

Scientific release
from the European
Federation of
Periodontology

Rapporteurs: Halperin-Sterefeld M,
Eskander L, Saminsky M, Rozitsky D,
Levi I, Weinberg G, with Eli E. Machtei

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Affiliation: Prepared by Residents from
the Postgraduate programme at the
department of Periodontology, School
of graduate dentistry, Rambam HCC
and The Faculty of Medicine –
Technion, Israeli Institute of
Technology, Haifa, Israel.

Study:



Subgingival air-polishing with erythritol during periodontal maintenance: Randomised clinical trial of twelve months

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Relevant background to study:

The objective of supportive periodontal therapy (SPT) is to remove newly formed bacterial deposits form residual pockets thus maintaining periodontal health. A variety of hand and ultrasonic instruments can be used. Air-polishing devices that

produce a jet of compressed air containing low abrasive agents via a nozzle, and which can be inserted to the top of the pocket may also be employed for this purpose.

Study Aims:

To evaluate the efficacy of repeated sub-gingival air-polishing containing erythritol powder with

0.3% chlorhexidine in residual pockets of >4 mm over 12 months.

Methods:

50 maintenance patients (≥ 3 months following completion of comprehensive periodontal treatment), with contra-lateral residual pockets >4 mm (at least one per quadrant) were included in this single-centre, randomised clinical trial. Clinical measurements (PD, PI, BOP, REC, root hypersensitivity) and microbial sampling were performed 3-monthly, while treatment was provided at 0, 3, 6,

and 9 months (providing that PD>4 mm). One site per patient was assigned to sub-gingival air-polishing with erythritol powder containing 0.3% chlorhexidine (test side) and the other site to ultrasonic debridement (control). The presence of PD >4 mm at 12 months was the primary end-point.

Results:

A reduction in number of sites with PD >4mm was achieved from 4.6 to 3.6 in test sites and 4.8 to 3.9 in control sites (p<0.001). Likewise, changes in BOP were statistically significant (0-12 months) for both groups. However, none of the changes were significantly different between groups. Patients' pain/discomfort perception was judged to be lower

at test sites. No difference was found in bacterial detection frequencies (0-12 months) in both groups. When comparing test and control sites, lower frequencies of Aa count>1000 cells/ml were observed in test sites. Two control site samples recorded Aa at 100,000 cells/ml while none of the test sites did.

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**Conclusions,
impact and
limitations:****Limitations:**

- The potential advantage of the air polishing might be attributed to the addition of 0.3% chlorhexidine.
- Intra-individual comparisons of local therapy may have crossover effects in different sites in the same dentition.
- The sample size in the present study may be insufficient to detect a true difference in prevalence of PD>4 after a period of 12 months.
- Finally, this was an industry-supported rather than an independent study.

Impact: What can we learn as practitioners?

- Following cause related therapy residual pockets may demonstrate continued improvement where continuous SPT is provided.
- Both instruments may have utility in a periodontal maintenance programme.

Conclusions:

- The primary endpoint, the reduction of sites with PD>4 mm, was achieved to a similar degree in both protocols.
- Continued improvement was observed throughout the 12 months observation period.
- Patients in the air polishing group reported less pain than in the ultrasonic group.
- At 12 months, the Aa count was significantly lower in the air-polishing group.

- The slightly greater improvement in the bacterial count for the air-polishing device might be attributed to the incorporation of chlorhexidine into the regimen.