighting around the victim, particularly electronic flash. It may frighten the victim, and it could even cause further injury if the victim makes sudden movement when startled or if he has an eye injury.

ASSAULT

In photographic recording of assault, the same general rules apply as described for Accidental Injuries. A nurse or physician can be a helpful witness later if present during photographing of injuries sustained in or near the private areas of the body (groin, anus, or breasts). Never touch a victim's injuries.

AUTOPSY

As the autopsy progresses, photograph step-by-step the examination of various injuries. This includes overall shots of the injury prior to any incisions or probing, and then close-ups of the wound site showing unique characteristics such as jagged edged incisions, or contact bruises from close-proximity firearm discharge.

It is important to photographically differentiate between entrance and exit wounds from gunshots. This has often been the critical evidence that contradicts or confirms witnesses' statements as to accidental, suicidal, or homicidal intent. Another unpleasant but important subject at an autopsy is the photographic documentation of the body's state of decomposition. This is an important consideration, particularly when determining the type and state of development of insect larvae (maggots), which are very useful gauges in establishing the time of death. Several points are unique to fatal fire victims. Injuries to the body such as skin splitting, blistering, pugilistic attitude, presence or absence of soot in the airway, and various degrees of burns all play important roles in evaluating the cause and responsibility for the victim's demise. Many victims of foul play, who were initially thought to have succumbed to the ravages of fire, were later found to have been the victims of a homicide or suicide.

CHILD ABUSE/NEGLECT

This crime is receiving increased publicity and attention, not only by the legal community, but also the general public. Reports of children being physically and sexually abused in

day-care centers, at home, and in school shake the country and the family unit. Cases involving everything from scalding with hot water, to cigarette burns, to death by Satanic ritual are present in records. People who encounter this very sensitive photographic assignment should exercise caution. The work will be under the scrutiny of many people.

Because the objective is to document evidence of injuries and the objects responsible, one may find himself/ herself in hostile surroundings with uncooperative victims and suspects. Photographing children should be done preferably in the presence of a pediatrician or nurse. Never be alone with the victim during a photographic session. The same general rules mentioned regarding lighting and scale of reference also apply to photographing children. (Photo 6)

Figure 7

Photo 6: Child abuse



HOMICIDE

Homicide victims are usually autopsied. However, there are some additional considerations important to photographic documentation of intentionally inflicted fatal wounds. It has been said that “dead men tell no tales,” but in reality the opposite is true. Proper photographic documentation of the wounds and bloodstains can provide an amazingly accurate account of the events that transpired. Consideration of the type of wounds (gunshot, stabbing, ligature, or blunt instrument) and their location are of paramount importance in assessing the mechanism of death. Both entrance and exit sites of gunshot wounds to the head, chest, or back should be documented.

Stab wounds require a critical eye when documenting their number, location, and angle. The approximate depth as well as which hand the assailant used can be determined.

Manual strangulation (by hands) will produce characteristic subcutaneous tissue injury, which may not be initially visible to the eye; however, pronounced bruises are usually noted during autopsy. Photograph the bruises caused by fingernails and thumbs on the victim's neck, from the front as well as from both sides.

SUICIDE

The logical, common sense approach is to treat suicide as a homicide until proven otherwise. Self-inflicted gunshot wounds are, almost without exception, very close range discharges. Photograph the hands of the victim. Usually, the hand used to hold the handgun will have the predominant pattern because the short distance creates the spatter of bloodstains on the thumb and index finger of the hand.(Photo 11) The most common target is the head, and depending on the caliber of the firearm, the trauma can range from destruction to minute, single-entrance wounds that may go undetected in the hair and/or scalp. Remember the scale of reference when photographing these wounds; it is important in the later identification of gun caliber.

Suicide with a cutting instrument — whether a knife, razor, or piece of glass — usually leaves evidence commonly referred to as hesitation marks. These marks are usually numerous and parallel to each other. Regardless of the method of suicide, always look for a suicide note. A very large percentage of suicide victims leave notes. Photograph the place where it was found. Photograph of all pages of the note, should be taken. Victim's handwriting should be searched for comparison purposes.

Figure 8

Photo 7- (a)Orientation shot of the bite mark showing its relation to the injured part of the body (b)This picture shows a close-up view of a human bitemark. The scale used is the ABFO No. 2, which is placed outside the area of the injury but still in close proximity (c) Full body photograph showing undisturbed position of the dead victim



