F26 Bite Mark Evidence: Junk Science or "Rocket Science"

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After attending this presentation, the attendees will learn and better understand the relationship between a quality bite mark, a dental profile and a bite mark with little or no individual characteristics. Misdiagnosis of pattern injuries leading to false conclusions will be presented. The presen- tation will provide examples of pattern injuries that mimic bite marks but have been diagnosed as bite marks. Examples of misdiagnosed bite marks and the consequences to the criminal justice system will be discussed with ideas for corrections. The relationship of the "junk science" of bite mark identification from a world population group versus fingerprints and DNA will be explored. The relationship of a "good" bite with class characteristics as a "rocket science" and its' use as an investigative tool in identification and eventual prosecution in criminal cases.

This presentation will impact the forensic community and/or humanity by influencing bite mark comparisons with a view toward con- servatism.

Human on human bite marks have been accepted in the courts in the United States for the past 30 years. Since that time, courts throughout the United States have grappled with the scientific validity of bite mark interpretations.

The original bite mark case admitted under the *Frye* Rule, Marx, occurred in California in 1975. Scientific principles were argued in People vs. Milone, an Illinois case in 1976. Two prosecution forensic odontologists testified that Milone inflicted the bite mark. Three defense odontologists testified that Milone was excluded and the injury pattern may not be a bite mark.

In the early 1980's the American Board of Forensic Odontology established standards and guidelines for documentation and interpretation of bite mark evidence. In 1984 Dr. Ray Rawson published an article detailing bite patterns left in wax and summarized the pattern uniqueness of six anterior teeth. By application of the product rule, he opined the virtual impossibility of finding two individuals with the same arrangement of anterior teeth. In 1987 Robert DeLaCruz published an article in the American Criminal Law Review entitled "Forensic Dentistry and the Law: Is Bite Mark Evidence Here to Stay." Mr. DeLaCruz pointed out the lack of scientific validity in the bite mark identification process and the lack of scientific basis of bite mark opinions. From 1985 through 1990 articles were published describing scientific procedures applied to bite mark evidence, ultraviolet light for the enhancement of pattern injuries (Dr. Tom Krause), the use of scanning electron microscopes, CAT scans and alternate light sources.

As more bite mark cases were adjudicated, prosecution experts became more assertive in their statements regarding comparison of the suspect with the bite wound. Terms such as "it is a positive match," "bite marks are better than fingerprints," "the chances are 4.3 billion to one that no one else left this bite mark," and "indeed and without doubt," were used to obtain convictions in cases, many of which have subsequently been reversed. For example, Wilhoit was convicted in Oklahoma on bite pattern evidence and by trace saliva that contained Canada Albacans that was "unique to Mr. Wilhoit." Wilhoit was subsequently acquitted. In addition to the Wilhoit case, convictions have been overturned in the Keko, Almoilsh, Christini, Moldowan, Brewer, Harrison, and Krone cases.

Arizona State University law professor Michael Saxs has referred to bite mark evidence as "Classic Junk Science." Barry Scheck of the Innocence Project has referred to bite mark evidence as junk science. Professor James Starrs, in his scientific sleuthing publication, has been critical of bite mark evidence. Are they correct?

Some skin bite mark patterns can be evaluated by a component forensic odontologist and result in valid investigative statements pertaining to a dental profile. Upper teeth are larger than lower teeth, a space, or a rotated protruding tooth can create recognizable patterns. If the appropriate pattern is present, a forensic odontologist should be able to inform the investigative authorities that the suspect has a space between his upper front teeth or he is missing a tooth or a tooth is out of line or the individual has "buck teeth." This is not complicated "rocket science." Also, bites can produce permanent injury; the force of teeth may avulse ears, fingers and other tissues. Again, this is simple to opine, if the patterns and circum- stances indicate. The size, shape and arrangement of teeth patterns can help determine if an individual is an adult or a child. When a dental profile bite mark is clearly recorded in skin, it is not difficult to eliminate individuals from a defined population of known suspects. However, to identify a dental pattern as unique to a specific individual from within a world popu- lation is a quantum leap in comparison to eliminating a suspect from a known defined group. This type of opinion evidence is open to question.

Given the same data, competent experts ought to be in agreement, but may not. Nordby, in a 1992 issue of the *Journal of Forensic Science*, "When Experts Disagree: Can We Believe What We See if We See What We Believe?" explains the basis of disagreement between competent experts. To enhance concurrence

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of correct interpretations, experts should apply sound scientific principles and follow ABFO guidelines and standards. Opinions should be supported by an independent second forensic odontologist. The goal is to ensure that justice is done.

Dental Profile, Bite Marks, Odontology

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