



EFFECT OF CONTAMINATION TO RESIN COMPOSITE POLYMERIZATION EFFICACY VIA VICKERS MICROHARDNESS

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Resin-based composites are used worldwide in dentistry, mainly because of their aesthetic quality and good physical properties. Since resin composite was first developed, many efforts have been made to improve the clinical behavior of this restorative material. This study aims to evaluate the effect of contamination on surface microhardness of resin composite in comparison to resin composite without contamination. Vickers microhardness was used to determine the effectiveness of polymerization on the contaminated surface of resin composite.

OBJECTIVES

- To investigate the surface hardness of contaminated resin composite during manipulation.
- To compare the surface hardness of contaminated resin composite between unpolished and polished groups.

MATERIALS AND METHODS

A total of 120 specimens of resin composite was filled into a disc-shaped metallic split mold (4 mm diameter and 2 mm depth). The specimens were divided into 6 groups depends on type of contamination (uncontaminated group, contaminated with alcohol, bonding agent, hemostatic agent, plumber tape and powdered gloves groups, respectively). Then, light cured for 40 seconds and each group (20 specimens) was divided into 2 subgroups (unpolished 10 specimens and polished 10 specimens). Each specimen was tested by Vickers microhardness tester (Figure 1). The data were analyzed statistically by independent t-test and paired t-test using SPSS.

RESULT

The means of microhardness values that contaminated by bonding agent and plumber tape groups (unpolished) resulted in 38.89 and 41.51, respectively. There were significant difference, compared between these two groups and uncontaminated group (unpolished) ($p < 0.05$). The means of microhardness values of polished groups range from 51.86 to 52.52. There were no significant difference, compared between each contaminated groups and uncontaminated group (polished) ($p \geq 0.05$). The means of microhardness values were significant difference, compared between unpolished and polished groups in each group ($p < 0.05$).

CONCLUSION

Contamination from bonding agent and plumber tape effect to effectiveness of resin composite polymerization that may cause significantly decrease the surface hardness by measurement of microhardness value. To improve this value can be done by polishing to eliminate the contaminated surface of resin composite. In addition, this study performed an ideal situation for experiment. Although, other materials do not effect to polymerization but awareness of manipulation on resin composite in clinical work is required.

KEYWORDS

Contamination, Polymerization, Resin composite, Surface hardness, Vickers microhardness



Figure 1. Vickers microhardness tester

