



F28 Assessment of Bitemark Severity and Willingness to Assess

Andrew Durning, BSc, University of Manchester, Dental Health Unit, 3A Skelton House, Manchester Science Park, Lloyd Street North, Manchester, WA13 9GB, UNITED KINGDOM; and Iain A. Pretty, DDS, PhD, Dental Health Unit, Skelton House, Lloyd Street North, Manchester Science Park, Manchester, M15 6SH, UNITED KINGDOM*

After attending this presentation attendees will: (1) understand the relationship between bitemark severity and forensic significance; (2) recognize the degree of agreement between experts; (3) recognize the importance of linking severity with the degree of analysis that can be undertaken; and, (4) understand the risks of assessing injuries of low significance.

This presentation will impact the forensic science community by highlighting the need to be cautious in assessment of bitemarks and will suggest a threshold at which such injuries should not be compared to a suspect's dentition.

There is a clear link between the severity of a bite injury at presentation and its forensic significance. For example, a bite injury that presents as a diffuse, non-discrete bruise is unlikely to possess unique characteristics suitable for analysis resulting in the positive identification of the perpetrator. However, on the other end of the severity spectrum, very aggressive, avulsive injuries are frequently poor candidates for analysis. A combination of factors including the loss of tissue, tearing and distortion of wound margins, and the need for urgent medical treatment generally render such injuries poor candidates for analysis. Bite injuries that present in the middle of these extremes, i.e., injuries made up of discrete, individual bruises, small abrasions and lacerations frequently and considered by odontologists to present the highest level of significance and many will enable the exclusion and inclusion of potential suspects.

A novel index, relating severity to forensic significance has been previously developed. A total of 37 suspect bitemark images were selected and a range of questions asked of each odontologist completing the questionnaire. In each case the severity scale was shown to the examiner and they were asked if the injury was or was not a bitemark and secondly to rate its severity. Supplemental questions were asked of the degree to which the examiner would pursue the bitemark in terms of forensic analysis. 20% of respondents were asked to repeat the exercise to provide intra-examiner reliability.

Initial results suggest that there is a high degree of agreement between the odontologists on which injuries are bitemarks ($\kappa = 0.92$) and to which level of the scale they should be assigned to ($\kappa = 0.88$). Agreement is reduced when considering the action to be taken in regard to the bitemark, with bitemarks rated as high severity having the largest degree of disagreement ($\kappa = 0.63$). Those bitemarks that fall within the middle of the scale have the highest level of agreement with the majority of respondents stating that they would analyze the injury further. Intra examiner reliability is also high with kappa values of 0.96 for determination of injury as a bitemark, 0.91 for scale assignment and 0.78 for analysis action.

Bitemark, Odontology, Agreement