CFAO GRADUATE STUDENT
POSTERBOARD ABSTRACTS

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DEVELOPMENT OF AN IMAGING METHOD TO QUANTIFY VOLUME OF LOWER INCISORS AND CANINES FROM CBCT IMAGES USING AN "IN-BLOCK" TECHNIQUE: INTRA- AND INTER-CLASS RELIABILITY

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AIM: To develop a reliable imaging method to quantify volume of lower incisors and canines from CBCT images using an "in-block" technique in order to increase measuring efficiency.

METHOD: The lower incisors and lower canines of five random patients coming from a Class II treatment RCT were segmented from CBCT images using ITK-Snap®. The segmentation method was semi-automatic with slice-by-slice manual refinement. This generated volume included the six teeth together. Using different tools, the volume was further segmented into six individual volumes. Another manual refinement phase was necessary with the aim of increasing volume accuracy. Finally, the volume of each teeth was calculated by the same software. In order to calculate intra- and inter-class correlations, three measurements of the same five patients were taken by the main researcher (GCM) at three different time points and one single measurement was taken by another researcher (KC).

RESULTS: All ICC values for all six teeth were larger than 0.9 ($p<.001$) for both intra- and inter-class correlations. Mean volume measurement errors among the three sets of quantifications for all six teeth was 4.15%.

CONCLUSIONS: This new method may represent a useful way to assess volume of lower anterior teeth based on CBCT imaging. The ICC values showed a high reliability. Also, the mean measurement error was relatively small but maybe considered clinically important in some scenarios.