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A six-week clinical evaluation of the plaque and gingivitis efficacy of an oscillating-rotating power toothbrush with a novel brush head utilizing angled CrissCross bristles versus a sonic toothbrush.

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Abstract

OBJECTIVE: To compare the efficacy of an oscillating-rotating power toothbrush with a novel brush head incorporating angled CrissCross bristles (Oral-B Triumph with SmartGuide with Oral-B CrossAction brush head) versus a sonic toothbrush (Sonicare DiamondClean) for plaque and gingivitis reduction over a six-week period.

METHODS: This was a single-center, randomized, examiner-blind, two-treatment, parallel group study involving 65 subjects per group. Subjects presenting with mild-to-moderate gingivitis at Baseline were randomly assigned to either the oscillating-rotating brush or the sonic brush. They were instructed to use their assigned toothbrush and a standard fluoride dentifrice for two minutes twice daily at home for six weeks. Gingivitis and plaque were assessed at Baseline and Week 6 using the Modified Gingival Index (MGI), Gingival Bleeding Index (GBI), and Rustogi Modified Navy Plaque Index (RMNPI). Data were analyzed using an Analysis of Covariance (ANCOVA), with baseline as the covariate. Subjects also completed a consumer perception questionnaire to evaluate their brushing experience.

RESULTS: One-hundred and thirty subjects were enrolled in the study and randomized to treatment. Sixty-four subjects per group completed the trial. Both brushes produced statistically significant reductions in gingivitis and plaque measures at Week 6 relative to Baseline ($p < 0.001$ for all). The oscillating-rotating brush with the novel brush head demonstrated statistically significantly greater reductions in all gingivitis and plaque measures compared to the sonic toothbrush. The benefits for the oscillating-rotating brush over the sonic brush were 32.6% for gingivitis, 35.4% for gingival bleeding, 32% for number of bleeding sites, 22% for whole mouth plaque, 24.2% for gingival margin plaque, and 33.3% for approximal plaque ($p < \text{or} = 0.001$ for all measures except gingival margin plaque, where $p = 0.018$). Analysis of the consumer perception questionnaire results showed subjects using the oscillating-rotating brush rated it higher for overall use experience and key attributes related to cleaning, gentleness, and brush head shape/size versus subjects in the sonic brush group. There were no adverse events reported or observed for either brush.

CONCLUSION: This six-week randomized, examiner-blind, comparative clinical study showed the oscillating-rotating toothbrush, with a novel brush head incorporating angled CrissCross bristles, was significantly better than an advanced sonic power toothbrush at reducing gingival inflammation and bleeding, as well as reducing whole mouth plaque, plaque along the gumline, and in the approximal regions.

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