The long term effect of an oscillating/rotating electric toothbrush on gingivitis. - an 8 month clinical study -


Objectives
The primary objective of this study was to evaluate the safety and efficacy of the Braun Oral-B Plaque Remover (D5) in the removal of supragingival plaque and improving gingival health in a long term clinical trial. The secondary objective was to compare the Braun Oral-B Plaque Remover (D5) with a manual toothbrush (Butler GUM 311).

Design
Parallel group, randomized, single blind to investigator.

Materials and Methods
Eighty-seven volunteers with an average age of 22 years, possessing at least twenty-four natural teeth were enrolled into the study. Volunteers had no relevant medical condition, no orthodontic bands on maxillary teeth, and were not using any medication that may have affected gingival health. No previous experience with the use of an electric toothbrush was permitted.

The volunteers were selected on the basis of moderate gingival inflammation (at least 35% of three test sites showing bleeding on probing), and a probing depth of more than 2 mm but less than 5 mm.

At baseline volunteers were scored using the following indices, in the order listed:
- Calculus
- Plaque
- visual inflammation
- bleeding
- plaque index on the vestibular surfaces only

The subjects were randomly assigned to two experimental groups. Each Group received either a Butler GUM 311 or Braun Oral-B Plaque Remover (D5). The Braun Oral-B group were encouraged to read the manufacturer’s instructions carefully. The manual toothbrush group were provided with an oral hygiene instruction brochure as promoted by the Dutch Society of Periodontology. All volunteers were requested to brush for two minutes. The D5 group could use the timing device in the handle, the manual group were provided with a two minute timer. No further information regarding oral hygiene was given.

At the end of one month, following the measurement of the indices, all volunteers were given professional instruction in oral hygiene, by a hygienist, using the assigned toothbrush. The modified "Bass" technique was used for the manual group and the D5 technique was as the manufacturer’s instruction. In addition, all volunteers were given a professional prophylaxis.

Clinical indices were again measured at two, five and eight months after baseline. Oral Hygiene was reinforced at two and five months. All subjects were provided with brushes, brushheads and a regular toothpaste (Zendium, Oral-B Laboratories). Volunteers were instructed to brush their teeth approximately three hours, but not within one hour, prior to each examination.
At eight months seventy-seven subjects remained in the study (thirty-five - manual toothbrush, forty-two - Braun Oral-B Plaque Remover) (D5). The two groups were statistically well matched for clinical indices at baseline.

At one month a decrease in all indices was observed, with the exception of bleeding in the manual group.

Following professional prophylaxis and oral hygiene instruction subjects returned after another month, showing a further decrease in all indices. At this stage the plaque index showed a trend towards significant improvement in the D5 group over the manual toothbrush group. At five months the indices continued to improve, except the Quigley & Hein plaque score in the manual group.

At eight months a difference was observed in both plaque indices between the two groups, in favour of the Braun Oral-B Plaque Remover (D5). In addition, there was significantly less bleeding in the D5 group.

No serious adverse events were observed affecting either the manual group or the electric toothbrush group.

**Clinical Comment**

This study confirms the safety of the Braun Oral-B Plaque Remover (D5) during a long term (eight months) trial period. The overall plaque removing effect, and as a consequence the gingivitis reducing effect, of the D5 electric toothbrush was greater than that of the manual toothbrush (Butler GUM 311).

The volunteers were non-dental students with generalized gingivitis. Hence, in a regular user population the long term benefit of the D5 electric toothbrush over the manual toothbrush has been demonstrated. Individual instruction in proper usage improved the efficacy of the D5.

At the end of the eight months trial the Braun Oral-B Plaque Remover (D5) proved to be more effective than the Butler GUM 311 manual toothbrush.