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Evaluation of Adjunctive Use of Low-Level Diode Laser Biostimulation with Combined Orthodontic Regenerative Therapy.

Attia MS¹, Hazzaa HH², Al-Aziz FA³, Elewa GM⁴.

Author information

- 1 Department of **Oral** Medicine, Periodontology, Diagnosis and Radiology Faculty of Dental Medicine, Al-Azhar University (Girls Branch), Cairo, Egypt, mai_shafik@yahoo.com.
- 2 Department of **Oral** Medicine, Periodontology, Diagnosis and Radiology Faculty of Dental Medicine, Al-Azhar University (Girls Branch), Cairo, Egypt.
- 3 Department of Orthodontics, Faculty of Dental Medicine, Al-Azhar University (Girls Branch), Cairo, Egypt.
- 4 Banha Teaching Hospital, Qalyobia, Egypt.

Abstract

BACKGROUND: The combined orthodontic regenerative **therapy** approach can greatly enhance periodontal conditions and dentofacial aesthetics in many situations. The purpose of this study was to evaluate the effectiveness of 940nm low-level diode **laser** biostimulation in enhancement of intrabony wound healing with combined orthodontic/regenerative **therapy** in chronic periodontitis subjects suffering from malocclusion.

METHODS: Fifteen chronic periodontitis adult patients with at least two intrabony defects and requiring orthodontic treatment for abnormalities in occlusion were included. A total of 30 defects were divided into two groups and treated in a split mouth design. The defects were treated with combined orthodontic regenerative **therapy** with **laser** irradiation (Group I: test group) or with combined orthodontic regenerative **therapy** alone (Group II: control group). The following hard and soft tissue measurements were recorded at baseline (prior to **surgery**) and after six and nine months postoperatively: probing depth (PD), clinical attachment level (CAL) by periodontal calibrated probe and bone density (BD) using the DBS-Win software.

RESULTS: Probing depth reduction was 64.57%±9.37 and 64.95%±10.07 with no statistically significant difference between Group I and Group II. Percent change in clinical attachment level gain were 59.77%±12.107 and 38.83%±7.56 in Group I and II respectively, with a statistically significant

cant difference (P-value =0.005considered signifi cant). Moreover, defects treated with combined orthodontic regenerative **therapy** with **laser** irradiation showed signifi cant preservation of bone density with a percent decrease of $4.14\% \pm 3.17$ at the end of the study period.

CONCLUSION: Improvements in clinical and radiographic parameters were observed following the adjunctive use of low-level diode **laser therapy** and orthodontic regenerative **therapy** for the management of intrabony defects in chronic periodontitis patients.

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KEYWORDS: bone grafts; diode **laser**; intrabony defects; low **laser therapy**; orthodontic tooth movement; periodontal regenerative **therapy**; resorbable membranes

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Conflict of interest statement

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