Accuracy of laboratory scanner by scanning the impressions and dental stone casts of the prepared tooth: An In Vitro study

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Purpose: The accuracy of a scanner is determined by two factors: “trueness” and “precision. The purpose of this in vitro study was to determine the trueness and precision of laboratory scanner by scanning the impressions and dental stone casts of the prepared tooth.

Method and material: For the evaluation of trueness, the impression and stone model of the prepared mandible first molar were scanned with a laboratory scanner to obtain a stereo lithography (STL) file. Further, the impression and the stone model was removed from the scanner table and fixed on it again and scanned. This procedure was repeated to obtain 20 files for each scan. For precision evaluation, laboratory scanner were used to scan the impression and stone model to obtain a stereo lithography file. Without moving it, scanning was performed 19 more times. First STL file was superimposed onto the other STL files one by one, and by the best-fit-alignment colour-difference maps and reports were obtained. For the comparison of the data between the groups an independent t-test was used.

Result: A significant difference was noted for trueness between the impression and stone model scanning, but no significant differences were found for precision.

Conclusion: The results may help in advance the digital dental CAD/CAM research and in the clinical field of Prosthodontics.

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