



G15 Bitemarks: To Profile or Not to Profile — So What's the Question?

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After attending this presentation, attendees will know the value and importance of profiling as a part of the initial phase of bitemark analysis. The significant differences with actual case material versus experimental bites on cadavers and live volunteers will be shown and explained.

This presentation will impact the forensic science community by sharing the experience of profiling bitemarks in experimental cases and comparing them with actual case material. The importance of analyzing a bite pattern and forming a profile of the biter may be necessary to obtain a court order or search warrant in order to proceed with securing records from a defendant. The bitemark profile will provide the necessary “probable cause” to justify a search warrant or court order.

A bitemark left in human flesh by another human will not only leave a pattern injury but, most importantly, DNA evidence. The forensic odontologist will be responsible for first analyzing the injury, then providing an opinion as to the origin, such as human or animal teeth or a pattern that mimics a bitemark. If the injury is indeed a bitemark left by human teeth, the investigator should be able to classify the bitemark based on its appearance and detail or lack of detail.^{1,3}

A Class I bite exhibits no details of individual teeth and has been described as a “smoky ring,” but it still is of evidentiary value. It may yield DNA evidence and may be helpful in the elimination of suspects. A Class II bite pattern will have class characteristics but limited individual tooth pattern recognition and may have only one arch identifiable. A Class III bite pattern has been referred to as a “classic” bitemark. Both arches are present and individual teeth can be identified. A Class IV bite is one that produces total avulsion of the body part such as an ear, finger, or nose and usually does not leave a Class or individual pattern. There may be another area of the body with a Class I, II, or III bite pattern.^{1,4}

The analysis of a bitemark should include an opinion as to the arrangement of the biter's teeth, the position of the biter vis-à-vis the victim and, in some cases, whether the bite was left by a child (deciduous teeth) or an adult. This is all part of the analysis of a bitemark and specifically profiling of a bite with real teeth in a real (not experimental) situation will be helpful to the authorities and indeed may be essential in order to obtain a search warrant or court order.^{1,2,4} A bite profile need not be very specific and should leave room for modifications. An example is a bite that shows a space between the maxillary incisors or where the pattern shows clearly crooked teeth. Distortion plays a part in almost all bitemarks and needs to be taken into consideration. Profiling may be possible with all classes of bites except the Class IV. Profiling with experimental bites in cadavers is usually not possible, largely because of the distortion factor. Indeed, false profiles and mismatches are the usual result. Likewise, experimental bites on live volunteers after only a short period of time leave no pattern for profiling. This presentation will show profiling with all three classes of bites in real life cases, the effect of distortion on the bite pattern, and a comparison with experimental cadaver and volunteer bitemarks.

References:

1. Dental Autopsy-Silver & Souviron, CRC Press, Taylor/Francis Group, 2009 Chapter 13 pp- 151-194.
2. Forensic Dentistry 2nd Edition, Senn & Stimson, CRC Press Taylor/Francis, 2010- Chapter 14 pp 305-367.
3. Spitz & Fisher, Medicolegal Investigation of Death, 4th Edition, Charles C. Thomas Publisher LTD, 2006, Chapter VI pp-264-275.
4. Forensic Pathology Dolinak, Matshes, Lew, Elsevier Academic Press, 2005, Chapter 27 pp-615-629.

Bitemarks, Analysis, Profiling