

Influence of scanbodies material and the presence of errors in their scanning on the accuracy of digital models

Faria Moura, Guilherme; Silva Moreira, Rodrigo; Mendonca, Gustavo; Rizzante, Fabio A.; Soares, Carlos J.; das Neves, Flavio D.

Guilherme Faria Moura, DDS, MSc, PhD
Assistant Professor
Dept of Reconstructive & Rehabilitation Science
Medical University of South Carolina
James B. Edwards College of Dental Medicine

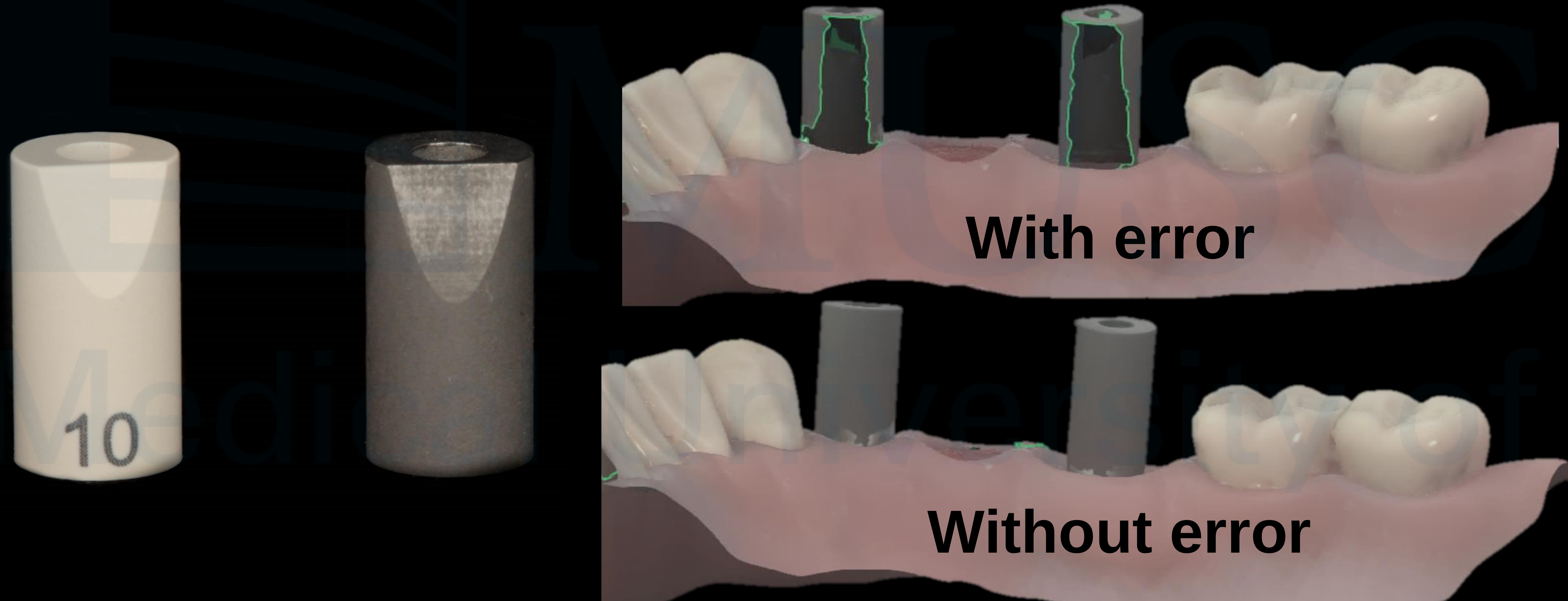


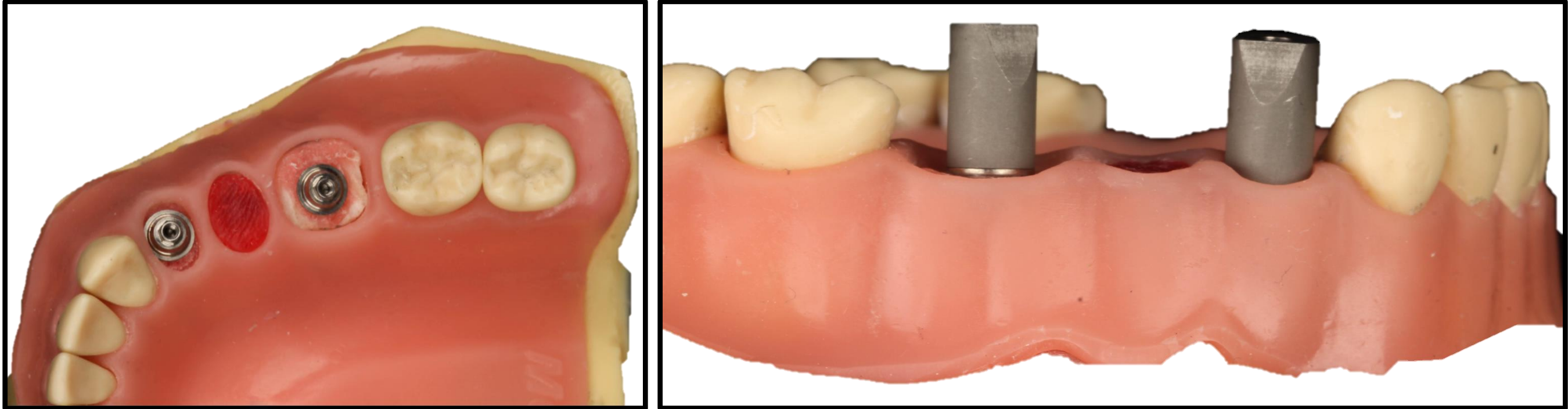
