

## POSTER

### **Influence of Implant Scan Body (ISB) material and surface over the accuracy of intraoral optical surface scanning (IOS) for implant impression: A randomized in vitro trial**

Area: Computer Assisted Technology, Biomechanics, Imaging and Diagnostic Systems

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Objective:

The aim of this in vitro study was to evaluate the influence of ISB material and surface onto the accuracy of IOS for complete arch multiple implant impression.

Materials:

An edentulous maxillary master model set-up with 6 internal connection dental implant analogues was scanned with an extraoral optical scanner to achieve a standard tessellation language (STL) file to be used as a reference for the study measurements. Three ISBs with the same geometry but different materials (polyetheretherketone (P), titanium (T) and PEEK with a titanium base (PT)) were scanned according to a randomized sequence with an IOS device. The 45 test STL files were obtained by three different experienced operators and then aligned to the reference scan with a 0,01-mm tolerance best fit algorithm. Linear (X, Y and Z-axis) and angular deviations (DeltaANGLE) were measured for each analogue (n=270). Absolute values of the linear discrepancies were summed up to obtain a tridimensional discrepancy value (DeltaASS). ISB material influence over DeltaASS and DeltaANGLE was statistically analyzed through a hypotheses test for mixed model analysis of variance with Tukey adjustment for multiple comparison.

Results:

DeltaASS LS Means resulted as 0.0547 mm for P, 0.0992 mm for T and 0.1964 mm for PT.

Considering DeltaASS, P was significantly more accurate than T ( $p=0,0096$ ) and PT ( $p<0,0001$ ). T was significantly more accurate than PT ( $p<0,0001$ ). DeltaANGLE LS means were P 0,6423°, T 0,7137°, PT 0,7600°. Considering DeltaANGLE, P was significantly more accurate than PT ( $p=0,0178$ ). While no statistically significant difference was found between P and T ( $p=0,2216$ ) as well as between T and PT ( $p=0,5273$ ).

Conclusion:

Within the limitations of this study, ISB material seemed to influence the accuracy of digital complete arch implant impressions obtained through a confocal microscopy IOS. P expressed the best results on both linear and angular measurements, followed by T. PT resulted as the less accurate.