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Nd:YAG Laser in Caries Prevention: a Clinical Study

D.M.Zezell, H.G.D. Boari, C.P.Eduardo

Centro de Lasers e Aplicações- IPEN/CNEN-SP; Faculdade de Odontologia, Universidade de São Paulo- BRAZIL

The aim of this work was clinically evaluate the efficiency of Nd:YAG laser associated with acidulated phosphate fluoride in pit and fissure caries prevention of children and adolescents. It were selected 242 pre-molar and molar teeth from 33 children and adolescents aged from 7 to 14 years old. The selected teeth were free from caries or decalcification marks (active white marks) to clinical and radiographic exams. The teeth were divided in two groups: the first group was laser irradiated and their homologous remained as a control. The right side teeth were dye-assisted Nd:YAG laser irradiated. The dye solution was a moisture of dust coal and equal parts of water and alcohol. The irradiation conditions were 60 mJ, 10 Hz, 300 mm optical fiber in contact mode, resulting in a energy density of 84,9 J/cm². The occlusal surface of the teeth was completely irradiated, specially on the slopes and in the deepest part of the pits and fissures. This procedure was repeated three times. In a sequence it was applied the acidulated phosphate fluoride for 4 minutes. On the left side teeth- control group- only acidulated phosphate fluoride was applied for the same time. The final examination considered the presence of caries and active white marks after a period of one year. There were statistical significant differences ($p < 0.01$) between the lased + fluoride and the non irradiated group. The present study concluded that the technique used is a efficient and safe alternative clinical method for caries prevention.

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Diode Laser Bleaching – Clinical Study

J.E.P.Pelino, J.G.A.Guimaraes, F.M.Bevilacqua, V.A.Marinho, W.Romao Jr., C.P.Eduardo

University of São Paulo – School of Dentistry – Brazil

LELO – Laboratório Experimental de Lasers em Odontologia

Purpose: This in vivo study evaluated the safety and effectiveness of the laser bleaching in comparison with the conventional method using a curing lamp and two different bleaching products.

Materials and Methods: The diode laser (810 nm \pm 25 nm, 0.5 – 10 W; 1-1,000 sec; 2-20,000 J; bleaching fiber, continuous wave mode) – Opus 10 – Sharplan) was utilized for bleaching the human enamel in comparison with the conventional method using a curing light system (Optilux 400 – Demetron) and two different bleaching agents: Opus White™ (OpusDent – UK) and Opalescence Xtra (USA). The inclusion criteria for the study were: vital and sound teeth, absence of periodontal problems, age range: 25-50, absence of anterior prosthesis, patients had to stay in the area for at least 18 months. The exclusion criteria were: presence of crowns and anterior composite resin restorations, periodontal problems, tetracycline stains and endodontic stains. There were three groups (G1, G2 and G3) with 8 patients in each and the patients were assigned to each group randomly and they didn't know what kind of treatment they were receiving. G1: control (conventional method); G2: diode laser + Opus White™ and G3: diode laser + Opalescence Xtra. The parameters were the following: G1: curing light for 45 sec. Each tooth, three times each; G2 and G3: 1.5 W, CW, 30 sec. Each tooth, three times each. The color shades were measured before and after and pictures were taken before and after the bleaching treatment as well as sensitivity thermal tests. Rubber dam was used during all the bleaching treatment. After the bleaching treatment the patients were given a questionnaire regarding the sensitivity that varied from 0 to 3 being null (0), minimum (1), median (2) and high (3). **Results:** This study showed that the laser groups (G2 and G3) were faster than the control group (G1) and no sensitivity was reported in any of the groups.

Conclusion: According to the results obtained from this research it is possible to bleach the teeth with a laser system faster than the conventional method with a curing light system and also with safety and effectiveness within these parameters.