

the bruise. Without this scale being placed correctly and photographed with the injury, the subsequent measurements will be subject to error and affect the analysis resulting in inadmissible evidence for court.

It is important to use the same scale when taking photographs of the bite mark and making recordings of the suspect's dental cast, to minimise unwanted measurement error. The scale should have a matt finish to reduce reflection. 26

Colour chart

An accurate colour chart is needed when photographing the bite mark to ensure correct colour calibration when using a computer. For consistent results a colour chart should be visible in every image that is taken because slight changes in the distance between the flash and subject will have an influence on brightness within the image and will create slight variance in the colour.

Digital image file formats

The lossless (little compression) type of format used by the camera is either the TIF (Tagged Image File) format or a RAW image format. Many forensic photographers use only RAW files when creating photographic evidence. Thus integrity of the evidence is maintained as all original data is reconstructed faithfully at all stages in the workflow, from viewing to archiving of the image.

The JPEG file format uses a heavier compression, meaning that, to reduce the size (in megabytes), parts of the data from the image file are removed. The JPEG format can introduce changes to the appearance of the image itself. Artefacts can appear around the edges of an object in the digital image. If image enhancement is needed, then further loss of detail is introduced. Changes brought about by image compression may cause issues for the forensic investigator when analysing the images. To preserve the continuity of the sequence all images must be kept. There is no acceptable reason to delete images; even if some images do not depict important information, the continuity of the sequence should be preserved. Using of a ring flash is recommended for intraoral photography. Flash devices positioned on top of the camera or to one side will cause shadows to fall over parts of the dentition and obscure information.

8. Conclusion

Human bite mark analysis is by far the most demanding and complicated part of forensic dentistry. There is no dependable way of stating that one or more tooth marks seen in a wound are irrefutably unique to just one person in the population. Bite mark distortion through skin elasticity, anatomical location and body positioning is a recurring problem. With the recent developments regarding expert testimony, the need for accurate, reliable, reproducible and above all objective methods for bite mark analysis and comparison has never been greater. Although more research is needed to explore the possibilities of image perception technology, its possibilities to visualise more details in a bite mark photograph are promising. The availability of additional colouring of selected areas with similar intensity values as well as rendering 2-D photographs as pseudo 3-D

images may enable the researcher to analyse the image more extensively and come to a more accurate conclusion regarding the source of the bite. However, bite mark analysis alone should not be allowed to lead to a guilty verdict, but it will offer the opportunity to exclude a suspect from a crime when data do not correspond.

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