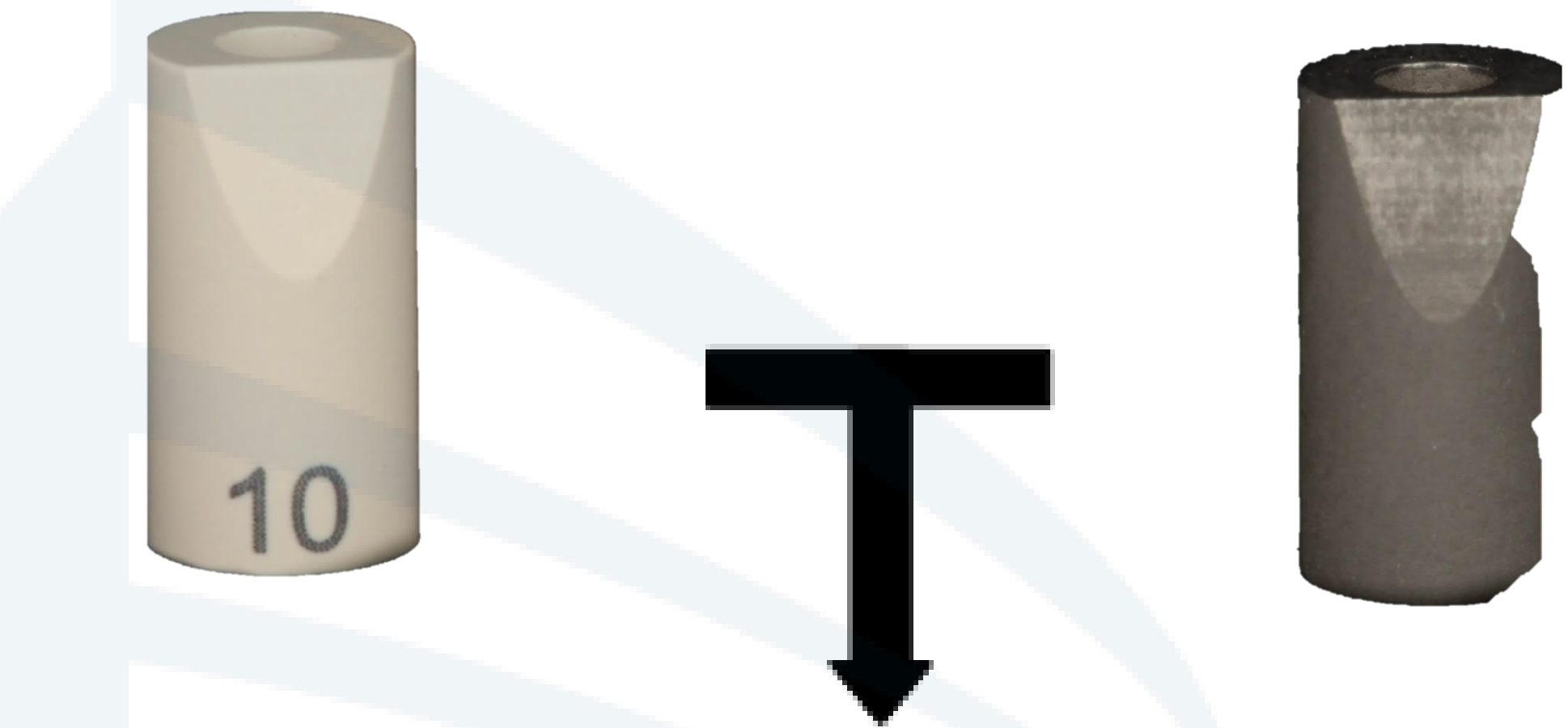
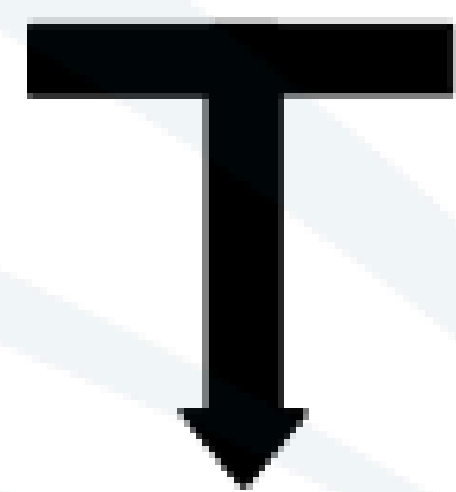
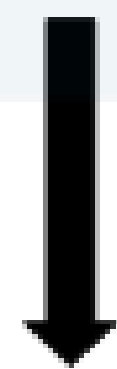
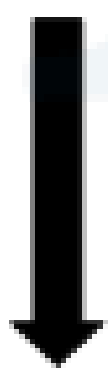
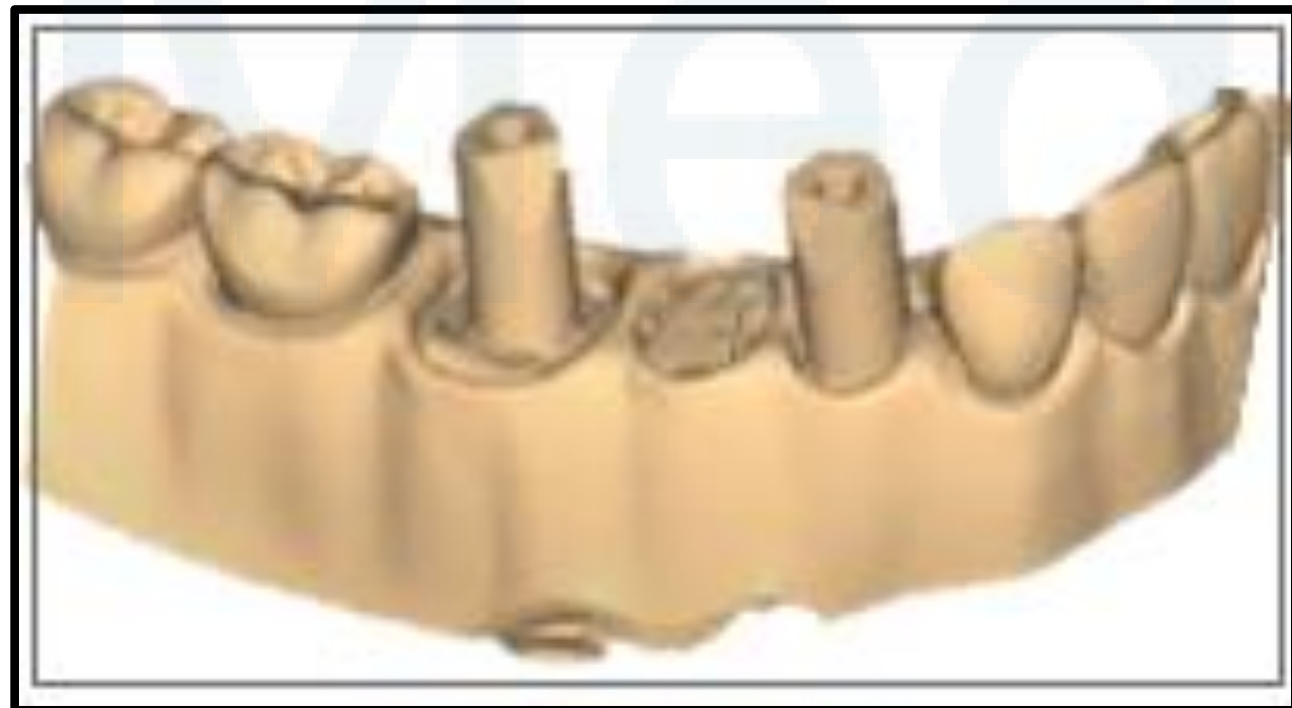
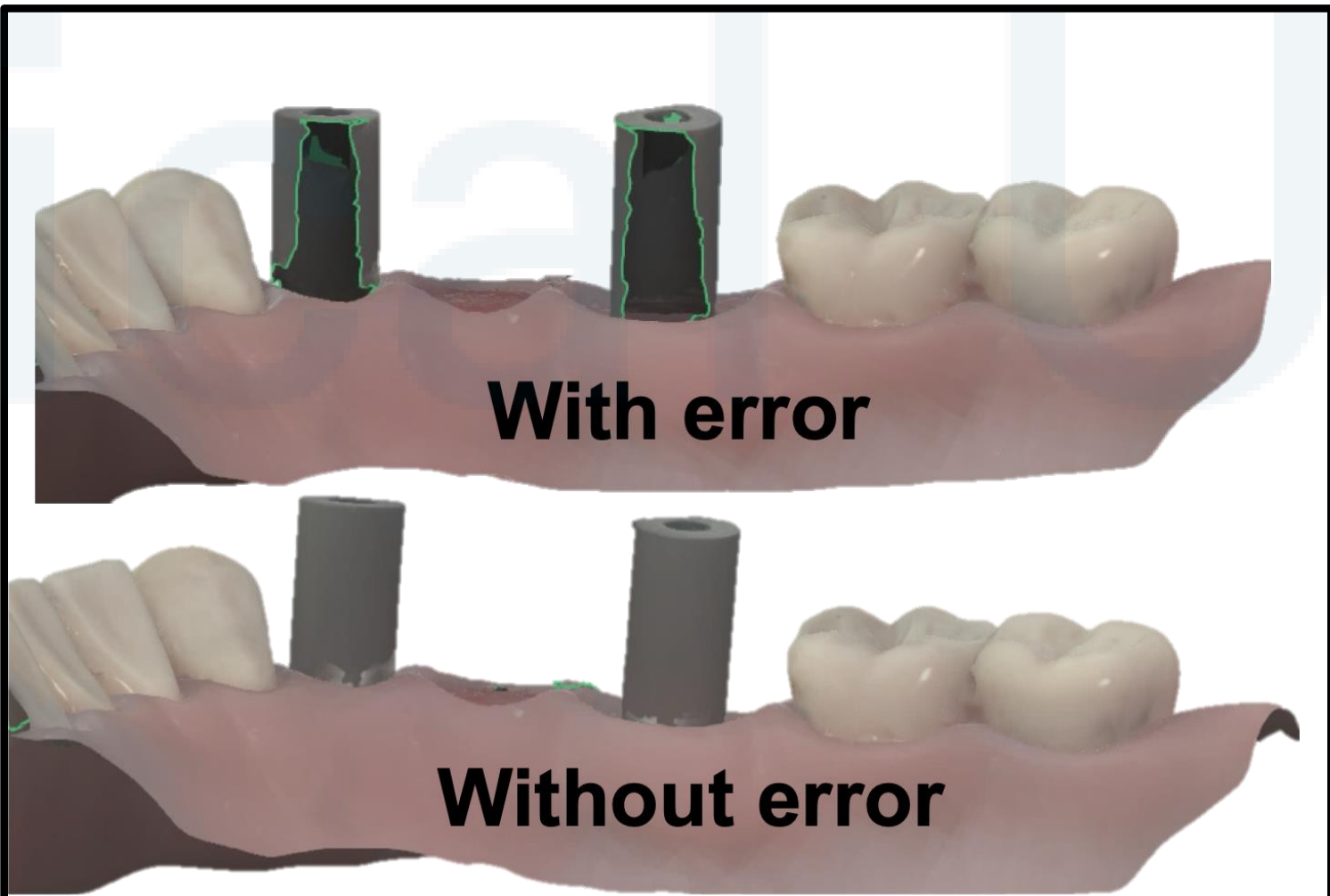
Introduction

