

Pala® denture acrylics and equipment – PalaXpress® and Palajet®

Transfer accuracy – FSU Jena

Experimental comparative study on the degree of three-dimensional position changes of acrylic teeth during manufacture of full dentures using different processing technologies.

An important factor in selecting the manufacturing system for full dentures is the accuracy with which the occlusal conditions are transferred from the wax stage into the acrylic stage. This study compared three commonly used manufacturing systems for full dentures: Palajet injection process, the Merz Dental PremEco® Line casting process and the conventional press and pack.

The Palajet injection process showed significantly greater accuracy in transferring the occlusion compared to the PremEco® Line casting process and the press and pack technique.

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When fitting full dentures to edentulous patients, not only an optimum basal fit is essential, but also the occlusion is of central importance. After the optimum set-up of the teeth in wax, the aim is to transfer the wax model into acrylic as exact as possible.

Materials and Methods

In an experimental comparative study the accuracy of transferring the occlusion was investigated for the Palajet injection process (Kulzer), PremEco® Line casting process (Merz Dental) and the conventional press and pack technique (Tab. 1). For each system 14 templates of a full maxillary denture were invested in the bottom part of the respective flasks (7 new and 7 used). The initial situation of the wax dentures was recorded with a laser-scanner. The final investment and transfer into acrylic were performed according to manufacturer's instructions. After deinvestment the acrylic dentures were laser-scanned while still on the model (approximately 80000 pixels per measurement). The spatial deviation of the denture teeth was compared to the initial situation by generating a three-dimensional measurement result.

System name	Product	Process	Manufacturer
Palajet® system	PalaXpress®, cold-curing acrylic	Injection	Kulzer, Hanau, Germany
PremEco® Line system	PremEco® Line, cold-curing acrylic	Casting flask	Merz, Lütjenburg, Germany
Press and pack technique	Aesthetic, cold-curing acrylic	Press and pack technique	Candulor, Wangen, Switzerland

Tab. 1: Overview of the tested processing techniques.

Results

The Palajet injection process showed significantly greater accuracy during transferring the occlusion than the PremEco® Line casting process and the press and pack technique. The Palajet injection process yielded the most accurate results with an average deviation of 0.086 mm after transfer of the wax model to the acrylic denture (Fig. 1). No statistically significant differences concerning the accuracy could be detected between the used and the new flasks in any of the three systems. Old flasks tended to achieve lower discrepancies than new flasks.

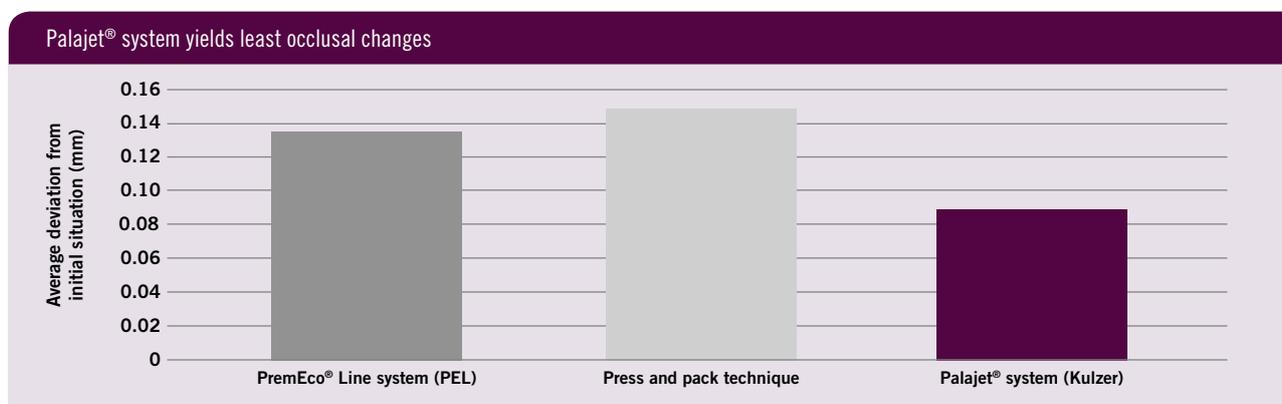


Fig. 1: Average discrepancies between wax model and acrylic denture concerning the occlusion. The Palajet system showed the lowest occlusal changes compared to the initial values.

Conclusion

Compared to the casting process and the press and pack technique, the Palajet system showed the highest accuracy in transferring the occlusion. The age of the flasks was insignificant for the accuracy of the transfer for all three systems.

Source

Naumann K: Experimental comparative study on the degree of three-dimensional position changes of acrylic teeth during manufacture of full dentures using different processing technologies. Diss. University of Jena, 2009. The study was abbreviated and summarised and all diagrams and titles have been established by Kulzer.