SCIENTIFIC REPORT

Grandio Flow – Curing depth

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One of the key requirements for all light-curing composites is that they should undergo as complete a polymerisation as possible throughout the restoration, including the base of the respective increment, i.e. the spot furthest from the light source. A study by the Shahid Behshti University of Tehran has examined the extent to which different flowables achieve this aim.

In the dental practice, composite materials must be applied by the layering technique. Apart from reducing the effects of volume shrinkage, there is also a second reason for using this technique. The intensity of the light source used to trigger photopolymerisation diminishes within the increment towards its base. This is accompanied by a reduction in the degree of polymerisation of the restorative material. While this tendency is unavoidable, it must be ensured that the lowest region of an increment is also sufficiently cured, when applied correctly. A study by the University of Tehran examined this question by determining the Vickers hardness for different flowables.[1]

Microhardness of flowables

The test specimens examined were fabricated to the same dimensions and subsequently light-cured from one side for 40 seconds. After 24 hours water immersion, the surface hardness was determined both on the upper side (the side facing the light) and on the underside (the side facing away from the light). Fig. 1 summarises the results of these measurements.

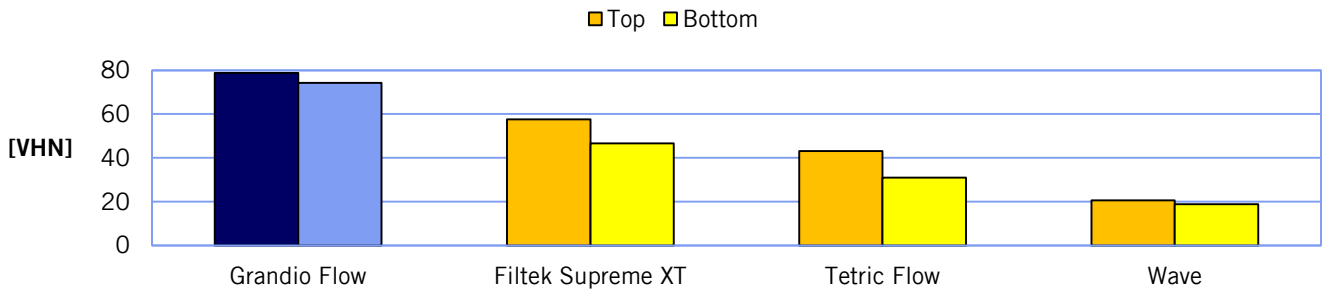

Figure 1: Vickers hardness [VHN] on the upper and underside of the test specimens

Grandio Flow not only achieves the best absolute values for the upper and underside of the test specimens, but also undergoes the lowest decrease in hardness of only 6%.

Conclusion: Grandio Flow cures reliably throughout the restoration and is clearly superior to the other flowables that were examined in this study.

[1] M. Bargrizan, A. Ghassemi, F. Gholami, IADR Toronto **2008**, Abstract 1729.