Certain clinical situations may present difficulties in capturing the entire scanbody surface. Additionally, different materials may offer distinct optical features for image capture by intraoral scanners. However, the influence of several factors remains unclear.

Objective

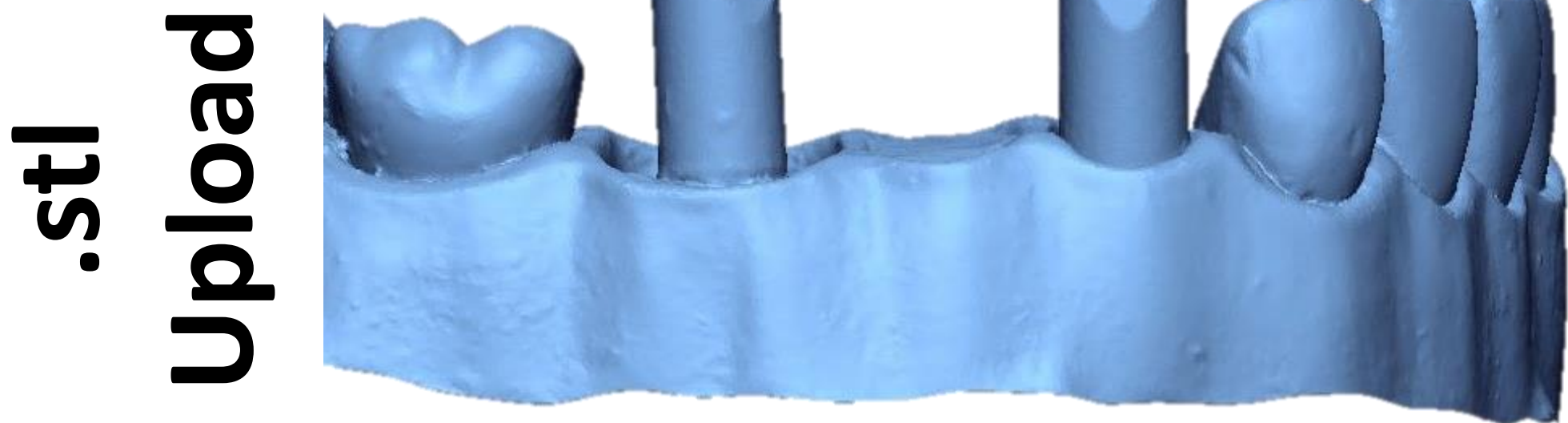
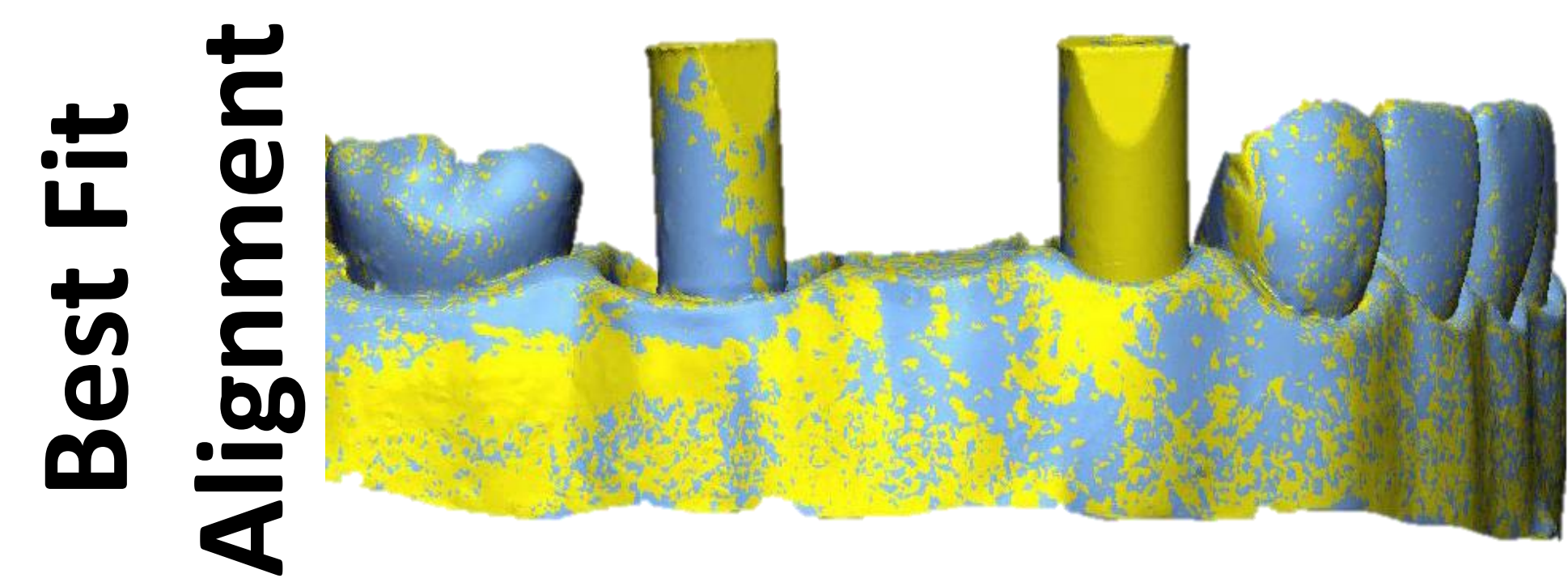
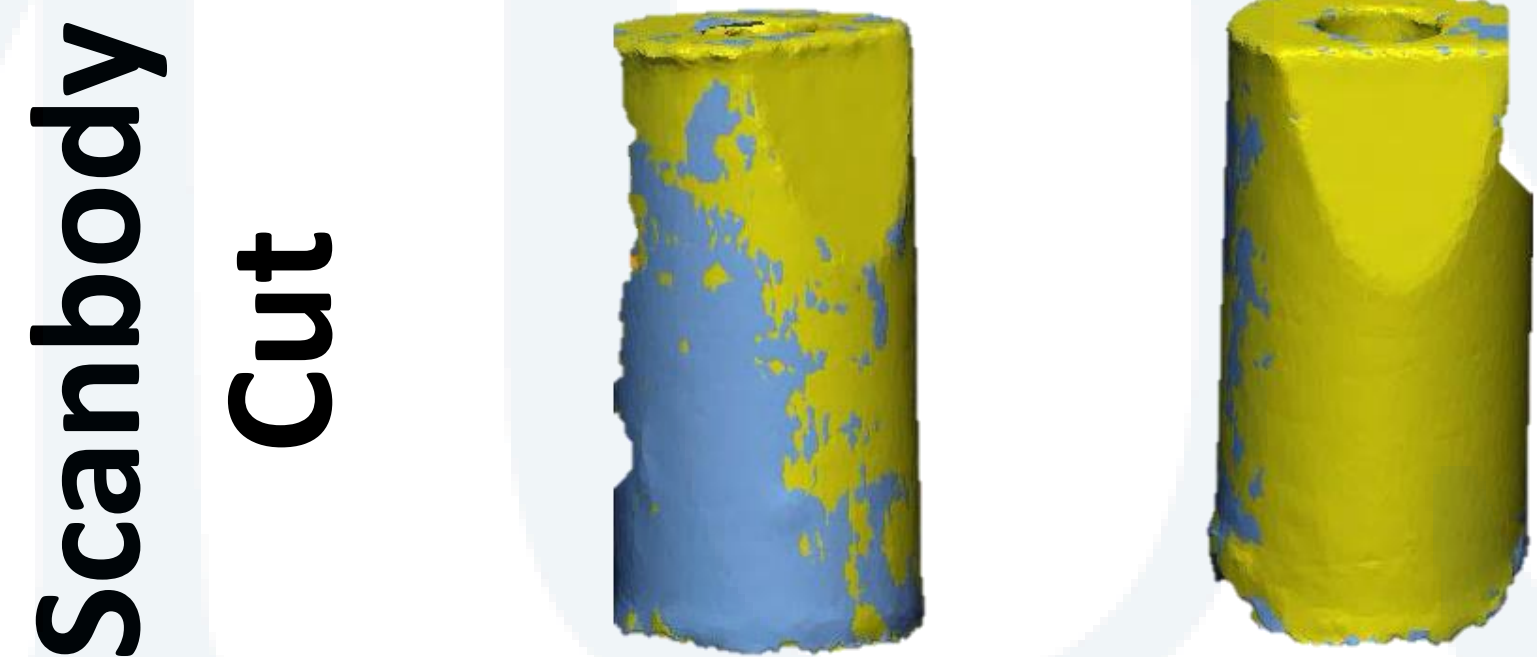
