

EFFECT OF DIFFERENT BITE REGISTRATION STRATEGIES FOR EDENTULOUS ARCH

Objectives. The objective of this study is to compare, *in vitro*, bite registration accuracy between three different methods using IOS.

Materials and Methods. Maxillary edentulous and mandible dentate models were printed using the Asiga Max UV (Asiga, Sydney, Australia) 3D printer. Four Straumann BLT RC 4.1 mm diameter (Straumann, Switzerland) dental implants were placed in the maxilla model. Scanbodies were attached to the implants. Metrological spheres were attached to both models. Reference scans were obtained using a Nikon Altera (Nikon Metrology, Shinagawa, Japan). Digital impressions were taken with Trios 4 (3Shape, Denmark) intraoral scanner ten times for each model. Additionally, three types of digital bite records were taken for each pair of scans (Fig 1-3): The first group of registration was done by acquiring bite scan between buccal aspects of models from one left to right with scanbodies fixed to the upper model (WSB). For the second group, the same protocol for bite registration was applied with the addition of putty silicone (Variotime Easy putty, Kulzer GmbH, Germany) index between two models (WSB silicone). The third group was done according to pre-preparation scanning protocol (Pre-PREP): digital impression was acquired of a prefabricated maxillary removable denture, then the antagonist. Conventional bite registration was acquired. Finally, the denture was cut out of the maxillary scan and rescanned with scanbodies attached to implants. Distances between corresponding spheres were calculated as a way to represent interarch distances. Trueness and precision were calculated for all the parameters measured, and a comparison was made between different bite registration groups.

Results. There were significant differences among the groups three (pre-prep)-two (WSB silicone) and three (pre-prep)-one (WSB) on trueness. Pre-preparation method was more inaccurate than the other two. (Fig. 4)

Conclusions. In this, *in vitro*, study pre-preparation registration technique was less accurate than using scanbodies with or without silicone index for maxillomandibular relation registration.

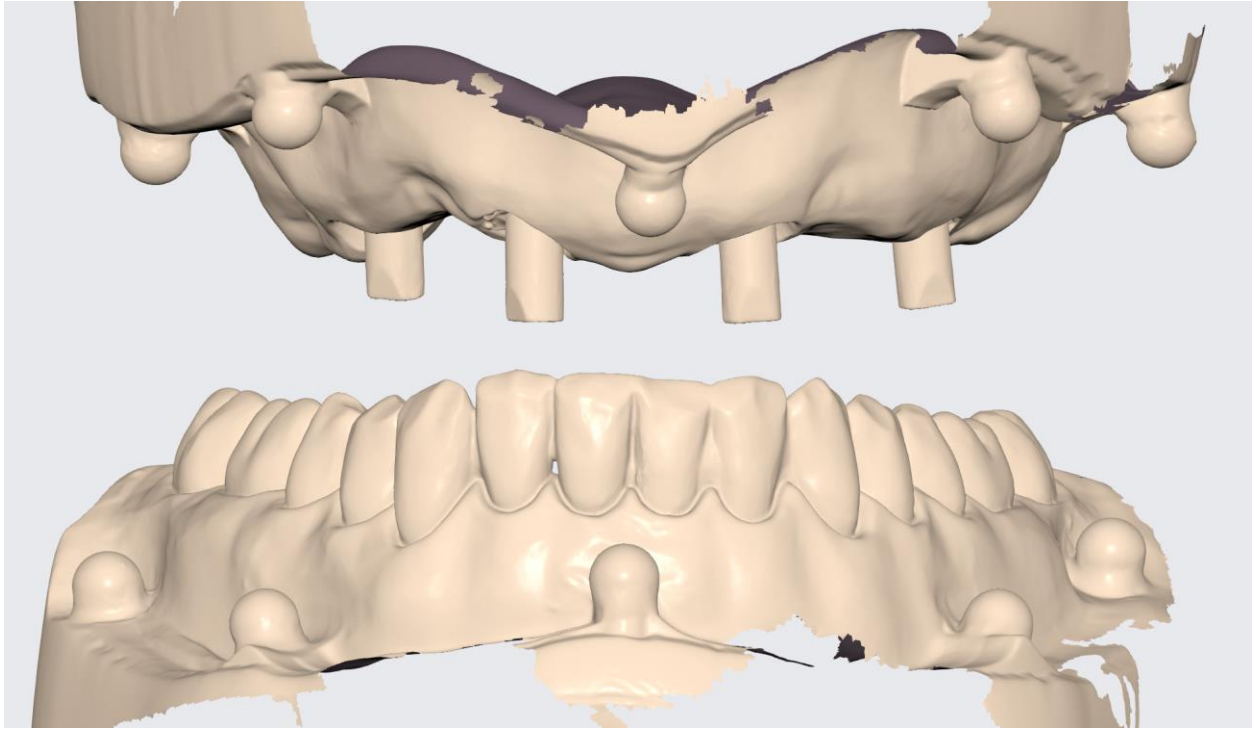


Fig.1 Group one. Bite registration with scanbodies attached.

