

The Reliability and Reproducibility of Conventional, Digital and CT Created Cephalograms: A Comparative Study

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Abstract

Objective: The purpose of this retrospective radiographic study was to determine the reliability and reproducibility of skeletal and dental measurements of lateral cephalograms created from computed tomography (CT) scan compared to the conventional and digital lateral cephalograms.

Method: Following reliability studies, CT records of 30 patients were obtained from the archives. The lateral cephalometric radiographs of these patients were initially manually traced. Then the same radiographs were scanned and traced using Dolphin Imaging software Version 11 (Dolphin Imaging, Chatsworth, CA, USA). Totally 16 (10 angular and 6 linear) measurements were performed. Cephalometric measurements performed on conventional, digital and CT created cephalograms were compared statistically using repeated measures analysis of variance. Statistical significance was set at $p < 0.05$ level.

Result: The intrarater reliability test for each method showed high values $r > .090$ except for the mandibular length which had a correlation of 0.82 for the CT created cephalogram. Five measurements (N-A-Pog, N-S, ANS-PNS, Co-ANS and Co-Gn) were found to be significantly different between the CT created and conventional cephalograms and three measurements (SNB, ANB, and /1-MP) were found to be significantly different between the CT created and digital cephalograms.

Conclusion: The measurement differences between the conventional, digital and CT created cephalograms are statistically significant, but clinically acceptable.