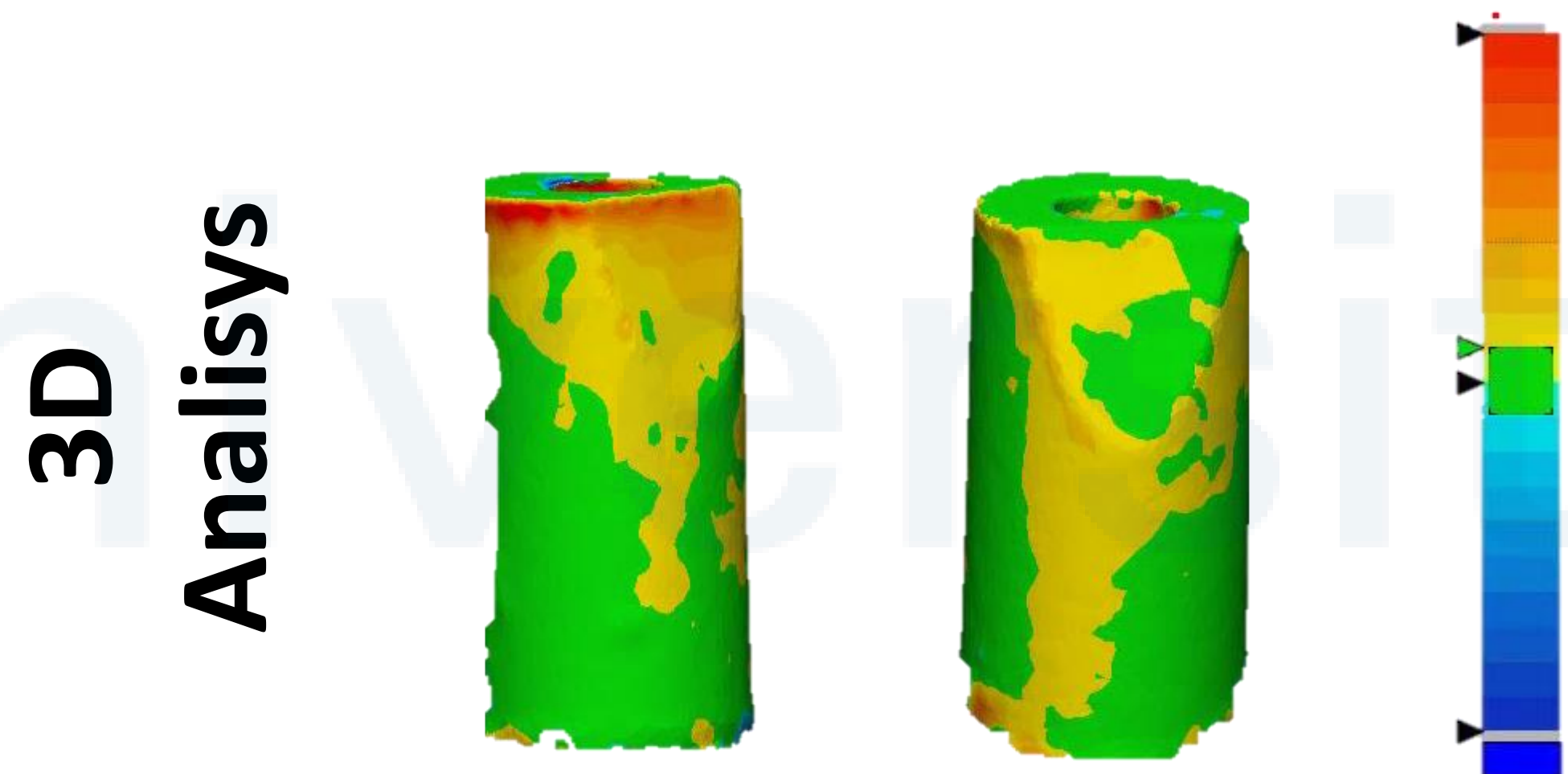
The purpose of this in vitro study was to evaluate the influence of scanbody material and the presence of scanning errors on digital file accuracy.





