

TECHNICAL NOTE

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Dusting and Lifting the Bite Print: A New Technique

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ABSTRACT: Utilizing the powder and brush method employed in lifting fingerprints, one of the authors was able to lift tooth prints on the body surface of both living and dead victims. The advantages of ease, speed, and greater accuracy of detail render the procedure useful to the forensic odontologist, the medical examiner, and the on-scene evidence technician.

KEYWORDS: odontology, bite marks, bite prints

The collection, preservation, evaluation, and subsequent interpretation of bite mark evidence in a criminal case is of crucial evidentiary value. Standard procedures for bite mark recording accepted by the American Board of Forensic Odontology consist of the following: photography with a scale adjacent to the bite mark, followed by swabbing the bite mark for the presence of saliva which will be used for ABO typing and secretor status [1-3]. This is then followed by a mold of the bite mark using the rubber base or silicone material and, subsequently, dental stone. This latter procedure [4] is time-consuming, difficult to apply, and messy. It requires specialized equipment and some knowledge of the handling of these materials. Interpretation of the stone "positive" model of the bite mark is difficult. The method outlined below is useful in that the evidence technician can perform the entire task of lifting this evidence as soon as it is recognized as a bite mark per se since a great deal of "dental evidence" is transitory with the passage of time.

Materials and Methods

In order to "develop" a bite mark using this method, one requires the standard fingerprint black powder and the camel hair brush. (The magna brush and powder proved disappointing.) A very small amount of powder is placed on the brush and the excess is dusted off. The bite mark on the skin is very lightly brushed. If the surface is hairy—the skin should be shaved to procure greater detail as the hair tends to distort the lifted print by adhering to the clear lifting tape (Fig. 1). The area of the bite arch should be brushed and not the arch concavity so the detail will not be obscured by excess powder (Fig. 2). Photography before, during, and after "brushing" aids the documentation and preservation of this evidence. Clear fingerprint lift-

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FIG. 1—If the surface is hairy, the skin should be shaved to procure greater detail as hair tends to distort the lifted print.

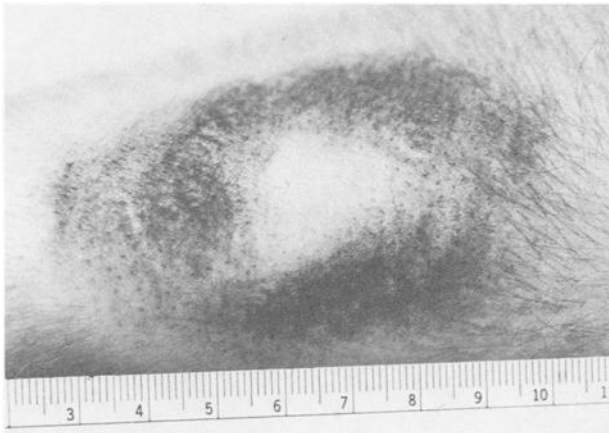


FIG. 2—The area of the bite arch should be brushed and not the arch concavity so the detail will not be obscured by excess powder (measurement in centimetres).

ing tape (10 cm width) is used to lift the bite print (Fig. 3). The lifted print is then placed on a glossy fingerprint card (Fig. 4). This card can then be placed in the case file as part of the record to be used at a later date as evidence in court. The jury will be able to handle this card as they do a photograph on a particular case, and this lends for a better understanding by the jury of dental evidence. In addition, a forensic odontologist called in by an attorney for the prosecution or defense will be able to study it at a later date and render his opinion.

Excellent clarity and detail is obtained using this method. Figure 5 clearly indicates that the bite was made by the upper anterior teeth, and the suspect who inflicted this bite has a gap between the upper right and left central incisor.

Procedure for Subsequent Comparison

A set of dental models from a given suspect is made. This is done either on a voluntary basis or after a court order or search warrant is obtained. Using the following: (a) photographs, (b) the "bite print" card evaluated both by unaided visual examination and under the microscope, and (c) acetate tracings of the incisal edges an analysis and comparison can be made. Subsequently, using stone models of the suspect's teeth and either a live victim or a cadaver,

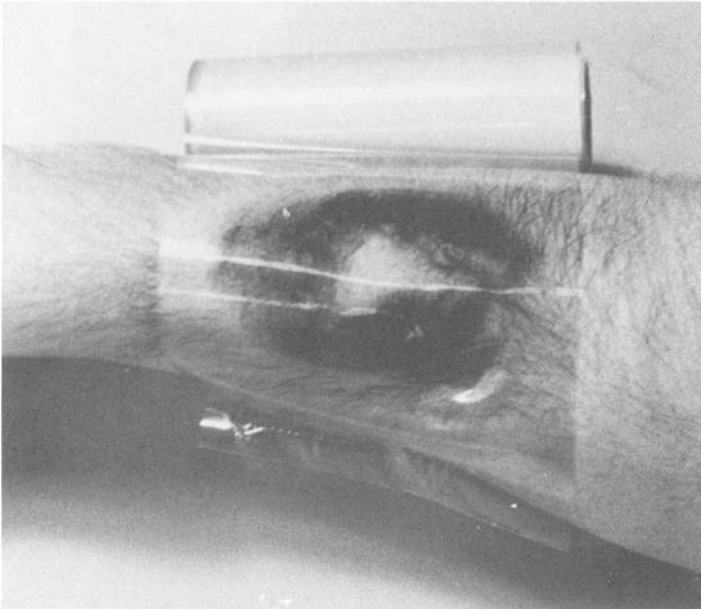


FIG. 3—Clear fingerprint lifting tape (10 cm width) is used to lift the bite print.