Figure 9

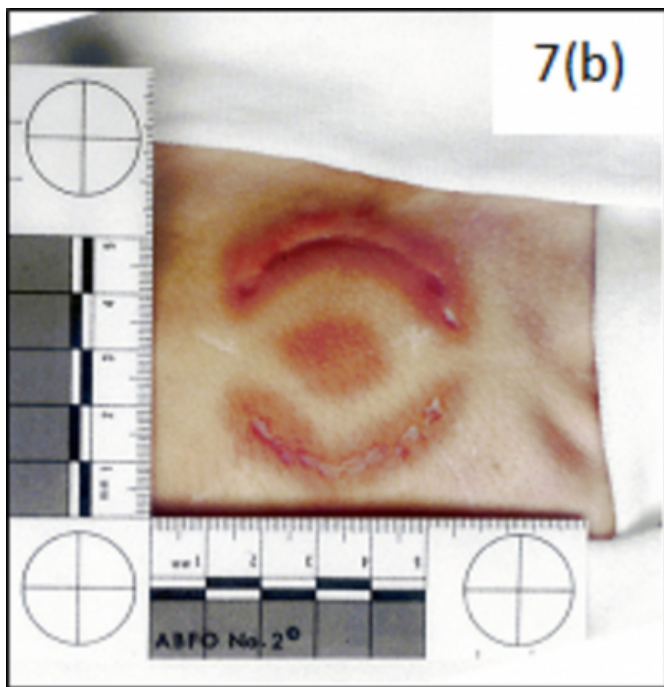


Figure 10



Figure 11

Photo 8-Photograph documenting the presence of soot in the airway of the fire victim is important in establishing whether the victim was dead before the fire or succumbed to the toxic products of combustion later on in the fire



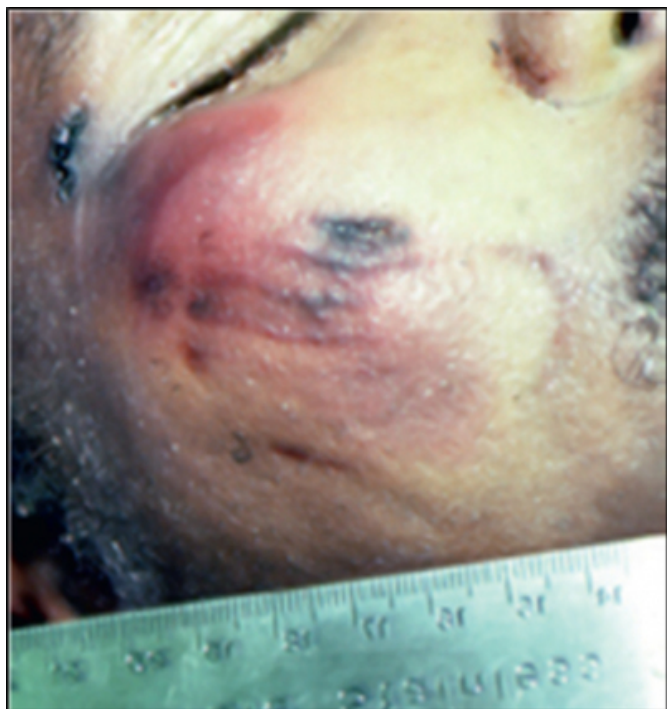
Figure 12

Photo 9- It is important to photograph the hands of a gunshot victim. As shown in this photograph, the hands of a suicide victim frequently show the characteristic back spatter of bloodstains.



Figure 13

Photo 12- The use of the autopsy ruler in this photograph is incorrect due to its misalignment with the injury on the cheek.



{image:14}

JUDICIAL ADMISSIBILITY OF PHOTOGRAPHIC EVIDENCE

Presentation is very important when appearing before a jury. The complexity of a case makes it extremely difficult to explain to a jury all the findings in a case; displays make it possible to sum up an entire case using both text and photographs. The photographic section produces displays using imaging & layout software. The final piece is printed on a 24-inch inkjet printer and mounted on poster board, creating a professional quality display.³

The principal requirements to admit a photograph (digital or film-based) into evidence are relevance and authentication. The party attempting to admit the photograph into evidence must be prepared to offer testimony that the photograph is an accurate representation of the scene. This usually means someone must testify that the photograph accurately portrays the scene as viewed by that witness.^{9,10}

THE ADMISSIBILITY OF DIGITAL PHOTOGRAPHS IN COURT

When digital imaging is considered for law enforcement, the concern of the admissibility of digital photographic evidence in court is often raised. The fact that digital photographs are more easily altered than film-based photographs is usually cited. Some even believe digital photographs are not admissible in court.

CONCLUSION

Perhaps no aspect of crime scene documentation is more important and more demonstrable than photography. The mere click of a shutter can lock in time a theoretically unbiased account of a scene or subject.

Affirmatively, photography is one of the most important applied protocols of forensic dentistry. The demands on the photographer can be great, especially in situations where an injury is the only evidence tying a suspect to the crime. While often frustrating and time consuming, when done properly the results yield good evidence, bringing with it a sense of accomplishment and satisfaction that the forensic dentist has made a significant contribution to the case. Crime photography involves documenting the scene of the crime, rather than the criminal.¹²

“If your photographic efforts are satisfactory, you could be the hero. If not, you could be the one blamed for failure of the investigation.”¹

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