

A 3-month clinical investigation comparing the safety and efficacy of a novel electric toothbrush (Braun Oral-B 3D Plaque Remover) with a manual toothbrush.

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Cronin, M. et al.
New Institutional Service Co., Northfield, New Jersey, USA
Am. J. Dent., 1998; In press.

Objectives

The primary objective was to compare the efficacy of the Braun Oral-B 3D Plaque Remover with a manual toothbrush, with respect to control of plaque and gingivitis. A secondary objective was to evaluate safety over a 3-month period of use.

Design

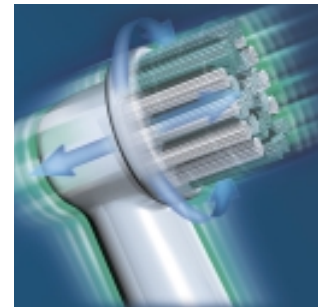
Randomized, parallel group, single-blind to the examiner.

Material and Methods

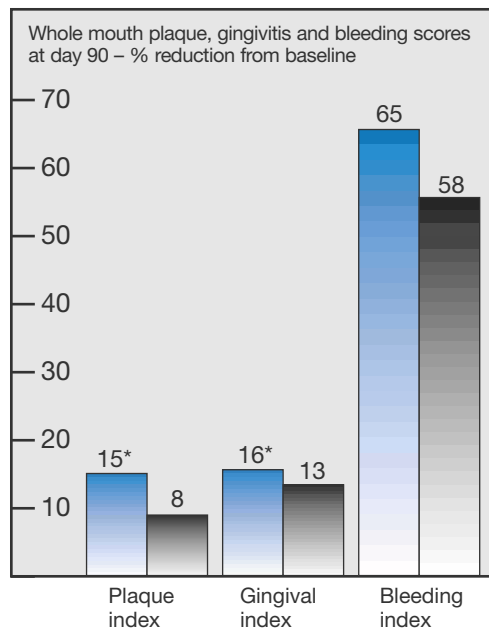
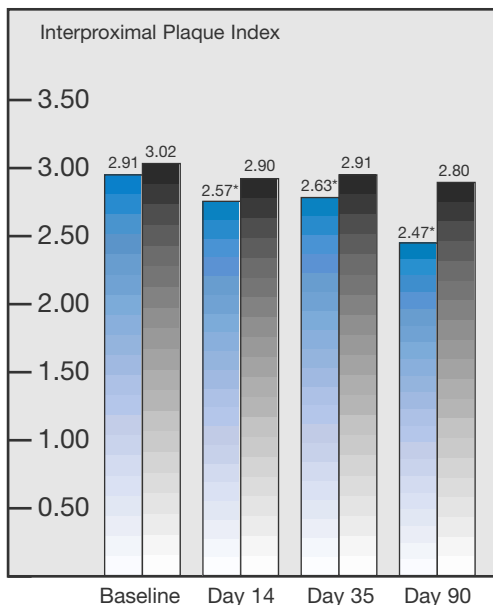
A total of one-hundred and fourteen healthy adult volunteers from a general population were entered into this three month study. They were between the 18 and 65 years of age, had at least 18 natural teeth and no evidence of extensive caries or periodontal disease. To enter the study, volunteers had to have a whole mouth plaque score of ≤ 2.0 (Turesky modification of Quigley and Hein).

At baseline, volunteers were examined for evidence of pre-existing soft and hard tissue abrasion, and were scored for plaque (Turesky modification of Quigley and Hein), gingivitis (Löe and Silness) and gingival bleeding (derived from Löe and Silness gingival index). They were then allocated either the Braun Oral-B 3D or an ADA approved manual toothbrush, supplied with Colgate regular toothpaste and instructions in the use of their respective brushes, and asked to brush twice daily for two minutes.

Plaque, gingivitis and gingival bleeding was reassessed by one examiner who was unaware of the type of brush used by the subject, at day 14, day 35 and at the end of the study (day 90). At each examination over the three months of the study, volunteers were assessed for evidence of hard tissue and gingival abrasion.



Results



*Significant advantage in favour of the 3D, ($p < 0.05$).

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Oral-B

Both the 3D and the manual toothbrush were found to be safe, with no clinical evidence of significant hard or soft tissue abrasion at any time point in the study.

The whole mouth plaque index, gingival index and bleeding index were all significantly reduced from baseline at all time periods in both groups ($p < 0.005$), except for day 35 in the manual group when the plaque index was not significantly reduced from baseline. In terms of a percentage reduction from baseline at day 90, the 3D reduced plaque by 15%, gingivitis by 16% and bleeding by 65%. Figures for the manual toothbrush were 8%, 13% and 58%, respectively. The 3D was significantly more effective than the manual toothbrush with respect to plaque reduction at day 14, day 35 and day 90, and gingivitis at day 90 ($p < 0.05$).

Analysis of data from individual sites within the mouth revealed that for plaque, the 3D was significantly more effective than the manual brush at interproximal sites and anterior lingual sites, at all three time periods ($p < 0.05$). Interproximal plaque scores decreased by 15% at day 90 in the 3D group, in contrast to 7% in the manual toothbrush group. A significant advantage in favour of the 3D was also observed for the gingival index at posterior lingual sites at day 90 ($p < 0.05$).

Clinical Comment

This three-month clinical study demonstrated that the Braun Oral-B 3D Plaque Remover effectively controls plaque and reduces gingivitis. Compared to the manual control toothbrush, the 3D was found to be more effective at reducing plaque and gingivitis, particularly at interproximal sites. At these difficult to reach surfaces, the 3D progressively reduced plaque scores over the course of the study, and by day 90 had produced a two times greater reduction from baseline than the manual toothbrush, confirming the ability of the 3D to clean deeper. These results confirm the ability of the Braun Oral-B 3D Plaque Remover, with its novel pulsating/oscillating/rotating action, to clean deeper than a manual toothbrush, particularly at hard to reach interproximal surfaces. The study also confirms that over a three month period, the 3D is safe to use.

