Comparison of an oscillating/rotating electric toothbrush and a "sonic" toothbrush in plaque-removing ability. A professional toothbrushing and supervised brushing study.


Objectives
The purpose of this study was to compare the plaque-removing efficacy of the Braun Oral-B Plaque Remover (D7) and the Sonicare toothbrush, when brushing was carried out professionally and by tutored subjects. In addition, patient preference for the two toothbrushes was evaluated.

Design
This was a randomized, parallel-group, post-brushing study, single-blind to the investigator.

Materials and Methods
Thirty-five healthy volunteers with six or more natural teeth per quadrant were enrolled into the study. Each subject received the Braun Oral-B Plaque Remover (D7), and the sonic electric toothbrush, with instructions to use the brushes on alternate days for a period of two weeks. Subjects were asked to abstain from using any oral hygiene procedures for 24 hours before all assessments.

When subjects returned, the amount of dental plaque on the vestibular, lingual, mesial and distal surfaces of each tooth was assessed by the Silness and Löe plaque index. In the first phase of the study, the subjects’ teeth were professionally brushed by a second examiner for a total of two minutes, brushing two quadrants at random with one study brush and the remaining two quadrants with the other brush. The amount of plaque was then measured again at each site. Subjects were then given professional oral hygiene instruction in plaque removal.

Four weeks later, in the second phase of the study, plaque was measured before and after the subjects brushed their own teeth for two minutes, brushing two quadrants at random with one study brush and two quadrants with the other brush.

At the end of the study, subjects were allowed to keep whichever brush they preferred and were asked to complete a questionnaire which explored their preferences.

Results

<table>
<thead>
<tr>
<th>Plaque Index (Silness and Löe) after professional brushing</th>
<th>Plaque Index (Silness and Löe) after tutored brushing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Braun Oral-B D 7 n = 35</td>
<td>Braun Oral-B D 7 n = 35</td>
</tr>
<tr>
<td>1.82</td>
<td>2.00</td>
</tr>
<tr>
<td>Sonicare electric Toothbrush n = 35</td>
<td>Sonicare electric Toothbrush n = 35</td>
</tr>
<tr>
<td>1.81</td>
<td>2.00</td>
</tr>
<tr>
<td>0.54*</td>
<td>1.10*</td>
</tr>
<tr>
<td>0.68</td>
<td>1.20</td>
</tr>
</tbody>
</table>

* Statistically significant difference in favour of the D7 (p<0.05).

Whole Mouth Plaque Results

Baseline

After 2 minutes
Brushing with the Braun Oral-B Plaque Remover (D7) removed significantly more plaque than brushing with the Sonicare toothbrush (p<0.05). This was true when the brushing was carried out both professionally, and by the subject after tutoring. The D7 was significantly more efficient than the Sonicare at all the evaluated mouth sites with tutored brushing.

The majority (97%) of the subjects preferred the Braun Oral-B Plaque Remover (D7) to the Sonic toothbrush, the D7 receiving significantly higher scores for enjoyment, sound, vibration and a feeling of cleanliness (p<0.001).

**Clinical Comment**
This post-brushing study demonstrated that the Braun Oral-B Plaque Remover (D7) was more effective in removing supragingival plaque than the Sonicare toothbrush.

Despite tutoring, subjects did not remove plaque quite as effectively as the professional examiner, particularly at the back of the mouth. The advantage in favour of the D7 was, however, present under both brushing conditions.

With any toothbrush, overall efficacy is related to compliance, and subjects must be prepared to brush their teeth regularly for a sufficient duration of time. The fact that 97% of subjects in this study preferred using the D7 to the Sonic toothbrush, is therefore an important finding.