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#862

Precision and Handling of A-silicon versus Polyether for Implant Impressions

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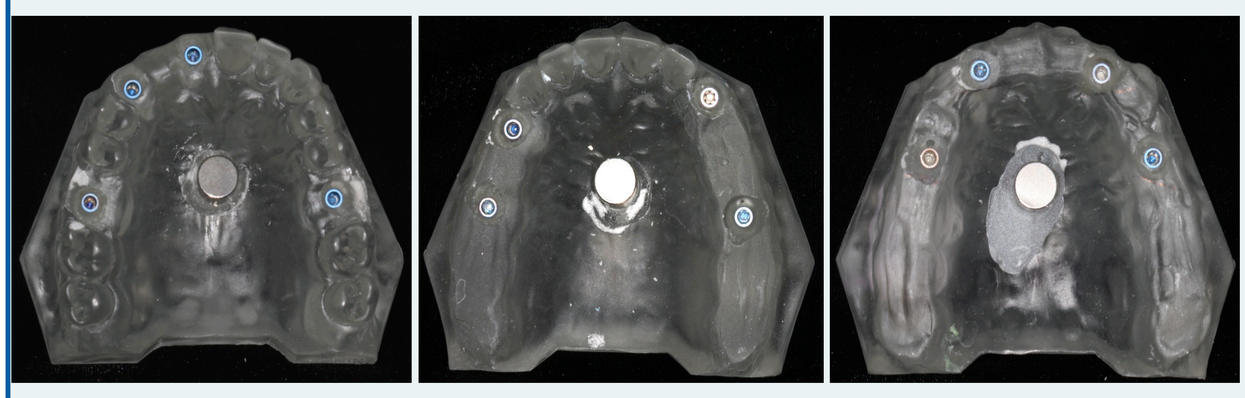
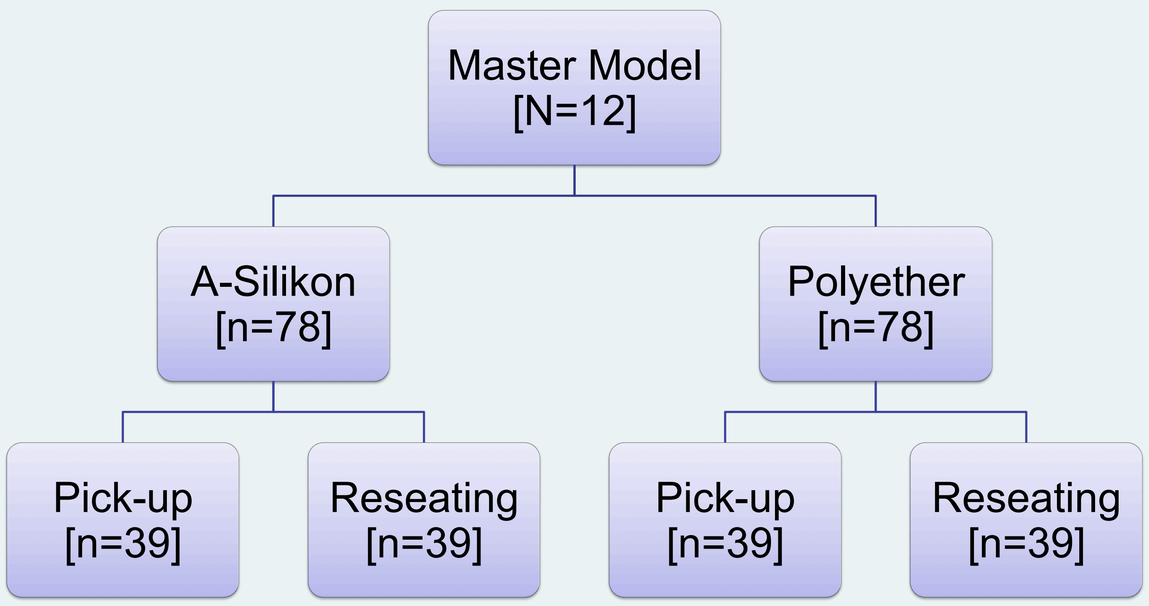
1.Objectives

The most often applied material for implant impressions is polyether. However, some studies have shown that the use of a-silicon yields comparable accuracy. Comparison of handling was not investigated until now. It was aim of this study to compare the precision and the handling of polyether (Impregum, 3M Espe, Germany) and a-silicon (Affinis, Coltene/Whaledent, Switzerland) for implant impressions.

