

*Short communication***Forensic Photography - An Emphasis on Bite Mark Photograph**

Ramesh G, Nagarajappa R, Sreedhar G, Sumalatha G.

Evidence photography, videography and other evolving multimedia technologies are indispensable to the evaluation, interpretation and presentation of physical evidence in court. Photographs are more accurate, graphic, objective and verifiable than written or verbal description and sketches in any crimes. In criminal investigations, properly taken, scaled photographs are indispensable in the evaluation and interpretation of physical evidence. The location, relative position, appearance, physical size, and depth and shape of any object that possesses potential evidentiary value should be photographed, both scaled and unscaled, using the following recommendations.^{1,2}

Photography used by the forensic dentist is to document clinical findings in identification, person abuse and bite mark cases. French photographer, Alphonse Bertillon³ was the first to realize that photographs were futile for identification if they were not standardized by using the same lighting, scale and angles.³

Amongst these in Bite mark cases photography is the most suited and practical and necessary to record size, shape, and color in bite mark cases. Color photographs should be made for all views. All photographs should be exposed in duplicate and properly labeled. Bracketing exposures is recommended as a safeguard against miscalculation.⁴

Forensic photographs can be of different types in a single case of bite mark. 1. *Initial photographs* of Bite marks are those that precede all other investigations and represent the untampered evidence as it appeared to the photographer before it was altered by touching, moving, swabbing or cleansing. 2. *Orientation photographs* are those views that show the location of the bite marks on the body and must include sufficient anatomy to accurately reconstruct the location of the marks. 3. *Close up working photographs* are those

views which are used for direct size and shape comparison to the suspect teeth and the fastidious technique is necessary to ensure accuracy, resolution, focus depth of field, perspective control, and size reproducibility.¹

Required Equipment for such photography are:^{4,5}

- A. Single lens reflex (SLR) film camera or digital single lens reflex (DSLR) camera with manual exposure controls.
- B. A sturdy tripod with a sturdy head and the capability to invert the center column and/or remount the center column at a 90° angle for close-up photography. There is also a quadrapod (four legs) designed for close-up photography.
- C. Cable release for camera.
- D. Electronic flash with extension cord or other device for off-camera flash.
- E. Thin, rigid, flat, accurate rulers in addition to accurate adhesive rulers.

1. *Accurate paper stick-on type scales are acceptable for fingerprint photography.*
2. *An ABFO #2 (American Board of Forensic Odontology) "L" shaped photomacrographic scale is suggested for bite mark photography.*

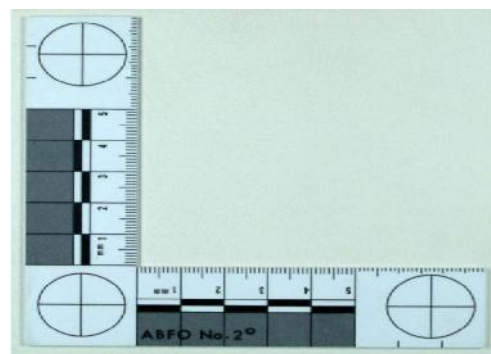


Figure 1: Shows an ABFO scale that is commonly used in bite mark evaluation.⁶

Depending on the appearance of the bite mark, photographs may have to be made over an extended period. This may be a time frame of

several days or more, depending on whether the victim is living or deceased, the condition of the body, storage facilities, etc. The impression should be swabbed for saliva that may be used in an attempt to obtain a DNA profile of the individual who made the impression. If swabbing results in uncovering more detail in the bite mark, the impression should be re-photographed.^{5,6}

Preparation for Bite Mark Impression photography:¹

- A. Camera must be on a tripod!
- B. A scale must be used! An ABFO #2 photomacrographic scale and a thin accurate scale are recommended.
- C. When photographing the scaled impression, the camera back must be parallel to the impression and scale with the lens directly centered over both.
- D. Take an overall view of the person showing the part of the body where the bite mark impression is located.
- E. Take a medium view showing the bite mark and the area around the bite mark impression.
- F. Consider the depth of the impression and the contour of the area of the bite mark impression. An impression on a curved portion of the victim's body may call for more than one photograph of a specific bite mark.
- G. A scale should be placed as much as possible on the same plane as the area of primary interest and parallel with the impression and film plane. Remember, camera is on a tripod, camera back is parallel to impression and lens centered directly over impression. The scale should not obscure any detail or characteristics.
- H. After overall and medium photographs are recorded, take an unscaled close-up photograph of the bite mark making sure the entire image fills up the viewfinder using lighting techniques described below under *General Lighting Recommendations*.
- I. Place a scale next to the bite mark impression as outlined in steps F and G above. Take a scaled color photograph without changing any of the equipment positions.
- J. After the color images have been made, additional close-up, scaled and unscaled

photographs should be produced with the digital camera set to monochrome or black and white using the appropriate black and white contrast control filters such as Kodak Wratten 25 (red), 47 (blue) and 58 or 61 (green) to enhance the bite area.

K. Additional photographs may be taken with the light from other positions relative to the impression or using a ring light so as not to create shadows, if appropriate.

General Lighting Recommendations:^{1,7,8}

Depending on the depth of the impression and the surface of the material it is in/on, the light should be placed at a low angle to the impression, from 10 – 45 degrees. On-camera flash is seldom used for pattern impressions. Light should be at a distance from the impression to evenly illuminate the entire length/width of the impression. It is important to avoid brighter areas at one end of the impression than the other end. A reflector card may be used to “fill-in” the end farthest from the light provided the shadows or detail are not eliminated.

Conclusion:

The objectives of the photography should be to produce consistent and accurate results. To effect this results the forensic dentist must have the background knowledge of photographic theory and must accomplish how to use his equipment. Photographs are more accurate, graphic, objective and verifiable than written or verbal description and sketches as they capture perishable or transient evidence. Photography can also be used to discover unsuspected findings by extending the range of human visibility, employing such techniques as macrophotography, infrared, and ultraviolet photography.

Author affiliation: 1. Dr. Gayathri Ramesh, Professor, Dept. of Oral and Maxillofacial Pathology, Rama Dental College Hospital and Research Centre, Rama University, Kanpur. 2. Dr. Ramesh Nagarajappa, Prof and Head, Vice Principal, Rama Dental College Hospital and Research Centre, Rama University, Kanpur. 3. Dr. Sreedhar Gadiputti, Prof and Head, Dept. of Oral and Maxillofacial Pathology,

BBDental College, BBD University, Lucknow. 4. Dr. Sumalatha M, Reader, Dept. of Oral and Maxillofacial Diagnosis Radiology, BBDental College, BBD University, Lucknow.

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Corresponding author:

Dr. Gayathri Ramesh
 Professor, Dept of Oral and Maxillofacial Pathology
 Rama Dental College Hospital and Research Centre, Kanpur.
 Email id: amug3r@gmail.com

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