

How Finishing and Polishing Systems Influences on the Gloss Surface

Vincenzo Tosco*, Riccardo Monterubbianesi¹, Giulia Orilisi¹, Simone Grandini², Giovanna Orsini¹ and Angelo Putignano¹

¹ Polytechnic University of Marche, Ancona, Italy. ² University of Siena, Italy

**Corresponding author*

Vincenzo Tosco DDS, PhD student

Polytechnic University of Marche, Ancona, Italy.

Via Tronto 10, Ancona

v.tosco@pm.univpm.it

The Aim

To evaluate the behavior of the gloss and morphology surface of four resin-based composites before and after using the same finishing and polishing system.

Materials and Methods

Four resin-composite material was investigated: Harmonize (Kerr), Gradia Direct (GC corporation), Estelite Σ Quick (Tokuyama Dental), TPH Spectra. Eighteen discs of composite were prepared using homemade Teflon molds. A glass on bottom and a Mylar strip on top were used to exclude the oxygen inhibition during curing. Then, they were polymerized for 20 seconds both the top and the bottom. All specimens were divided into 6 groups (n=3) following the different finishing and polishing systems, as listed in table 1. Gloss was determined by a glossmeter, calibrated with a reference value of 95 gloss units (GU). All samples were also examined by Scanning Electron Microscopy (SEM) to examine the morphology before and after finishing and polishing.

Results

The mean gloss values showed statistically differences results among to the different finishing and polishing systems. Group Control showed the highest gloss values (93 ± 9 GU), while Group Unpolished showed the lowest ($1,7 \pm 0,7$ GU). Group A and D showed the highest values for the groups polished (62 ± 17 A; $53,74 \pm 2$ D), following Group B and C ($47,29 \pm 5,8$ B; 38 ± 5 C). SE micrographs showed that smooth flat surfaces especially in the finished glossy samples. Further statistical evaluations are ongoing.

Conclusion

The gloss is finishing and polishing systems dependent. The highest gloss surface is obtained when the resin composite polymerizes against a Mylar matrix without finishing and polishing. However, this study demonstrates that acceptable gloss results are obtained using systems based on hair goat brushes and diamond paste. Many manufacturers offer different finishing and polishing systems, despite no consensus reached on the method providing the smoothest and highest gloss surface. Clinicians could benefit from choosing the suggested reliable and simple protocols to obtain good gloss surface.

Keywords: Gloss, composite resin, polishing.

Table 1

Protocol	Finishing & Polishing system
A	<p>Sof-Lex Disc XT (3M, ESPE)</p> <p>Coarse (C)</p> <p>Medium (M)</p> <p>Fine (F)</p> <p>Extra fine (XF)</p> <p>Sof-Lex Spiral Wheels Beige</p> <p>Sof-Lex Spiral Wheels Pink</p> <p>Enamel Plus Shiny (Micerium) Shiny A Shiny B Shiny C</p>
B	<p>Sof-Lex Disc XT (3M, ESPE)</p> <p>Coarse (C)</p> <p>Medium (M)</p> <p>Fine (F)</p> <p>Extra fine (XF)</p> <p>Enamel Plus Shiny (Micerium)</p> <p>Shiny A + Hair Goat Brushes Shiny B + Hair Goat Brushes Shiny C + Felt discs</p>
C	<p>Sof-Lex Disc XT (3M, ESPE)</p> <p>Coarse (C)</p> <p>Medium (M)</p> <p>Fine (F)</p> <p>Extra fine (XF)</p> <p>Komet Burs #4 of Direct Kit of Style Italiano</p> <p>Komet Burs #1 of Direct Kit of Style Italiano</p> <p>Sof-Lex Spiral Wheels Beige</p> <p>Sof-Lex Spiral Wheels Pink</p> <p>Diamond Paste (Premier)</p>
D	<p>Sof-Lex Disc XT (3M, ESPE)</p> <p>Coarse (C)</p> <p>Medium (M)</p> <p>Komet Burs #4 of Direct Kit of Style Italiano</p> <p>Komet Burs #1 of Direct Kit of Style Italiano</p> <p>Sof-Lex Spiral Wheels Beige</p> <p>Sof-Lex Spiral Wheels Pink</p> <p>Hair Goat Brushes and Felt discs + Diamond Paste (Premier)</p>