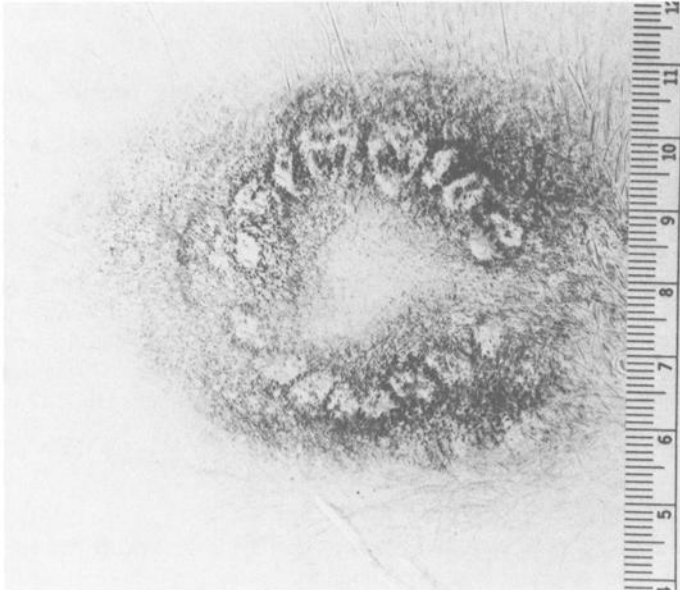


FIG. 4—The lifted print is placed on a glossy fingerprint card (measured in centimetres).

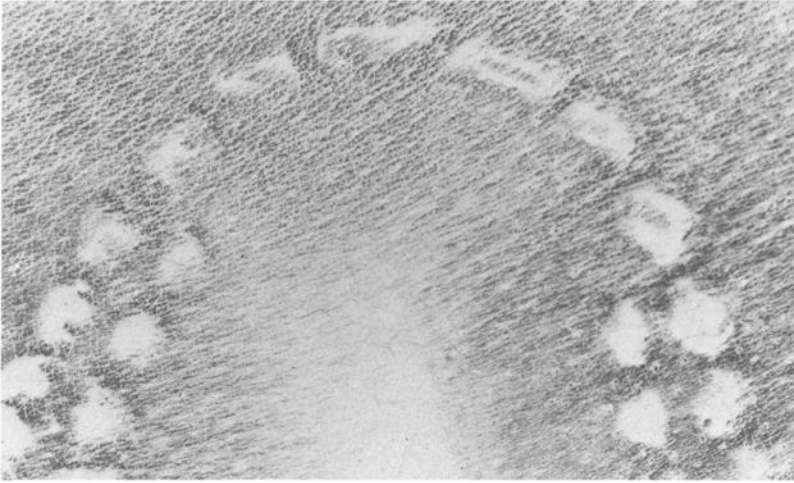


FIG. 5—It is clearly indicated that the bite was made by the upper anterior teeth, and the suspect who inflicted this bite has a gap between the upper right and left central incisor.

imprints can be made by the stone model and a “bite print” card prepared from this imprint. A comparison can once more be made using the initial bite print lifted from the “victim” and that prepared using the dental model of the suspect’s teeth.

Fingerprints and methods of comparison of fingerprints are well understood by crime scene personnel, attorneys, judges, and juries. The scientific use and application of this method adapted to lifting the bite print is hence rendered easy to understand by the layman.

Discussion

Much has been written regarding the preservation and documentation of bite marks. The method described has many advantages and none of the disadvantages of the traditional im-



FIG. 6—Bite print showing that there is a crowded condition in the upper part of the mouth and, furthermore, the upper left central incisor protrudes slightly over the upper right central incisor.

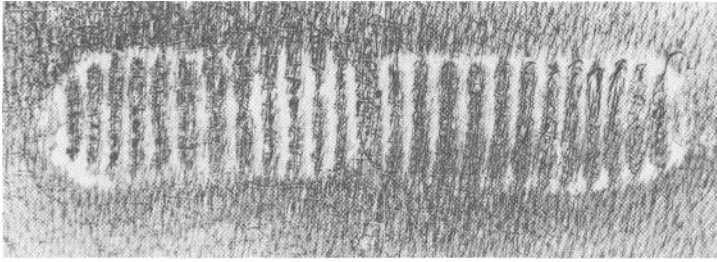


FIG. 7—Tool mark print lifted with the same method used for the bite print.

pression and stone model technique. The fingerprint powder, clear tape, camel hair brush, and glossy fingerprint cards are cheap and readily available. There is no expertise required to lift the print and any crime scene technician or investigator can lift a bite print using this procedure after the area has been swabbed for possible presence of saliva from the assailant. Moreover, this method does not preclude subsequent use of the impression and stone model. The print illustrated in Fig. 6 shows that there is a crowded condition in the upper part of the mouth and, furthermore, the upper left central incisor protrudes slightly over the upper right central incisor. This type of information can be extremely important to the state attorney who can use this as a tool to obtain a search warrant or court order to get a suspect to cooperate in the taking of a dental cast for future comparison. The method gives the forensic odontologist one more tool to work with in coming to his conclusions on the analysis of a particular bite mark. In addition, the lifted "bite print" on the card can be examined under the microscope. This magnification brings out details of the internal anatomy of the biting surface. Interestingly, this method can also be used to lift a tool mark on a victim (Fig. 7). The versatility and use of the fingerprint powder and brush technique is yet to be explored in lifting "prints" caused by instruments, both animate (bite marks) and inanimate (tool marks).

References

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