

# Long-term Clinical Effect Of Adjunctive Antimicrobial Photodynamic Therapy In Periodontal Treatment: A Randomized Clinical Trial

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## Introduction

Mechanical removal of microbial biofilm dental plaque from tooth surfaces is important for treatment of periodontal diseases. However, the effectiveness of conventional scaling and root planing (SRP) is affected by the local conditions and residual bacteria which may affect the healing process. This is a randomized clinical trial to test the hypothesis that adjunctive antimicrobial photodynamic therapy (aPDT) plus SRP has significant effect compared with SRP alone, which can last for 1 year mechanical removal of microbial biofilm dental plaque.

## Results

There were no significant differences between the two groups at baseline.

PPD and BOP showed significant reduction, and CAL showed significant gain from baseline for all three time points in both groups. In addition, there were significantly greater reduction and gain for SRP + aPDT than for SRP at all three time points. No adverse effects of aPDT were observed. These data demonstrate the significant improvement in all evaluated clinical parameters for at least 1 year and suggest that aPDT as an adjunctive therapy to SRP represents a promising therapeutic concept for persistent periodontitis.

## Materials and Methods

136 sites in 16 patients with untreated chronic periodontitis  
(at least one premolar and one molar in every quadrant  
& at least one tooth with attachment loss of  $\geq 4$  mm in every quadrant)

SRP

SRP + aPDT

Base Line Examination for Probing Pocket Depth (PPD), Bleeding on Probing (BOP) & Clinical Attachment Level (CAL)

3 months Follow-up (PPD, BOP & CAL)

6 months follow-up (PPD, BOP & CAL)

1 year follow-up (PPD, BOP & CAL)



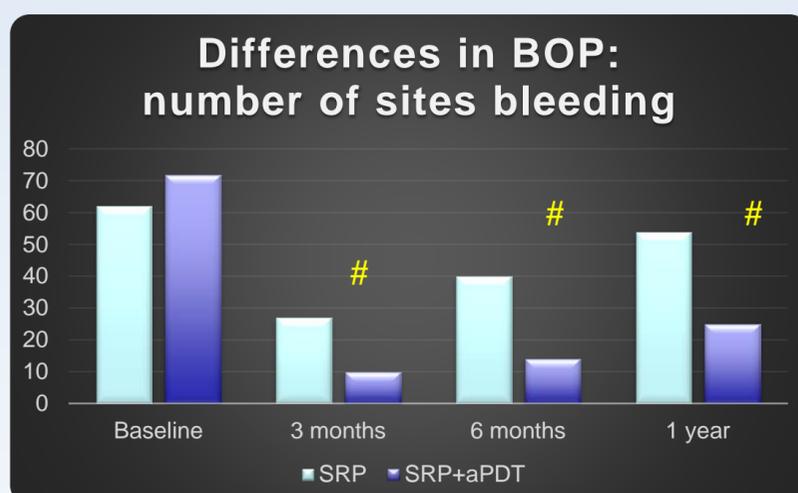
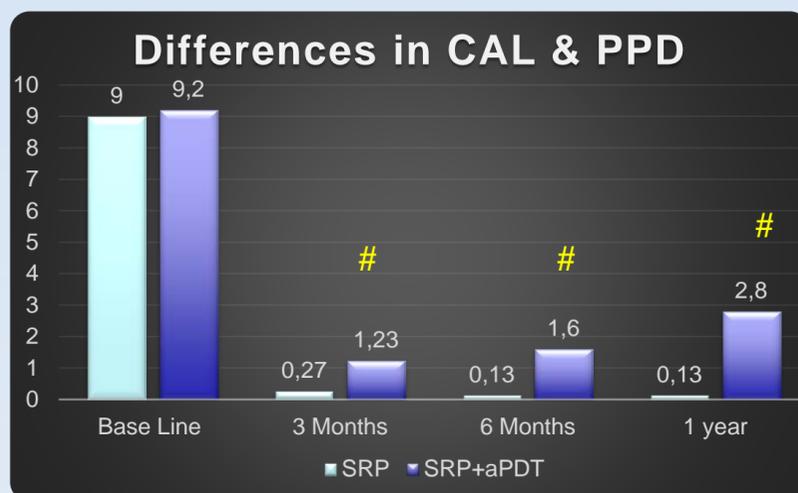
Application of HELBO® Blue Photosensitizer from apical to coronal direction!



Light exposing with the HELBO® TheraLite Laser for 1 min per tooth

aPDT was performed with a diode laser (wavelength, 660 nm; diode power 100 mW; HELBO®, bredent medical, Senden, Germany) in combination with a dedicated photosensitizer dye solution (phenothiazine chloride; HELBO®, bredent medical).

Strict supragingival control was established from the beginning of the study. The patients were called for to check their adherence to the clinical instructions, as well as to supragingival control every 2 weeks.



# P value <0.005 (Mean –Whitney test and McNemar test)

## Conclusion

The present study showed that the addition of a single application of PDT as an adjunctive therapy to SRP succeeded in enhancement in terms of PPD reduction, CAL gain, and BOP percentage reduction at different time points (3, 6, and 12 months) compared with conventional SRP periodontal treatment alone.