Braun Oral-B D17, Sonicare Plus and ADA reference brushes function.

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Abstract

This study was to measure simulated dentin wear and other surface characteristics occurring with toothpaste and toothbrush use when the brushed surface was clean and covered with surface debris. ADA Hard Reference Brush (A), Oral-B D-17 (B), Sonicare Plus (C) and ADA Soft Reference Brush (D). Brushes were used with 50 & 150gm for 30 sec. Electric & manual brushes were used at 16 and 60 strokes/min, resp. Each brush was used with the simulated dentin, acrylic substrate and 5gm of Cal Pyro reference abrasive in 1% CMC and 10% glycerin in water. After the baseline scans, the 26x50mm acrylic strips were taped to provide a reference region for each post-brushing profilometer scan. Simulated surface debris was added to half of the acrylic strips by dipping in white latex paint and dried at room temp. The non-dipped strips were brushed directly. Surface debris removal was measured with a Minolta Chroma Meter CR-100. After measuring the debris removal, the acrylic strip surface was cleaned in a sonicator. Wear and other surface characteristics were obtained with a Federal Products Co, Surfanalyzer 5000 fitted with custom software. With 50gm brush head load and debris covered surface, there were no statistical differences in the wear with B, C & D. With 50gm load, C produced more wear on uncovered surface ($p<0.05$), while B & D are not statistically different from each other. With 150gm load and covered surface, D produced statistically more wear than the two electric brushes & other manual brush A. With direct brushing and 150gm load, there were no significant difference between the two electric and two manual brushes. In cleaning power studies with 50gm load, B was more effective than C & D ($p<0.05$). At 150gm, D was most effective ($p<0.05$). A, B & C were comparable. Disruptive wear on simulated dentin with one 2-min. brushing session was minimal with or without debris. Supported in part by Braun Oral-B.

Conclusions

These laboratory studies were designed to measure any changes after one 2-minute brushing of simulated dentin with or without plaque.

- As one would expect, surface debris minimized changes in the brushed surface, supporting the concept that the daily toothbrushing with a toothpaste can clean the teeth with little effect upon the tooth surface.
- There was no statistical difference between brushes with 150-gram brush head load and no surface debris.
- At the lighter 50-gram brush head load recommended by the manufacturer, the Sonicare Plus produced statistically more wear than the other brushes. It is likely that this statistical difference has little clinical significance.
- At 150-gram brush head load, Braun Oral-B 3D Excel (D-17) was more effective in cleaning than the ADA Reference manual brushes and Sonicare Plus brush.