

0071 Vertical Discrepancies Caused by Interocclusal Records. Influence of Loading Forces

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Objectives: The aim of this study was to evaluate the ability of different materials to reproduce accurate vertical interocclusal relationships when defined compressive forces were applied to stabilize the casts.

Methods: A custom-made apparatus which consisted of two parts and posterior denture teeth was used to simulate the maxilla and mandible. The mandibular teeth 45-47 were prepared. Then eight interocclusal records were made between the prepared teeth and their antagonists in each of the following groups: G1: aluminum wax (Aluwax, Aluwax dental products co., Michigan, USA), G2: hydrocarbon wax compound (Beauty Pink, Miltex, Inc. York, USA), G3-G5: vinyl polysiloxane (Futar D, Futar D Fast, Futar Scan, Kettenbach, Eschenburg, Germany), G6: polyether (Ramitec, 3M ESPE, Seefeld, Germany). The vertical discrepancies were measured by an inductive displacement transducer connected to a carrier frequency amplifier after storage of the records for 1 hour at the room temperature. Different compressive loading forces up to 1 kg were applied onto the upper part to evaluate the influence on the vertical discrepancies of the records. Two-way ANOVA was used for statistical analysis.

Results: All tested recording materials produced vertical discrepancies. However, the compressive loading force had a statistically significant influence on the vertical discrepancies ($p < 0.01$), i.e. higher forces reduced the vertical discrepancies. When a compressive force of 1 kg was applied onto the upper part of the apparatus, the mean vertical discrepancies for G1 ($11 \pm 3 \mu\text{m}$) and G2 ($12 \pm 3 \mu\text{m}$) were statistically significantly higher than in the other groups G3 ($1 \pm 1 \mu\text{m}$), G4 ($2 \pm 1 \mu\text{m}$), G5 ($0 \pm 1 \mu\text{m}$) and for G6 ($-2 \pm 2 \mu\text{m}$).

Conclusion: A compressive force of 1 kg could be used to stabilize the cast during mounting procedures in an articulator using interocclusal records made of vinyl polysiloxane without changing the interocclusal relationships vertically.

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