A scientific evaluation of five selected dental features for use in court cases involving bite marks

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ABSTRACT

The presence of recognisable dental features, together with an understanding of their discriminatory potential, constitutes the foundation of bite mark analysis. The prevalence of dental features within most populations is unknown and therefore cannot be used with any degree of scientific certainty while giving evidence in court cases involving bite marks. This study represents the largest data set of descriptive statistics in five selected dental features commonly observed in bite mark cases. The features studied included intercanine distances, arch shapes, diastemas, missing teeth and the difference in height between the central incisors in both mandibular and maxillary arches.

The bite mark research was conducted on 4286 self –classified volunteers from four racial groupings. The bite registrations were taken on a double layer of pink wax folded around a cardboard strip which gave a good representation of the features present in the anterior dentition. Plaster casts were made from the wax bites and each of the features analysed. The frequencies, means, Standard Deviation, median and Interquartile ranges for all of the features were analysed. The interrelationship of the features was also analysed. To test whether interrelationship existed between the intercanine distance and other dental features, an ANOVA analyses were carried out. The results showed statistically significant correlation between intercanine distance and arch shape, intercanine distance and midline diastemas, intercanine distance and missing teeth and intercanine distance and differences in central incisor height. This study makes weighty impact to the analysis of features present in bite mark cases at the time when subjective opinions need to be replaced with sound scientific data.