measured before each irradiation with an optical power meter.

Results: Results showed that even under conditions where fluoride loses its physicochemical effect (pH = 4), the Laser+Fluoride treatment presented less demineralization. Mineral loss was reduced by 56.6% in the Laser+Fluoride group compared to the Negative Control group, and by 36.2% compared to the Fluoride group. Additionally, the Laser+Fluoride group showed a greater area under the phosphate band, lower optical attenuation coefficient, and less demineralization in morphological observations.

Conclusion: In conclusion, the Laser+Fluoride combination was more effective in reducing enamel demineralization under critical pH conditions than fluoride alone, representing a promising approach, especially for patients at high risk for caries and with compromised salivary flow.

Li Qian, Ya-Qun Kong, Xiao-Xi Dong, Ji-Zhi Zhao (China)
Category: preclinical study
Title: THE USE OF 810 AND 1064 nm LASERS ON DENTAL IMPLANTS: IN VITRO ANALYSIS OF TEMPERATURE, SURFACE ALTERATIONS, AND BIOLOGICAL BEHAVIOR IN HUMAN GINGIVAL FIBROBLASTS

Aim: The primary objective of this study was to evaluate the safety of 810 and 1064 nm laser treatment on dental implants. Peri-implantitis is a challenge for clinicians and researchers.

Material and methods: A pig mandible model was used to evaluate temperature increases during laser irradiation . Surface alterations on processed pure titanium discs were analyzed via scanning electron microscopy and measurement of surface contact angles. Processed titanium discs were cocultured in vitro with human gingival fibroblasts; subsequently, cell proliferation was measured.

Results: The maximum temperature and time to reach each threshold were comparable. No surface alterations were detected after 810 nm laser irradiation, whereas surface cracks were observed after 1064 nm laser irradiation under the parameter setting of 31.84 W/cm^2. Compared with unaltered processed pure titanium discs, the proliferation of human gingival fibroblasts was significantly greater on altered processed pure titanium discs.

Conclusion: The use of either 810 or 1064 nm laser treatments may increase the risk of thermal damage in terms of increased temperature if the parameter setting is not warranted. In addition, the use of 1064 nm laser treatment could lead to changes in pure titanium discs that do not negatively affect cell proliferation. Further investigations of laser-assisted therapy are necessary to improve guidelines concerning the treatment of peri-implantitis.

Luciene Aparecida Linhares Rosa, Martha Ribeiro SIMÕES, Alcides Ricardo GONÇALVES, Aguinaldo Silva GARCEZ SEGUNDO, Victor Augusto Martins MONTALLI, (Brazil)
Category: Clinical human studies
Title: PHOTODYNAMIC THERAPY AS ADJUVANT IN MICROBIAL REDUCTION OF THE TONGUE IN INTUBATED PATIENTS IN THE INTENSIVE CARE UNIT

Aim: The objective of this study was to determine the impact of antimicrobial photodynamic therapy (aPDT) as an adjunct to oral care, evaluating the reduction of tongue microbiota in adult patients with mechanical ventilation admitted to the intensive care unit (ICU), after a standard operating procedure for oral hygiene (SOP-OH).

Material and methods: Thirty adult patients admitted to the ICU and intubated participated in the study. Oral hygiene was performed with the aid of a toothbrush with an attached suction device (Power Clean®, Impacto, São Paulo) and with a 0.12% chlorhexidine digluconate gel solution. For aPDT, 0.01% methylene blue was used, which remained on the tongue for 5 min before irradiation. Afterwards, the tongue was irradiated at 2 points (left and right) with a red-emitting InGaAlP semiconductor diode laser (660 ± 10 nm, TherapyEC, DMC, São Carlos, Brazil), 100 mW, 9 J per point, for 180 s, totaling 18 J. Biofilm samples were collected from the tongue region of the patients in 3 moments: before SOP-OH, after SOP-OH and after aPDT. The samples were placed in Petri dishes containing specific culture media for the growth of microorganisms, taken to the laboratory, and left in an incubator for 48 h. Scores were assigned to the plates (1 to 3), depending on the microbial growth (lowest to highest, respectively).

