## BACKGROUND

Forensic odontology generally addresses the problem of identifying individuals based on the properties of teeth or bite mark impressions. It is legally relevant to accurately and reliably match a bite mark impression to convict a criminal. Therefore, a system which minimizes human interaction to conduct the comparison would be beneficial to ensure accuracy and reduce human bias. This study describes experiments with a method to compare 3D dental models taken from human volunteers and bite mark impression images in the apple and also to evaluate which level of the labial surface matches the indentations. Once the compound overlays were generated, the best match is identified by performing an interobsrver analysis.

## AIM

To ascertain if the depth of penetration in a bitemark would require alterations in the assessment of layers in the digital compound overlay technique.

## MATERIALS AND METHODS

The study was carried out on 30 volunteers. All of them were made to bite on to apples and the bitemarks were photographed immediately. Upper and lower arch impressions were obtained and 60 dental study casts were made and scanned using 3D scanner. Compound overlays were generated from the dental casts using Adobe Photoshop software and compared with the bite impression images. Statistical evaluation included descriptive and Kappa analysis.

## RESULTS

All the samples matched positively. Also in maxillary bite pattern, percentage of level 3 cross section was found to be the highest followed by level 2,level 4and level 1 and in mandibular bite pattern, percentage of level 2 and level 3 cross sections were found to be the same and highest followed by level 4 and level 1.

## CONCLUSION

Comparison techniques used in bite mark analysis are many and varied. The choice of technique depends largely on personal preference. So to overcome these problems more recently three dimensional scanning and Adobe Photoshop Software are used to produce bite mark comparison overlays. Hence, with the use of three dimensional scanners and advanced softwares, it is possible to make bitemarks a highly reliable evidence. Also it is recommended that labial surfaces of the teeth rather than incisal edges be looked in for the comparison of bite marks in food substances.

## KEY WORDS

Forensic, bitemark, compound overlay