Approximal brushhead used on a powered toothbrush.

Presented at IADR, Chicago, 27-30 June 2001

Abstract

Aim: This study was designed to test whether the approximal efficacy of a powered toothbrush (Braun Oral-B 8 3D Plaque Remover [PTB]) can be improved when a specifically for these areas designed brushhead (pointed shape [ABH]) is used as compared to the standard brushhead (SBH).

Material & Methods: 40 non-dental students were included. They all received the PTB with 2 different brushheads (SBH + ABH). Instructions were given to use each brushhead twice every day (2 min with the SBH followed by 1 min with the ABH). 2 weeks later they received an appointment for the first experiment (Exp 1), prior to which they abstained from all oral hygiene procedures for 48 hours. Plaque was assessed at 4 sites per tooth. Next the dental hygienist brushed for 30 sec with the ABH. Next approximal plaque was selected contra-lateral quadrants for 30 sec with the SBH and in the hygienist brushed the approximal areas for another minute. In 2 randomly selected contra-lateral quadrants with the SBH in the opposing quadrants for 30 sec with the ABH. Next approximal plaque was scored. After 2-3 weeks Exp 2 was carried out comparable to Exp 1; only opposing quadrants for 30 secs with the ABH. Next approximal plaque was scored again. Subsequently the dental hygienist brushed the approximal areas for another minute. In 2 randomly selected contra-lateral quadrants with the SBH in the opposing quadrants for 30 sec with the ABH. Next approximal plaque was scored. After 2-3 weeks Exp 2 was carried out comparable to Exp 1; only this time the plaque was scored themselves. Results: Exp 1 showed approximal plaque scores at baseline of 1.70 and 1.72 and at post-brushing of 0.31 and 0.26 for the SBH + ABH and SBH resp. (p<0.05). The additional increase in approximal plaque reduction after 30 secs of brushing with ABH was 23.6% and for the SBH 19.2% (p<0.05). Exp 2 showed approximal plaque scores at baseline of 1.76 and 1.74 and post-brushing of 0.21 and 0.24 for the SBH + ABH and SBH resp. The additional approximal plaque reduction of 30 secs brushing with ABH was 18.6% and 17.5% with the SBH (non-significant).

Discussion/Conclusion: An additional 1 minute showed minor differences (0.1%) between brushing. Much larger was the effect of the 1 min with brushing (p<18%) itself. It seems therefore beneficial to advise the patient to brush longer. A 2nd different brushhead may stimulate to do so.

Results

- **Conclusions**
  - When brushing was carried out by a dental hygienist, an additional 60 seconds brushing with an approximal brushhead removed significantly more plaque than did brushing with a standard brushhead.
  - When brushing was carried out by the panelists, there was no significant difference in the amount of additional plaque removed with the two brushheads.
  - An additional 60 seconds of brushing either by the hygienist or by the panelists led to between 17.5% and 21.6% more plaque removal.
  - Increased brushing time will result in greater plaque removal. The availability of a second approximal brushhead might encourage longer brushing times.

Safety, efficacy and acceptability of a new power toothbrush: A 3-month clinical investigation


**Objectives**

To compare the safety and efficacy of a new power toothbrush (Braun Oral-B 3D Excel - D17) with an ADA reference manual toothbrush.

**Design**

This was a randomized, parallel-group, clinical study.

**Materials and Methods**

A total of 110 healthy adult volunteers from a general population, aged from 18 to 65 years, were entered into the study, which followed ADA approved methodology. For inclusion, subjects were required to be non-smokers with at least 16 scorers teeth (including 3 molars). At the baseline examination, subjects had to have a whole mouth plaque score of ≥2.1 and a gingival index of ≥1.0.

At the start of the study, subjects who met the inclusion criteria were randomly assigned to either the Braun Oral-B 3D Excel D17 group or the ADA reference manual toothbrush group. The D17 is a new power toothbrush, based on the Braun Oral-B 8 3D (D15), which differs from the 30 in that the angle of oscillation is reduced slightly and the frequency of pulsation is increased from 170 Hz to 340 Hz.

**Results**

- Evaluations for safety, plaque, gingivitis and bleeding were carried out at baseline and after 1 and 3 months of product use. Plaque was scored using the Turesky modification of the Quigley & Hein Plaque Index. Gingivitis was scored using the Löe & Silness index. Bleeding scores were derived from the Gingival Index. Prior to all evaluations, subjects were instructed to abstain from oral hygiene for 12 to 18 hours to allow overnight plaque formation. Subjects were requested to brush for 2 minutes twice daily. At the baseline visit, a clinical assistant instructed each subject in the use of their assigned product.

- After 3 months of product use, subjects in the D17 group were asked to complete a questionnaire which documented their attitude to and subjective opinion of the D17.

**Clinical Comment**

It is now well established that some power toothbrushes have the potential to increase plaque removal and improve gingival health, when compared with use of a manual toothbrush. This superiority over a manual toothbrush was confirmed at the 1998 European Workshop on Mechanical Plaque Control, where a consensus was reached that "There is evidence from both short- and long-term controlled clinical trials that some of the more modern designs of automated toothbrushes are somewhat superior to manual brushes in plaque removal and gingival inflammation control". The evidence from the study presented here is in agreement with this conclusion, results showing that both plaque removal and control of gingivitis were significantly greater with the new Braun Oral-B D17.

Compliance with a power brush is also an important issue, and results from the questionnaire completed by users of the D17 in this study, suggest that this new power brush is well accepted. A significant subjective feeling of both smoothness and polish was reported and subjects said that the D17 left their mouth feeling like they had just visited the dentist. These characteristics may enhance compliance.