G17   Human Bites: A Diagnosis

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After attending this presentation, attendees will recognize how the diagnosis of a human bite is different than assessing the evidentiary value of a bitemark, and how the diagnosis of an injury as a bite is useful in legal proceedings.

This presentation will impact the forensic science community by considering the value of the diagnosis of a bite injury without the inclusion or exclusion of a specific suspect.

Odontologists, Emergency Room (ER) physicians, pediatric child abuse specialists, medical examiners, and other mandated reporters may be asked to examine injuries suspected to be human bites. How does one diagnose an injury as a human bite? How is a diagnosis of human bite different than assessing the evidentiary value of a bitemark?

First, what is a diagnosis? Diagnosis may be defined as: (1) the act or process of identifying or determining the nature and cause of a disease or injury through evaluation of patient history, examination, and review of laboratory data; and, (2) the opinion derived from such an evaluation. Diagnosis is also based on the experience of the clinician as well as epidemiologic studies. Diagnoses are based on observed signs and symptoms, patient history, laboratory tests, and clinical experience — also known as evidence-based medicine.

Characteristics diagnostic for a bite injury are: a circular, oval, or curvilinear pattern or patterned injury consisting of two opposing arches, often, but not always, separated at their bases by space. Individual marks, abrasions, contusions, or lacerations may be found near the periphery of each arch. The marks present should reflect the size, shape, arrangement, and distribution of the contacting surfaces of human teeth. The size and shape of each arch visible is consistent with the size and shape of the human dentition.

The hypothesis that a human bite will cause an injury is reliable and valid. Reliability refers to the extent to which results are repeatable. If a bite is made with sufficient force, there will be an injury (mark) produced. "Validity" addresses the issue, "Is this statement true? A human bite with sufficient force will cause an injury." Again, data and experience support the validity and reliability that injuries can be caused by human teeth. The many studies on bitemark analysis have all started with an actual or experimental bite. There has been no disagreement that a visible injury was caused; however, assessing the evidentiary value of a bitemark is different, as the reliability and validity of bitemark analysis has been questioned. Studies are anticipated to better define parameters for evidentiary classifications and linkage to include or exclude suspect dentitions.

The 2014 Freeman-Pretty study was to test the first step of the American Board of Forensic Odontology (ABFO) Bitemark Algorithm. The question was essentially, "Is this mark evidentiary?" The disagreement between examiners cited by bitemark critics was not based on recognition of an injury as a bite, but rather whether the injury had sufficient evidentiary value to include or exclude a suspect.

The presentation will use case studies to review signs and symptoms of human bites, discuss differential diagnoses, discuss terminology, discuss the importance of a diagnosis without linkage to a suspect, and address differing opinions between clinicians.

Bitemark, Diagnosis, Odontology