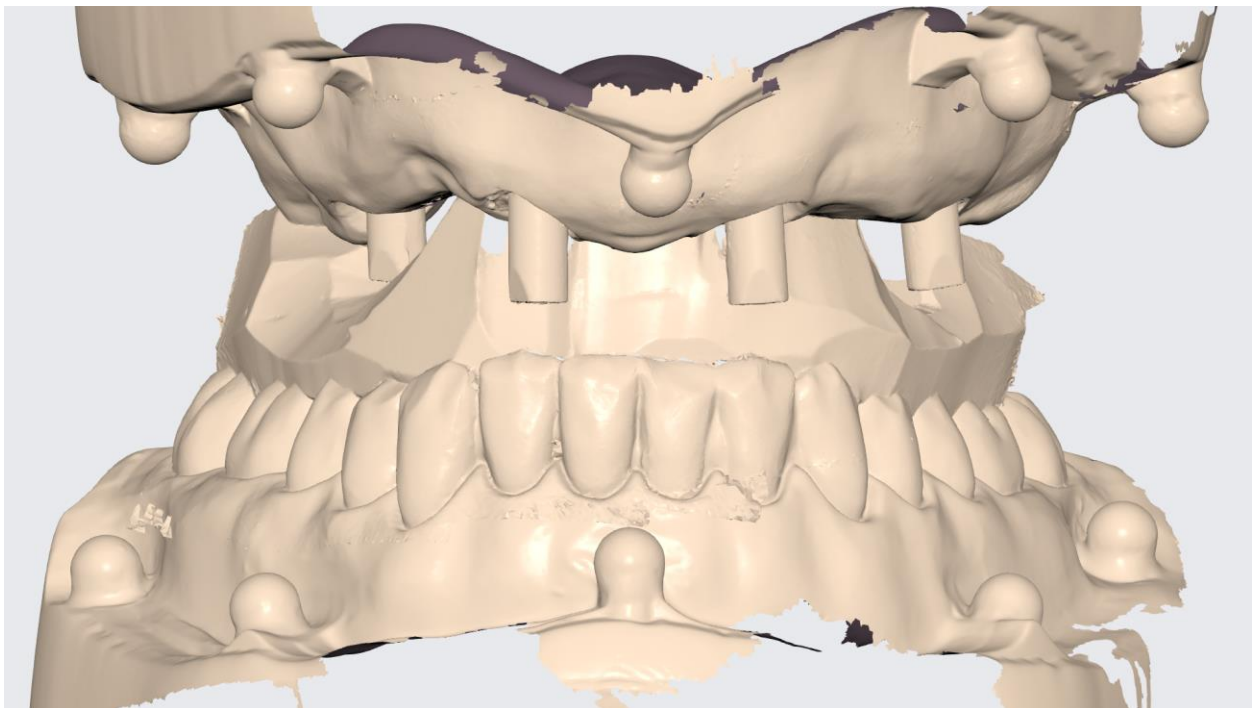


Fig.2 Group two. Bite registration with scanbodies attached plus using silicone index.