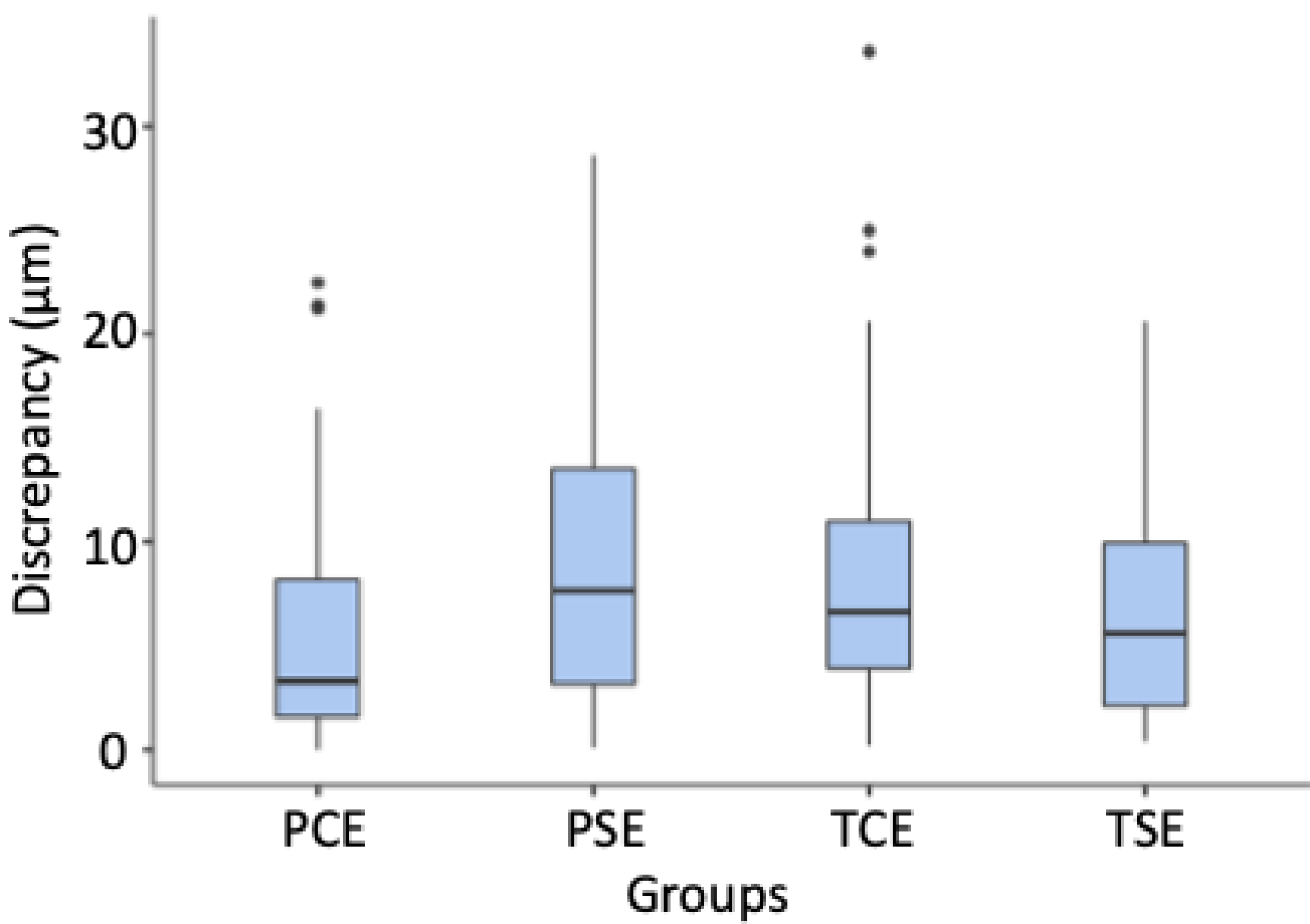
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Cx Geomagic® Control X