2.Methods

Twelve master-models of the maxilla were fabricated for three different clinical situations. Each model contained four parallel inserted implants (Ankylos Friadent, D-Mannheim) and a reference-cylinder. Afterwards, each of 39 dental students performed four impressions on one of the twelve models using two different techniques (pick-up and reseating) with a-silicon (Affinis, Coltene/Whaledent, Switzerland) and polyether (Impregum, 3M Espe, Germany).

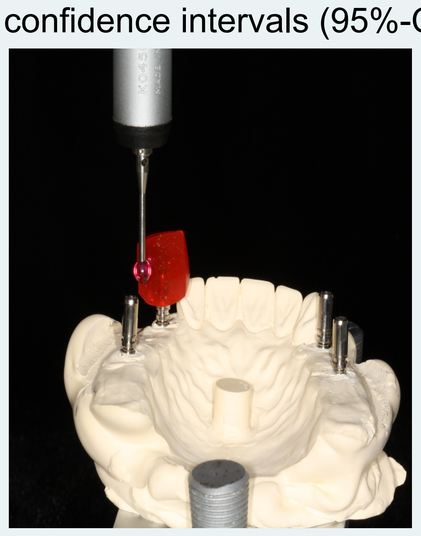


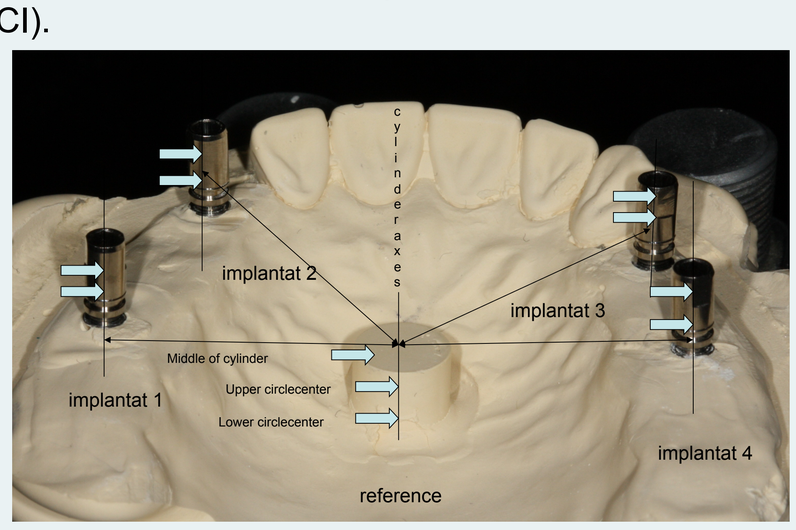


Satisfaction of participants was assessed using a 12 items questionnaire with a Visual Analogue Scale (VAS) ranging from “0- actually not satisfied“ to “100- very satisfied” in the following topics.

inserting resistance	consistence
release property	color
handling while spoon moistening	handling while impression
homogenity	attention to detail
processing time	assembly time
quality of the impression	general satisfaction

One calibrated dental technician fabricated 156 casts of the impressions according to a standardized protocol. All master-models and casts were measured using a 3D-coordinate measuring machine (Mitutoyo BH 706) with a measurement error of <10µm. Differences in the position of the implants in the master-model and the casts were measured in x-, y- and z-coordinates and evaluated as absolute deviations of between-implant distances with 95% confidence intervals (95%-CI).





3.Results

On average, position of implants differed about 188µm (95%-CI: 161-201µm) using polyether and 201µm (95%-CI: 168-227µm) using a-silicon. The difference between both materials was not statistically significant (t-test: p>0.05). Pick-up technique yielded in 52µm (95%-CI: 21-84µm) lower differences in implant position compared to the reseating technique.
General satisfaction with handling was highest for the pick-up technique in combination with a-silicon (74.4; 95%-CI: 68.2-80.6) (Fig.1).