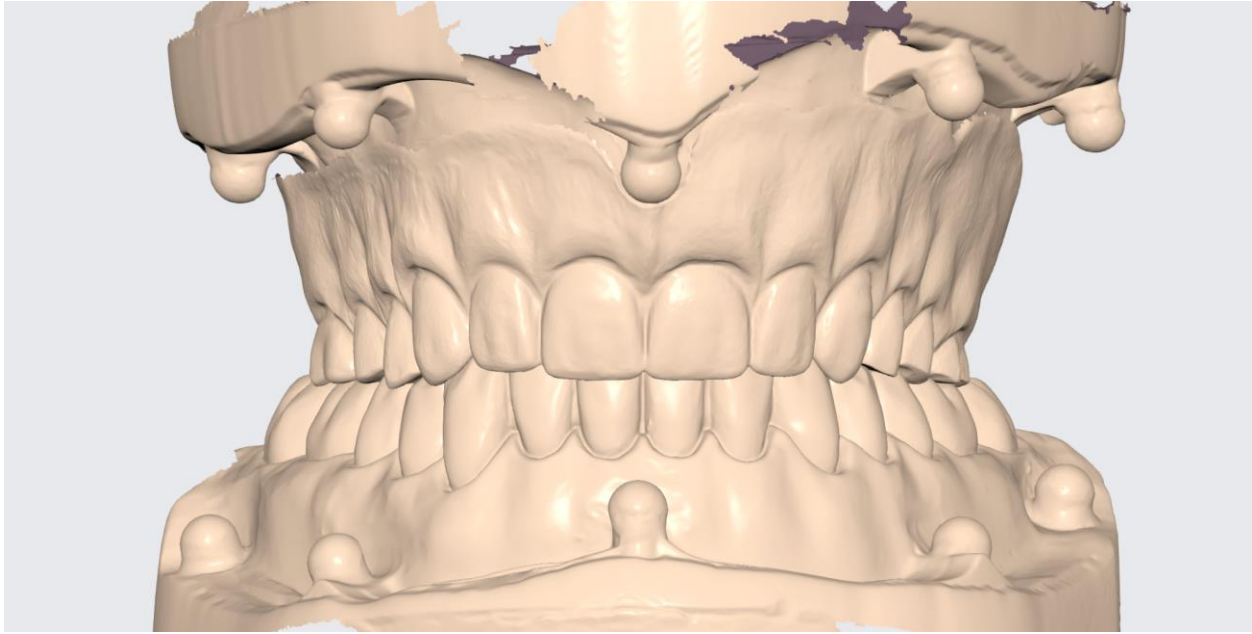


Fig.3 Group three. Bite registration using Pre-preparation technique.

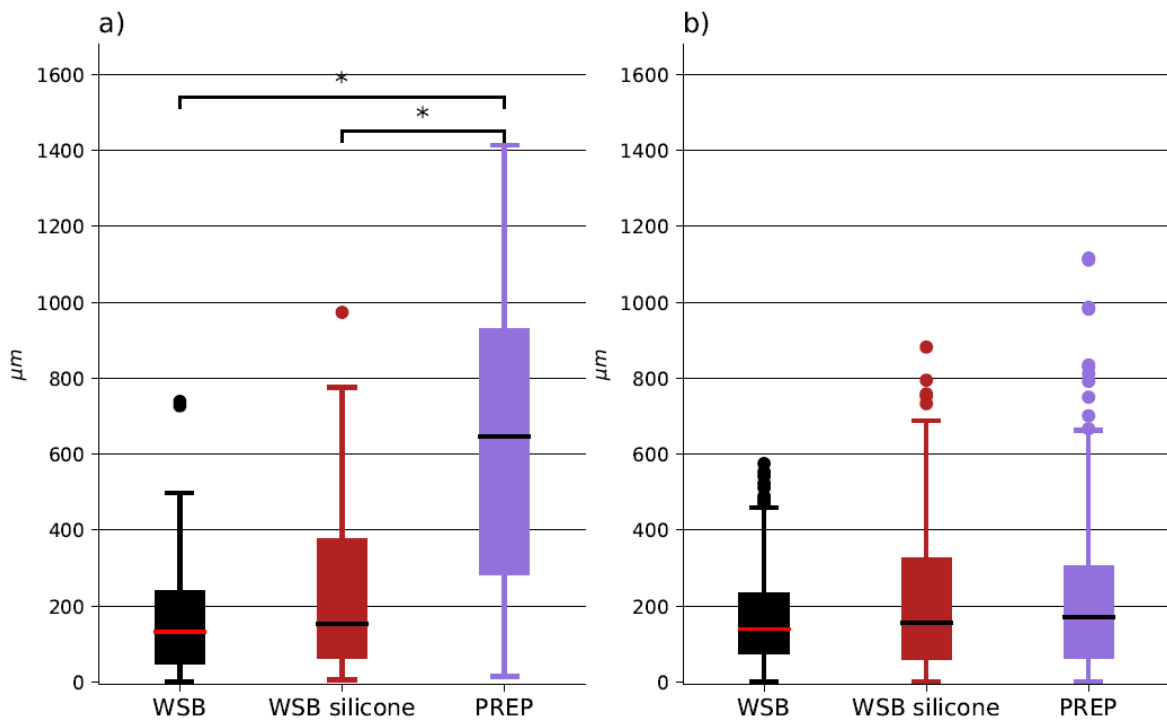


Fig. 2 Trueness (a) and precision (b) data. Asterix and lines connecting the data imply a significant difference ($p < 0.05$) between them.

