Clin Oral Invest
DOI 10.1007/s00784-016-1908-y

ORIGINAL ARTICLE

How effective is the Invisalign® system in expansion movement with Ex30′ aligners?

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Received: 12 October 2015 / Accepted: 7 July 2016

Abstract
Objectives The aims of this study are to validate a new method for quantifying the predictability of expansion movement with the Invisalign® system and to determine whether there are statistically significant differences between planned expansion with ClinCheck® and actual clinical quantification using upper post-treatment model comparisons.
Materials and methods A sample of 116 patients subjected to expansion with Invisalign® was studied. The following variables were measured at T1 and T2 on 3D models and ClinCheck®: canine gingival width, first premolar gingival width, second premolar gingival width, first molar gingival width, canine cuspid width, first premolar cuspid width, second premolar cuspid width, first molar cuspid width, canine depth, arch depth, first molar rotation, first right and left molar rotation, and first molar inclination.
Results Measurement error was tested, showing good precision for all variables. The paired test showed non-significant differences between the 3D model and ClinCheck® at T1 for all variables except first molar cuspid width and arch depth. Statistically significant differences were found for canine gingival width, first premolar gingival width, second premolar gingival width, first molar gingival width, canine cuspid width, first premolar cuspid width, second premolar cuspid width, first molar cuspid width, and canine depth when the 3D model and ClinCheck® were compared at T2.
Conclusions Differences between the 3D model and ClinCheck® at T2 showed that planned expansion at the end of treatment is not predictable.
Clinical relevance This is the first in vivo human study to quantify the predictability of expansion in patients with Invisalign® Ex30 material.

Keywords Invisalign · Orthodontics · ClinCheck · Predictability

Electronic supplementary material The online version of this article (doi:10.1007/s00784-016-1908-y) contains supplementary material, which is available to authorized users.

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Published online: 19 July 2016