Oral Presentation

Results: Our results demonstrated that aPDT, mediated by a red-emitting laser and methylene blue, can be an adjuvant to oral care because it was able to reduce tongue biofilm in adult patients, intubated, on mechanical ventilation and admitted to the ICU.

Conclusion: Our results demonstrated that aPDT, mediated by a red-emitting laser and methylene blue, can be an adjuvant to oral care because it was able to reduce tongue biofilm in adult patients, intubated, on mechanical ventilation and admitted to the ICU.

Marcia Vidor, Jair Carneiro Leão Filho, Paulo Francisco Cesar, Patricia Moreira de Freitas (Brazil)
Category: In vitro
Title: QUALITY EVALUATION OF PRESSED AND MILLED LITHIUM DISILICATE CERAMICS AFTER DEBONDING WITH Er:YAG LASER IRRADIATION FOR REBONDING PURPOSE- IN VITRO STUDY

Aim: The aim of this study is to evaluate changes in the quality of lithium disilicate ceramics after debonding with Er:YAG laser, for rebonding purpose through in vitro research.
Some studies have verified the effectiveness of the erbium laser for debonding of ceramics and some suggest as an advantage of the technique, the possibility of rebonding these veneers when they are intact without fracture or visible cracks.

Material and methods: e.max CAD and e.max Press ceramics were fabricated in 6mm ø discs with 1mm thickness (n=60), divided into milled and pressed groups, subdivided into control and laser groups, which were cemented to the enamel of extracted bovine teeth for the shear bond strength test (SBS). The laser groups were irradiated with Er:YAG (2940 nm, Litetouch, Light Instruments) following the protocol for veneer debonding (4W/ 200mJ/ 20Hz). The ceramics debonded with the laser were then rebonded and submitted to the SBS test and evaluation of the adhesive remnant in the enamel. Ceramic samples with 12mm ø and 1mm in thickness (n=90) were also produced for the flexural strength test, fractographic analysis and SEM; with the aim to identifying changes in the quality of these ceramics after irradiation with the Er:YAG laser.

Results: In the SBS test, the Press groups showed significantly higher values than the CAD groups ($p<0.05$), both in the control groups and also in the rebonded laser groups. The adhesive failures occurred between the ceramic and the cement interface in all groups. Flexural strength analysis showed that CAD control group had a significant difference in relation to the Press control group, while the laser irradiated groups showed higher values than the control groups, but without statistically significant difference between the groups. However, Weibull dispersion analysis, demonstrated better dispersion results of the Press Laser group compared to the CAD Laser group, demonstrating a higher reliability of the Press Laser material in relation to the CAD Laser, even with lower flexural strength values.

Conclusion: No visible defects were identified in the laser-irradiated ceramics by macroscopic analyses, but the SEM evaluation showed small changes in the size and arrangement of the lithium disilicate microstructure after Er:YAG laser irradiation, both in the pressed and milled groups.

Maria Clara de Souza, (Brazil)
Category: Preclinical
Title: INVESTIGATING THE EFFECTS OF WAVELENGTH-ASSOCIATED PHOTOBIOMODULATION THERAPY ON DORSAL EXCISION REPAIR IN MICE: A HISTOLOGICAL STUDY

Aim: The simultaneous association of red and infra-red wavelengths for photobiomodulation therapy (PBMT) has been gaining space among the clinical field. However, its effect upon the skin repair is still unknown. Therefore, this study aimed to assess the impact of concurrently combining 660nm and 808nm wavelengths on cutaneous wounds, in comparison to their isolated use.

Material and methods: In order to attain this, two full thickness wounds with 5mm diameters were made using a punch in 20 female Balb/c mice. These were then randomly divided into control (no treatment) and PBMT groups, these being: Red Laser (RL), in which PBTM was applied using a wavelength of 660nm; Infra-red and Red Laser (IRL+RL), which received an asynchronous application of 660nm and 808nm wavelengths; and Simultaneous Laser (S), where both wavelengths were applied at the same time. All PBMT groups had the irradiations performed in contact mode, perpendicular to the tissue, using continuous wave. For this, a Therapy EC