



G23 Recognizing Bitemarks: A Basic Problem

Alexander S. Forrest, MDS*, Griffith University Nathan Campus, School of Natural Sciences, Griffith Sciences, 170 Kessels Road, Nathan, Queensland 4111, AUSTRALIA

The goal of this presentation is to raise an alternative to stating in a courtroom or a legal statement that a suspect injury is or is not a bitemark when there is no victim statement to corroborate the diagnosis. Instead, this presentation proposes stating the degree to which an injury matches the class and individual characteristics of a bitemark.

This presentation will impact the forensic science community by illustrating how to reduce the potentially spurious certainty around claims that a particular injury is a bitemark when this is uncorroborated by other evidence. Instead, this presentation takes the conservative option of reporting only on the degree to which the injury meets the class characteristics, enhancing the probity of the evidence, and reducing reliability on “expert experience,” which has been shown to correlate poorly with a correct diagnosis.

Several lesions have been reported by Gold et al. simulating bitemark injuries, including fixed drug eruptions, subacute cutaneous lupus erythematosus, pityriasis rosea, tinea corporis, and granuloma annulare.¹ Other injuries may also look suggestively similar to bitemark injuries. Injuries from shoe sole contact, belt buckles, defibrillators, and saws have also been reported as potentially presenting confounding features.^{2,3}

A disputed paper purporting to determine the degree to which experienced forensic odontologists could agree on whether or not an injury was caused by teeth raised the issue of whether or not injuries that resemble bitemarks can reliably be differentiated from the real thing.⁴ Regrettably, the original project has not been repeated in a rigorous form, but the question is nonetheless an important one. Important elements of a case may turn on the diagnosis.

In the absence of hard research demonstrating that experience in bitemark analysis improves the reliability of the diagnosis, a more conservative approach may be warranted.

Current American Board of Forensic Odontology (ABFO) Bitemark Methodology Standards and Guidelines refer to three categories into which injuries may be classified: (1) Human Bitemark (human teeth created the pattern); (2) Inconclusive (there is insufficient evidence to reach an opinion as to whether or not the pattern is a bitemark); and, (3) Not a Human Bitemark (human teeth did not create the pattern).⁵ All of these are subjective judgements.

This presentation discusses the class characteristics of human bitemark injuries and suggests that a more conservative presentation removes the subjective nature of these categorizations. Instead, it is proposed that the class characteristics of a human bitemark be listed and agreed upon (this presentation enumerates a possible list) and that forensic odontologists comment only on the extent to which the injury in question matches these class characteristics. If a threshold is met, then the presence of individual characteristics can be used to determine whether or not the injury is suitable for comparison with a potential suspect dentition.

Reference(s):

1. Gold M.H., Roenigk H.H., Smith E.S., and Pierce L.J. (1989) Human bitemarks: Differential diagnosis. *Clinical Pediatrics*. 28, 329-31.
2. Grey T.C. (1989) Defibrillator injury suggesting bitemark. *The American Journal of Forensic Medicine and Pathology*. 10, 144-5.
3. Goodbody R.A., Turner C.H., and Turner J.L. (1976) The differentiation of toothed marks: Report of a case of special forensic interest. *Medicine, Science, and the Law*. 16, 44-8.
4. Page M., Taylor J., and Blenkin M. (2013) Expert interpretation of bitemark injuries – A contemporary qualitative study. *J Forensic Sci*. 58(3): 664-672.
5. American Board of Forensic Odontology Diplomates Reference Manual. (2017) p102

Forensic Odontology, Bitemarks, Class Characteristics