DIMENSIONAL CHANGE OF TWO ADDITION SILICONES

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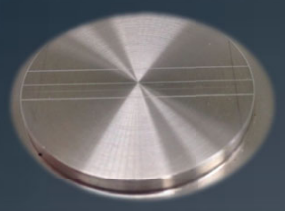


Dental impressions play a key role in clinical practice[1,2] . All prosthetic work, either fixed or removable, is transferred to the laboratory, from an impressions[3]. The impression quality depends on several factors including the sellection of the impression material[4].

These materials have been developed with the aim of achieving certain ideal characteristics[2]. The impression should have the best possible accuracy, the least distortion when removed from the oral cavity and the best possible dimensional stability [5].

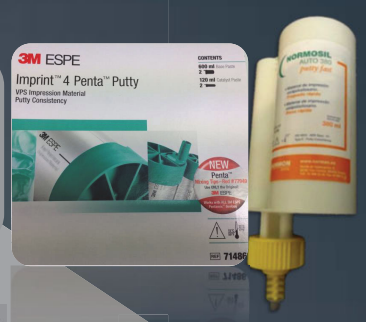
All materials suffer dimensional changes over time. This changes can be measured by different tests referred in to the specifications of each material[3].

Contact with blood and saliva can contaminat the impressions with microorganisms. It became crucial to implement infection control measures to decrease the risk of cross infection and in 1991 OSHA (Occupational Safety Health Association, USA) created the first set of guidelines [6].

Disinfection or sterilization of the impressions is crucial to control cross-infection. It is then paramount to evaluate the impact of these processes in the dimensional stability of impression materials.

Objective:

Disinfection and sterilization impact in the dimensional stability of Imprint 4 Penta Putty (3M ESPE™, Seefeld, Germany) and Normosil Putty Fast (Normon, Madrid, Spain).



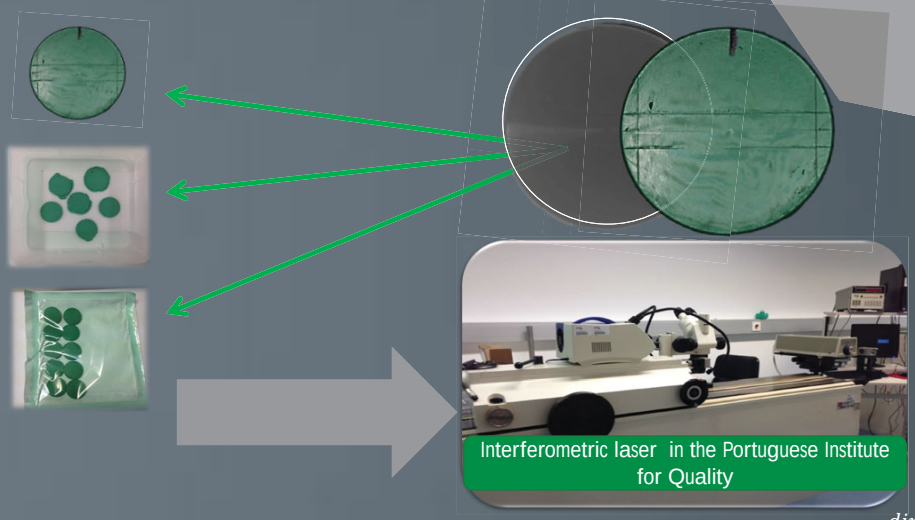
Materials and methods:

90 samples of each impression material were obtained with automatic mixer Pentamix 2 (3M ESPE™, Seefeld, Germany), following ISO 4823:2000 and were divided in 3 groups: Control Group, Hypochlorite Group, Autoclave Group. All samples were measured with an interferometric laser at T0 (immediatety after the disinfection method) and T24h (24 hours after the disinfection method).
The Control group was not subjected to any disifenction method. The samples on the Hypochlorite Group were submerged for 10 minutes in Sodium Hypochlorite at 5,25%. The Autoclave Group was subjected to a 134ºC for 40 minutes.

Control Group

Hypochlorite Group

Autoclave Group



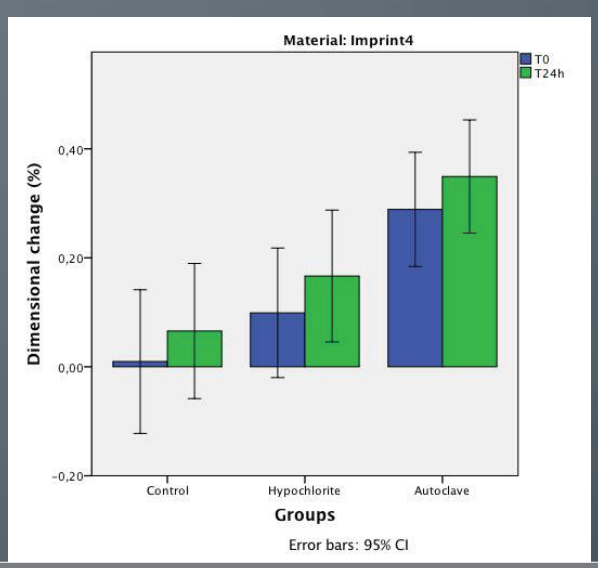
Interferometric laser in the Portuguese Institute for Quality

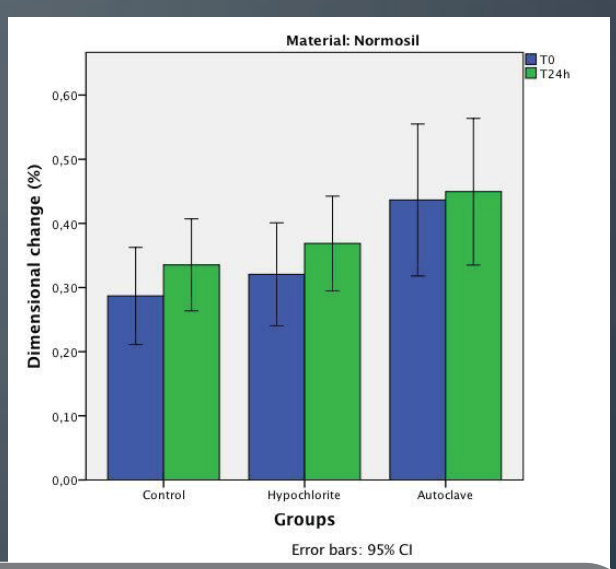
Results:

All data was inserted in IBM© SPSS© Statistics 20.0. A paired sample t-distribution or Student's distribution was performed with a confidence interval of 95%.

$$dimensional\ changes\ (\%) = \frac{B - A}{A} \times 100$$

Material	Groups	Average	Standard Deviation	Sig.
Normosil	Control	0,049	0,07	0,006
	Hypochlorite	0,048	0,05	0,001
	Autoclave	0,013	0,01	0,002
Imprint	Control	0,056	0,003	0,00
	Hypochlorite	0,068	0,04	0,00
	Autoclave	0,060	0,04	0,00





Conclusions:

All dimensional changes were positives, which reflects an expansion of the materials.

The largest dimensional changes were in the Autoclave group, for both materials and times.

Although there were dimensional changes in both materials in both groups, they were not clinical significant according to ISO 4823:2000 guideline as they were lower than 1,5%.

Of both materials Imprint 4 Penta Putty had the lowest expansion.

Although the results of this research, further studies are needed.

Clinical Implications:

Autoclave and Hypochlorite disinfecntion of impression materials can be made without clinical dimension changes.

The Hypochlorite disinfenction showed higher dimensional stability over time when compared with the Autoclave Group.

Funding sources

Bibliographical References :
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