



G16 Analysis, Comparison, and Misinterpretation: Do You Really Want to Ban All Bitemark Evidence?

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After attending this presentation, attendees will have learned the importance of bitemark evidence as a tool for law enforcement, the prosecution, and the defense. The analysis of a patterned injury to determine whether or not it is a human bite will be shown and explained. The analysis — not comparison — has many applications, none of which involve matching bite to biter.

This presentation will impact the forensic science community by demonstrating the value of bitemark evidence with emphasis on the exculpatory use of this evidence. Determination that a patterned injury is a human bitemark is the first and most basic step in the analysis process. Some important historical cases will be presented to illustrate the value of this evidence for exclusion of a suspect, as well as for inclusion. The mistakes caused by incompetence, manipulation of the evidence, and other misuses will be explained and illustrated by actual case material.

Bitemark evidence in some cases has been misused, and occasionally abused, but that does not render it useless. Banning all bitemark evidence would be similar to banning fingerprint evidence because the Federal Bureau of Investigation (FBI) misidentified a print in the *Mayfield* case. Can bitemark evidence be misused, misinterpreted, and manipulated? Yes, but it can also be a valuable and valid forensic tool under the right circumstances, especially for the exclusion of a suspect. The statement by the late Dr. Joseph Davis (Chief Medical Examiner, Miami-Dade County), “It’s not the science that’s faulty, it’s the people,” is applicable with fingerprint and DNA analysis, as well as with bitemarks.

In the textbook *Dental Autopsy*, ten issues are listed with which bitemark analysis may be able to provide assistance in the pursuit of justice.¹ The analysis of a bitemark should not in any way be confused with comparison or “matching” to a suspect. When the term analysis is used, it should mean “the separation into its constituent parts for individual study.” In the book *Bite Mark Evidence*, an entire section is devoted to the usefulness of bitemarks as exculpatory evidence.⁵ It is pointed out that if the bitemark clearly shows marks from six maxillary teeth (i.e., analysis) and the suspect has only three maxillary teeth, he can be excluded, regardless of any such complications as skin distortion, occlusal wear, bite force, etc. — there are simply insufficient teeth to produce the mark. Why would anyone want to ban the use of bitemark evidence that could prevent an innocent person from being falsely accused?

Misuse of bitemark evidence is not a reason to ban it entirely. Rather, put rules in place, guidelines for use, restrictions guarding against misuse, and limitations on when and how this forensic tool can be used. There should be punishment for deliberate misuse. An excellent example of limiting the use of bitemark testimony was the ruling by the Michigan Supreme Court that banned the use of statistics when testifying as to a particular level of certainty. Michigan did not ban the use of bitemark testimony altogether, but rather put appropriate restrictions on the odontologist’s testimony.

Most of the miscarriages of justice were brought about by faulty bitemark comparison (defined as “examination in order to note the similarities or differences”). In these cases, bitemarks were used without corroboration to identify a specific biter — and the analysts were wrong. These tragic mistakes have resulted in false convictions in several cases, of which the Kennedy Brewer case from Mississippi is probably the most egregious.^{1,3-5} A classic



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example of bitemark manipulation is the case of Ray Krone and the matching (i.e., comparing) of a bitemark to his dental arrangement.^{2,5} There was only one expert for the prosecution, while a plethora (4⁺) of board-certified experts excluded Ray Krone as “the biter.” Nevertheless, Krone was convicted and the jury recommended the death penalty. Ten years later, DNA evidence excluded Krone, and the DNA from the bitemark was “matched” to the real killer, whose teeth “matched” the bitemark.

To repeat, “It’s not the science that’s faulty, it’s the people.”

Reference(s):

1. *Dental Autopsy*. Silver and Souviron, CRC press, Taylor/Francis group, 2009. Chapter 13 PP-151-194.
2. *Forensic Dentistry Second Edition*. Senn and Stimson, CRC press, Taylor/Francis, 2010. Chapter 14 PP-305-367.
3. *Medicolegal Investigation of Death*. Spitz and Fisher, 4th Edition, Charles C. Thompson Publisher LTD. 2006. Chapter VI PP-264-275.
4. *Forensic Pathology*. Dolinak, Matshes, and Lew, Elsevier Academic Press, 2005. Chapter 27 PP-615-629.
5. *Bite Mark Evidence*. Edited by Robert B.J. Dorion, Second Edition, Marcel Dekker, 2005. Chapter 28 PT 555-556.

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