

P14**Diode and Nd:YAG laser frenectomy.**

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This study evaluated the clinical efficiency of laser technology (diode and Nd:YAG) for frenulum excision in case of interincisive diastema. Before orthodontic therapy, due to the correlation between the persistence of a maxillary medium frenulum and the presence of an interincisive diastema, frenulectomy is highly recommended.

Frenulectomy is advisable when the following anatomical conditions are observed:

Frenum is attached to papillar gingiva and mobilization of lips (traction test) causes a moving of marginal gingiva of upper central incisors.

Frenum reaches the upper part of the gingival septum and becomes blurred with bunoid papilla.

Transversal dimension of frenulum and density of tissue interposed between central incisors cause a very large diastema (6-8mm).

Three lasers were clinically compared:

Diode (Oralia Jet20): 810nm, PPR 10000Hz, fiber 400 m, PD: 15923 W/cm².

Diode (MC4 15W): 980nm, HSF 10000Hz, fiber 400 m, PD: 7961W/cm².

Nd:YAG (Fotona Fidelis Plus): 1064nm, fiber 320 m.

In all clinical cases, a contact anaesthetic was used. Bleeding was strongly reduced and good and rapid recovery of the wounds was obtained. After one or two weeks, healing was observed. An adequate program set out in cooperation between orthodontist, periodontist and oral surgeon is needed to solve interincisal diastema.

P15**Hybrid layer thickness and morphology: Influence of cavity preparation with Er:YAG laser .**

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The objective of this study was to compare the hybrid layer thickness and morphology formed utilizing Scotchbond Multipurpose Plus (SBMP) on dentin, prepared with a diamond

bur in a high speed handpiece and dentin prepared with an Er:YAG laser. Flat dentin surfaces obtained from five human teeth were treated with the two methods, and then were treated with the dentine adhesive system. After a layer of composite was applied, specimens were sectioned, flattened, polished and prepared for SEM observation. Ten different measurements of hybrid layer thickness were obtained along the bonded surface in each specimen. Results showed that SBMP produces a $3.43 \pm 0.75 \mu\text{m}$ hybrid layer in dentine prepared with diamond bur. This hybrid layer was regular and constantly found. In the laser group, the dentine adhesive system produced a $1.54 \pm 0.35 \mu\text{m}$ hybrid layer, which was very irregular and was not found constantly. Statistical analysis of variance ($p \leq 0,05$) showed that there was a statistically significant difference between the groups. The authors concluded that the Er:YAG laser, with the parameters used in the experiment, is not a preparation method which allows a thick hybrid layer formation, in opposition to the use of a diamond bur in a the high speed turbine.

P16**"In vitro" evaluation of morphologic changes on the root dentine irradiated by CO2 laser associated or not to calcium hydroxide.**

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This in vitro study has evaluated the structural changes on the root dentine irradiated by a CO2 laser associated or not to calcium hydroxide - an alternative method for dentine hypersensitivity treatment. Fourteen human teeth 3rd molars were utilized, divided into 7 groups. Group I (control group), Groups II, III and IV received an application of Ca (OH)₂ paste followed by CO2 laser irradiation for 5 seconds, intervals of 10 seconds, continuous emission, power of 0.5W, constant distance of 30mm (Group II), 1.0W (Group III), 1.5W (Group IV); Groups V, VI, VII received laser irradiations following the same parameters applied to groups II, III, and IV. Morphologic changes suggesting to fusion and re-solidification were observed, and the presence of material obstructing the whole analyzed surface on groups II, III, and IV. For groups V, VI, and VII, fusion, re-solidification, and cracks, were observed, results statistically significant ($P < 0,01$). No statistically significant differences were observed in groups that used the same treatment. Powers above 1.0W (DP=

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125,38W/cm²) showed carbonization and dark surface, results unfavorable due to the undesirable morphologic alterations and aesthetic compromising.

P17
Evaluation of Er:YAG, CO₂ and Nd:YAG lasers on apical dentine permeability after apicoectomies.

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Apicoectomy is a surgical procedure that consists of radicular apex resection, eliminating periapical lesion. This study evaluated the effect of CO₂ and Nd:YAG lasers on root dentine permeability after apicoectomy with Er:YAG laser. Forty-four single-rooted teeth, obtained from the Endodontic Laboratory stock from the Faculty of Dentistry of Ribeirão Preto, University of São Paulo, were used. The teeth were instrumented with the step-back technique, irrigated with 1.0% sodium hypochlorite and sealed with Sealer 26 (Dentsply, Brazil) and lateral condensation. The samples were divided into four groups of 11 teeth each that had the root sectioned 2 mm from the apex: G1 - roots were sectioned with a 4138 diamond bur with cooling; G2 - roots were sectioned with pulsed Er:YAG laser at the following parameters: 15 Hz and 250 mJ; G3 - roots were sectioned with pulsed Er:YAG laser and Nd:YAG laser (10 Hz, 100 mJ, and 1 W) was applied on the sectioned surface; G4 - roots were sectioned with pulsed Er:YAG laser and CO₂ laser (5 W, 10 seconds ON and 20 seconds OFF) was applied to the sectioned surface. The teeth were then impermeabilized with cyanoacrylate and placed in 0.5% methylene blue for 7 days. The proximal surface of the samples was removed for exposure of the sealed root canal and dye penetration was measured by means of microscopic evaluation. The results showed a statistically significant difference at the level of 1%. We conclude that all treatments presented microleakage and can be placed in increasing order: Er:YAG (G2), Bur (G1), Er:YAG + CO₂ (G4) and Er:YAG + Nd:YAG (G3); Er:YAG laser presented the lowest microleakage values, showing its viability for clinical use in apicoectomies.

P18
Proliferation of induction cellular in cells in culture of carcinoma (H.Ep.2): Laser Light.

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The objectives of this work were to evaluate the influence of time, treatment and wavelength, through the assessment of the cellular viability with MTT, on the proliferation of H.Ep2 cells submitted or not to laser irradiation (685nm and 830nm) with same energy density (45 and 60J/cm²). H.Ep2 cells were cultured on flasks and maintained in DMEM medium (10% FBS, 1% L-glutamine and 1% antibiotic solution) and irradiated with lasers of 685nm and 830nm and stained at times six, 12, 24, 48 and 72 hours after irradiation. There were significant differences when the groups were compared. Time influenced significantly only 830nm group. In conclusion, time, treatment significant influence in proliferative process of H.Ep2 cells.

P19
Study by photoreflectance spectroscopy by vickers hardness of conventional and Argon laser tooth bleaching .

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Twenty human embedded third molars were used in this in vitro study to evaluate the effects of two bleaching products associated or not with Argon laser irradiation. The specimens were divided at random into 5 groups and submitted to the traditional power bleaching procedure for enamel. Two bleaching products were used in this experiment: 35 % carbamide peroxide solution (Opalescence Quick) and 37% carbamide peroxide solution (Whiteness Super - FGM). Group 1 was control group. Group 2 was exposed to 37 % carbamide peroxide bleaching solution and developed with an Argon laser application. The same solution was used in Group 3 but the bleaching was developed with a halogen lamp irradiation. The 35 % carbamide peroxide was used in Groups 4 and 5. One was developed as in Group 2 and the other as in Group 3.

The samples were analyzed under Vickers microhardness tests, investigating indentation impressions on the samples. In addition, the samples were submitted to a photoreflectance experiment. It was observed that Group 2 presented more white spectra than Group 3. However, Groups 4 and 5 showed the same results inde-