



Intraoralscanner in der Praxis

# Mehr Behandlungsqualität dank digitaler Abformung

Ein Beitrag von Dr. Ingo Baresel

Literaturangabe

- [1] A. Ender, M. Zimmermann, A. Mehl  
**Accuracy of complete- and partial-arch impressions of actual intraoral scanning systems *in vitro***

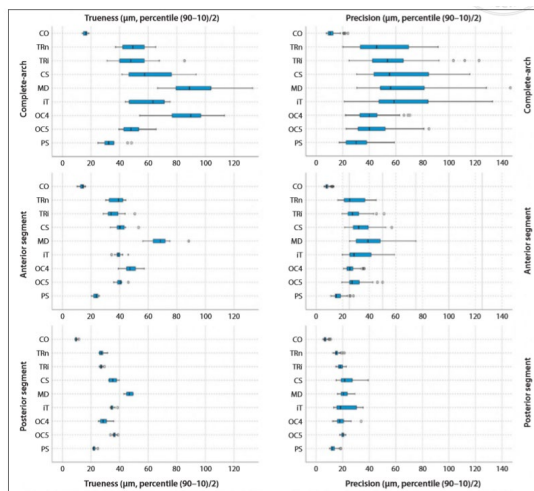


Fig 3 Boxplot diagrams showing the trueness and precision values for the digital and conventional impression methods using 90-10/2 percentile values. The box represents the interquartile range [IQR]. The bar within the box represents the median value. Three different regions of interest were evaluated for each group: complete-arch, anterior segment, and posterior segment.

- [2] *Clin Oral Investig*. 2019 May 27. doi: 10.1007/s00784-019-02965-2. [Epub ahead of print]  
**Accuracy of full-arch digital impressions: an *in vitro* and *in vivo* comparison.**

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**Abstract**

**OBJECTIVES:** Comparison of full-arch digital impressions to conventional impressions *in vitro* and *in vivo*.

**MATERIALS AND METHODS:** A straight metal bar was fixed between the second upper molars as a reference structure in the mouth of a voluntary patient and a corresponding polymer model. The following digitalization methods were applied: (1) the maxilla was digitized *in vivo* 12 times with the iTero Element (P-SCAN); (2) the maxilla was captured *in vivo* 12 times by conventional impression and the impression was digitized by a desktop scanner (P-IMP); (3) the impressions were poured and the 12 referring gypsum master-casts were scanned with the same desktop scanner (P-CAST); (4) the polymer model was digitized *in vitro* 12 times with the iTero Element (M-SCAN); (5) the polymer model was captured *in vitro* 12 times by conventional impression and the impression was digitized by a desktop scanner (M-IMP); (6) the impressions were poured and the 12 referring gypsum master-casts were scanned with the same desktop scanner (M-CAST). Datasets were exported and metrically analyzed (Geomagic Control X) to determine three-dimensional length aberration and angular distortion versus the reference structure. Mann-Whitney U test was implemented to detect differences ( $p < 0.05$ ).

**RESULTS:** For multiple accuracy parameters, P-SCAN and M-SCAN showed similar or superior results compared to the other digitalization methods. The following length deviations were found: M-SCAN (-55 to 80 µm), M-IMP (110 to 329 µm), M-CAST (88 to 178 µm), P-SCAN (-67 to 76 µm), P-IMP (125-320 µm), and P-CAST (92-285 µm).

**CONCLUSIONS:** Within the limitations of this study, the iTero-scan seems to be a valid alternative to conventional impressions for full arches.

**CLINICAL RELEVANCE:** Intraoral scanners are more and more used in daily routine; however, little is known about their accuracy when it comes to full-arch scans. Under optimum conditions, the direct digitalization using the iTero Element intraoral scanning device results in the same and for single parameters (arch width and arch distortion) even in higher accuracy than the indirect digitalization of the impression or the gypsum cast using a desktop scanner.