

Test Report

Efficiency of the **Paro** "In-Between" Interdental Toothbrush in removing plaque as compared to a hand and/or other electric toothbrushes.

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The commissioning company, Esro AG, wanted to compare the cleaning efficiency of the Paro "In-Between" toothbrush, with a single-tuft working end, with other toothbrushes on the market. Plaque removal has been shown to be only minimally influenced by instruction and the efficient use of hand toothbrushes, especially in the interdental embrasures. Conventional toothbrushing instruction does not appear to bring about greater cleaning efficiency and interdental plaque removal when using a hand toothbrush with a straight working surface. This appears to be effected through the use of increased pressure, which in turn, often causes gingival wounding. In addition, it is often observed that palatally a conventional toothbrush does not even reach the gingival margins.

The goal of this study was to compare the cleaning efficiency of the Paro "In-Between", with a single-tuft working end, to conventional toothbrushes with instruction.

Methods and Materials

The test subjects were given a hand toothbrush, with a straight working surface, and told to clean their teeth as they were used to doing. Just before starting this study, the subjects were asked to clean their teeth as long as they wanted and felt comfortable doing. Immediately following, the remaining plaque was measured and recorded. The subjects then undertook a final cleaning, first with their hand toothbrush and then with the Paro "In-Between". The subjects had received instruction in use of the Paro brush 4 days prior to this trial and had the ensuing time to become accustomed to its use.

The subjects were given the various toothbrushes in the order listed in Table 1 to use: electric toothbrush, sonic toothbrush, double-headed toothbrush (all without any instruction or practice) and after a 4 week period, were given first the hand toothbrush and then the Paro "In-Between" with a single-tuft working end and instruction.

Results and Discussion

All 8 subjects who started in this study were followed for the period described above and completed the study.

It is clear from Table 1 that the average Plaque Index with the electric toothbrush is 60% less than with the hand toothbrush and that the use of a sonic toothbrush reduced the plaque accumulation by a significant 0.67 or 66%. The double-headed toothbrush used at the end of the "uninstructed" test phase reduced the plaque accumulation to 0.97, which was also significantly better than the hand toothbrush.

Plaque removal with the hand toothbrush, after instruction and approximately 10 weeks of professional schooling, showed a markedly better result. On the average, only 1.63 plaque sites were found. After the subsequent use of the Paro "In-Between", only 0.3 plaque sites, on the average, were detectable. In other words, a further 82% plaque reduction over the last cleaning with a hand toothbrush was achieved. Of special note is the almost total plaque removal, palatally, from the gingival margins.

This study clearly shows the rank earned by traditional hand toothbrushes with flat working surfaces. The electric toothbrush tested showed significantly better results when compared to the hand toothbrush. Instruction, proper use and a few weeks practice resulted in better results with a hand toothbrush, but the amount of plaque removed remained markedly behind the results obtained with the electric and Superbrush. The use of the electric Paro "In-Between" single-tuft toothbrush, after a few day of use at home however, reduced the amount of plaque present to a level that with all the other toothbrushes has never been achieved.

Table 1

Average values for the 8 subjects, as well as maximal value, minimal value and difference when compared to conventional hand toothbrushes for the 8 subjects after cleaning with the various toothbrushing instruments.

Group/Value	Average value	Maximal value	Minimal value	% Reduction to Hand toothbrush	Difference
1. Part, without instruction					
Hand toothbrush, straight working surface, without instruction	2.13	3.04	1.26	-	-
Electric toothbrush	0.86	1.59	0.69	60	-1.27
Sonic toothbrush	0.67	1.20	0.40	68	-1.46
Double-headed toothbrush (Superbrush), without instruction	0.97	1.69	0.54	55	-1.16
2. Part, with instruction					
Hand toothbrush, flat	1.63	1.77	0.69	23	-0.50
Single-tuft, vibration	0.36	0.77	0.14	83/78*	-1.77/1.27*

2. Value in comparison to the efficiency of the hand toothbrush with/without instruction.

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The electric toothbrush for cleaning in-between.

Article No.: 6040

The set includes:

- Paro in-between: 1x 6040
- Battery: 1x 1,5 V battery
- Interspace: 1x 1013
- Interdental Brush: 1x 1041, 1 x 1043, 1x 1044
- Micro Brush-Stick: 1x 1060

Number of vibrations: 10'000/min

Length of battery use: approx. 3 months by using the brush twice per day

Paro[®] "in-between"

*Electric toothbrush technology,
raised to the next degree.*

While electric toothbrushes have raised the ability of most people to effectively clean their teeth, even they are not able to remove bacterial deposits in "hidden" areas - between the teeth, under bridges, at the gumline and/or around braces.

Designed for area specific cleaning:

- *between teeth*
- *at gumline*
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Paro[®] has adapted electric toothbrush technology to help solve this problem. The high-frequency brush movement disturbs bacterial growth capacity, while the mechanical contact gently removes existing deposits.

*The starter set includes 3 **different tips:***

Paro[®] Isola Interdental brush, conical- for use in smaller interdental spaces and under bridges

Paro[®] Interspace Brush - for use at gumline, under bridges and around braces

Paro[®] Isola Interdental brush, tapered - for use in open interdental spaces and under bridges

Paro[®] "in-between" is your solution to cleaning "all-around".

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