Plaque Biofilm Disruption

_in vitro study_

In vitro evaluation of interproximal biofilm removal with power toothbrushes


Objective

To compare the removal of interproximal biofilm beyond the reach of the bristles of the Sonicare FlexCare and a rotating-oscillating power toothbrush, using an in vitro model.

Methodology

The ability of the Sonicare FlexCare and Oral-B Triumph® to remove biofilm without direct bristle contact was evaluated using a dental plaque model of a multispecies oral biofilm grown on hydroxyapatite discs. In a typodont model, the discs with plaque biofilm were located on interproximal sites of molar teeth at a distance of 2-4 mm from the bristles, and exposed to the fluid dynamic activity generated by the activated brushes. An inactivated Sonicare FlexCare was used as a control. Plaque removal efficacy was determined by enumeration of the percentage of viable bacteria removed from the discs as a result of brushing.

Results

The active Sonicare FlexCare toothbrush removed a significantly higher percentage of biofilm bacteria when compared to both the inactive state (p<0.0001) and the active Oral-B Triumph toothbrush (p=0.0001). Moreover, with 73% plaque biofilm removal, the Sonicare FlexCare removed three times the amount of plaque biofilm when compared to the Oral-B Triumph, with 23% removal.

Conclusion

Sonicare FlexCare removed significantly more biofilm 2-4 mm beyond the reach of the bristles than the Oral-B Triumph.

Removal of biofilm bacteria from HA discs in an interproximal site model

- Sonicare FlexCare: 73.3%
- Oral-B Triumph®: 22.8%

(p=0.0001)