Tab1. Deviation of impression accuracy [mm]

Situation	Polyether			A-silicon		
	all	pick-up	reseating	all	pick-up	reseating
all	4,71 (5,67 --4,05)	4,77 (4,05 - 5,49)	4,77 (3,99 - 5,55)	5,19 (5,94 - 4,49)	5,17 (4,22 - 6,12)	4,73 (4,11 - 5,36)
edentulous	3,82 (3,13 - 4,51)	3,54 (2,78 - 4,29)	4,10 (2,92 - 5,29)	3,99 (3,14 - 4,83)	3,61 (2,35 - 4,87)	4,36 (3,20 - 5,53)
Strongly reduced	5,83 (4,72 - 6,95)	6,29 (4,68 - 7,90)	5,37 (3,79 - 6,96)	5,50 (4,40 - 6,59)	6,59 (4,62 - 8,56)	4,41 (3,47 - 5,34)
Tooth limited	4,64 (3,79 - 5,49)	4,46 (3,30 - 5,62)	4,82 (3,53 - 6,11)	5,35 (4,36 - 6,35)	5,28 (3,64 - 6,92)	5,43 (4,24 - 6,62)

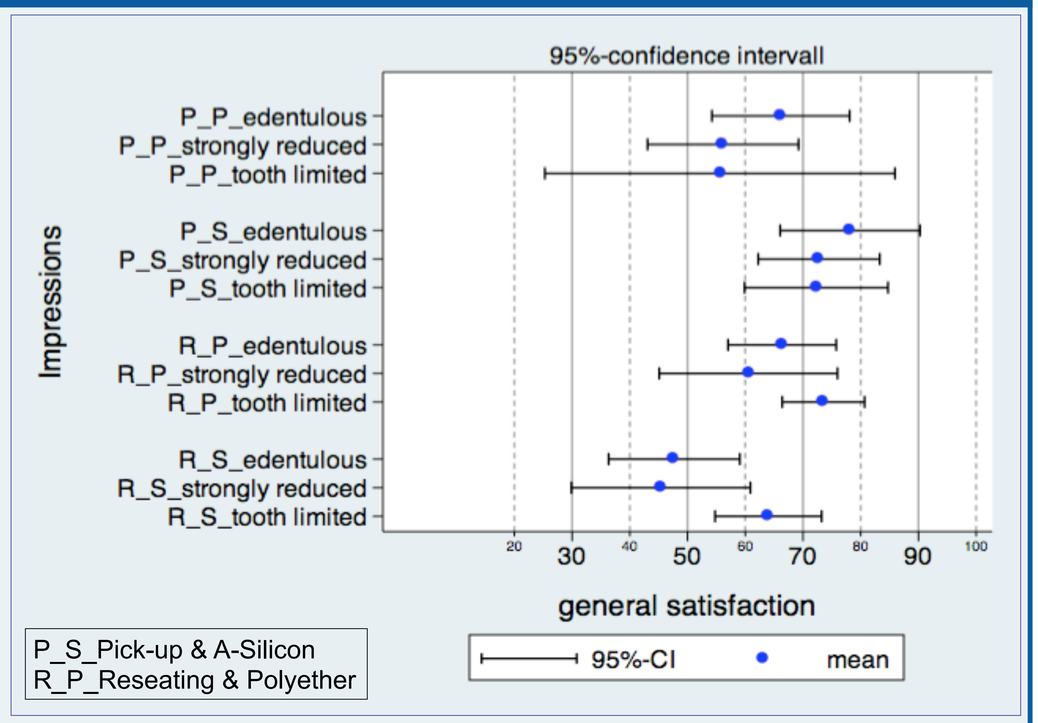


Fig. 1 General satisfaction with different impression-techniques and -materials

4.Conclusion

Both impression materials showed comparable accuracy. Pick-up technique resulted in best precision and in combination with a-silicon in highest general satisfaction of the participants.

Acknowledgement

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