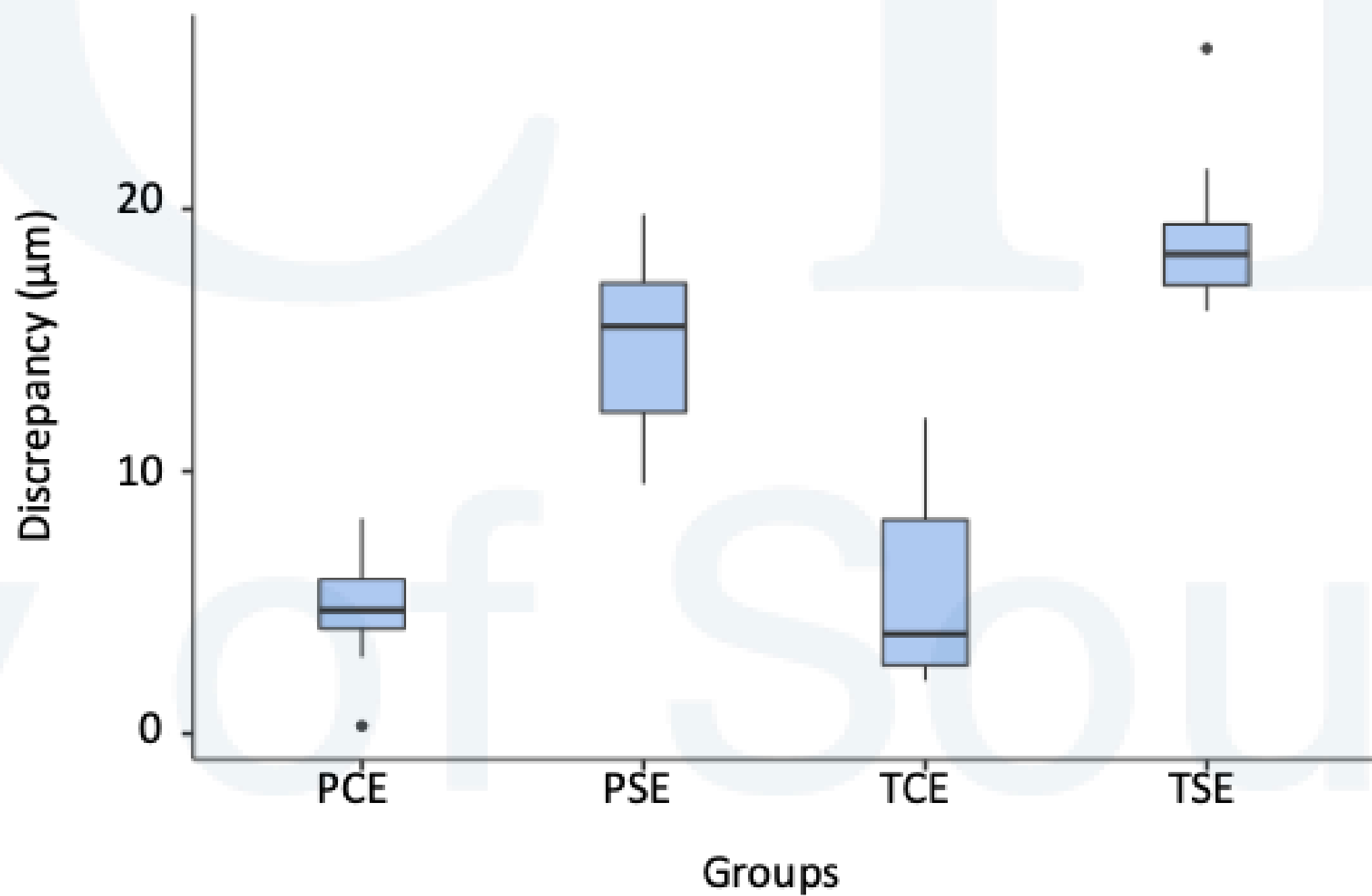
Precision

Figure 1 – Distribution of the Analyzed Data



Trueness

Figure 2 – Distribution of the Analyzed Data



Precision

Table 1 – Estimated Marginal Precision Data (µm)

Group	Mean	Standard Deviation	Lower Limit	Upper Limit
PSE^a	8.73	6.63	7.30	10.17
TCE^a	8.40	6.46	6.97	9.84
TSE^{ab}	6.36	4.75	4.92	7.80
PCE^b	5.52	5.70	4.08	6.96

Trueness

Table 1 – Estimated Marginal Trueness Data (µm)

Group	Mean	Standard Deviation	Lower Limit	Upper Limit
PSE^a	19.04	2.93	17.08	21.00
TCE^a	14.95	3.33	12.99	16.91
TSE^{ab}	5.40	3.53	3.44	7.36
PCE^b	4.81	2.30	2.85	6.77

Results

Regarding precision, a significant difference was observed, with the PEEK group with error presenting the lowest degree of discrepancy to the other groups ($P= 0.003$). For trueness evaluation, there was a significant difference in the presence of errors (groups with errors presented less discrepancy). As for the material variable, no significant difference was detected. The groups Titanium with error (5.40) and PEEK with error (4.81) showed a significant difference when compared to the other groups ($P< 0.001$).

Conclusion

The accuracy of scanned files was significantly influenced by the presence of errors during the acquisition of scanbody images, files without errors had lower accuracy. There was no significant influence on the accuracy parameters when using PEEK or titanium.

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