

بررسی اثر جدا کننده دای (میکروفیلیم) بر روی سختی سطحی دای گچی در شرایط مختلف

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Title: A study on the effect of die separator (microfilm) on the surface hardness of stone dies in different situations

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Introduction:

One of the important stages in fixed partial dentures is the preparation of stone die which is in fact the replica of the prepared tooth and should have the maximum adaptation in replicating it. Plaster die may be scratched by the instruments during the wax up and this leads to loss of precision. Microfilm is used as a lubricant to prevent wax from adhering to the stone and is applied to die. The objective of this study was to evaluate the effect of die separator (microfilm) in different situations on the hardness of stone die.

Materials & Methods:

In this experimental study forty dies were made after taking PVC impressions with the diameter of 2 and height of 1 centimeter with gypsum type 4 (extra hard stackable type IV dental stone), according to the manufacture instructions. Dies were divided into four groups of ten and after 24 hours of keeping in the room temperature for reaching the maximum tensile strength (final dry tensile strength) they were used as follow:

- 1- Control group on which, microfilm was not applied
- 2- Group A were immersed in microfilm for ten minutes and were immediately examined for hardness.
- 3- Group B were immersed in microfilm for 10 minutes and were stored in room temperature for 12 hours and then microfilm was applied again by a brush.
- 4- Group C were immersed in microfilm and were stored in room temperature for 24 hours and microfilm was applied again using a brush.

All of the groups were examined for hardness under 25 gram force for 5 seconds and the data was processed for statistical analysis. The one way variant analysis and multiple Dunnet, Tukey test and kruscal vallis test were used and the results were examined with 95% confidence interval.

Results:

The maximum surface hardness was found in the control group equal to 77.8 ± 12.5 and decreased in groups A, B and C to 41.1 ± 7.4 , 30.7 ± 5.9 and 22 ± 2.5 respectively. ANOVA statistical analysis showed a significant difference between the four groups ($P=0.001$). Dunnet analysis showed a significant difference between all the groups and the control group ($P=0.001$). Groups were compared in pairs using the Tukey test and only groups B and C didn't show a significant difference.

Conclusion:

According to this study the following results were acquired:

1. Applying microfilm to the stone dies resulted in significant decrease in surface hardness.
2. Applying microfilm resulted in a significant decrease in surface hardness after 12 hours.
3. There was no significant difference in surface hardness between 12 and 24 hours after microfilm application.

Key words:

Die separator, microfilm, surface hardness.

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