Dental forensics: bitemark analysis

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Abstrak

Forensic odontology (dental forensics) can provide useful evidence in both criminal and civil cases, and therefore remains a part of the wider discipline of forensic science. As an example from the toolbox of forensic odontology, the practice and experience on bitemark analysis is reviewed here in brief. The principle of using visible bitemarks in crime victims or in other objects as evidence is fundamentally based on the observation that the detailed pattern of dental imprints tend to be practically unique for each individual. Therefore, finding such an imprint as a bitemark can bear a strong testimony that it was produced by the individual that has the matching dental pattern. However, the comparison of the observed bitemark and the suspected set of teeth will necessarily require human interpretation, and this is not infallible. Both technical challenges in the bitemarks and human errors in the interpretation are possible. To minimise such errors and to maximise the value of bitemark analysis, dedicated procedures and protocols have been developed, and the personnel taking care of the analysis need to be properly trained. In principle the action within the discipline should be conducted as in evidence-based dentristy, i.e. accepted procedures should have known error rates. Because of the involvement of human interpretation, even personal performance statistics may be required from legal expert statements. The requirements have been introduced largely due to cases where false convictions based on bitemark analysis have been overturned after DNA analysis.