



F41 A Comparison of Bitemarks in Vital Tissue

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After attending this presentation, attendees will appreciate the predictability, or lack thereof, of a given dentition to transfer its impression (i.e., bitemark) consistently to vital skin.

This presentation will impact the forensic science community by demonstrating the need for further research into both the response of human skin to biting and the relative certainty with which odontologists ascribe bitemarks to individual dentitions.

It has, it seems, been accepted by the forensic odontology community with regard to bitemark pattern injuries that the pattern (impression) the anterior dental arch (be it maxillary or mandibular) leaves in wax or styrofoam or a similar inert medium capable of recording the shape of the incisal edges/cusp tips and the positional relationship of the teeth to each other is also the pattern which is left in human skin when a bite is inflicted and that the pattern is identifiable. It is also accepted technique that hollow volume overlays created using computer programs (Adobe Photoshop) are used to identify, rule in/rule out suspected/potential biters by comparing (i.e. overlaying) the overlay to the photographed pattern injury.

Research performed on cadaver models over the past several years has shown that distortion of skin, position of bite (relative to Langer lines), non-uniform height of the teeth, and other not yet identified factors all contribute to the pattern which is left on skin and that this pattern is not necessarily identical to the overlays or the patterns left in inanimate recording media.^{1,2} Additionally, it has been shown that positional distortions of bitemarks occur.¹

This project was undertaken to evaluate a very small number of bite injuries made in vital tissue by actual teeth (i.e., not dental casts).

Multiple bites from a single biter (not casts) were inflicted upon a vital subject, these were photographed, a cast of the maxillary arch of the biter was made, and a hollow volume overlay was made (photography, cast fabrication, and overlay creation all as per ABFO guidelines). The overlays were compared to the bitemark images for similarities and dissimilarities.

References:

1. Bush, M., Miller, R., Bush, P., Dorion, R. Biomechanical Factors In Human Dermal Bitemarks in a Cadaver Model *J. Forensic Sci.* 2009; 54 (1): 167-176
2. Miller, R., Bush, P., Dorion, R., Bush, M. Uniqueness of the Dentition as Impressed in Human Skin: A Cadaver Model *J. Forensic Sci.* 2009; 54 (4): 909-914

Forensic Odontology, Bitemark, Vital Human Skin