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### The effectiveness of semiconductor laser in the treatment of post-endodontic filling pain

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In endodontic literature, the so-called success rate of conventional root canal treatment is reported to range 70% and 95%. The purpose of this study is to evaluate the effectiveness of semiconductor laser in the treatment of post-endodontic filling pain before going endodontic retreatment. Forty subjects with standard endodontic filling teeth participated in a randomized, doubled-blind study, and were followed up for three months. Twenty subjects received semiconductor laser of 100 mW for 3 min, and the other 20 subjects received the same operation procedure without laser emission. The results indicated that immediately following semiconductor laser treatment, the subjects' perceived level of discomfort to percussion decreased to 60%. Over three months' follow up, there were no significant difference in pain reduction between laser treatment group and control group.

### Microleakage in CO<sub>2</sub> Laser Etching Class V Composite Restoration.

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The CO<sub>2</sub> laser (10.6 μm) can be indicated for dental hard tissues applications if it shows ability to remove the smear layer and creates irregular surfaces able to promote micromechanical retention for adhesive restorative dental materials. The purpose of this study was to evaluate *in vitro* the effect of CO<sub>2</sub> laser etching on cavosurface of cavity preparations to composite resin restorations performed conventionally. Forty Class V cavities were performed with high-speed drill in 20 extracted human molar and randomly divided into 4 different groups: Group 1- CO<sub>2</sub> laser (3W, 2Hz, 50ms) and after 37% phosphoric acid etching on enamel and dentin surface; Group 2- 37% phosphoric acid etching and after CO<sub>2</sub> laser; Group 3- CO<sub>2</sub> laser; Group 4- 37% phosphoric acid etching. The cavity restored with adhesive system (OptiBond Solo-Kerr) and composite resin (Prodigy-Kerr) and thermally stressed (700 cycles, 5<sup>o</sup>-55<sup>o</sup> C). The samples were then impermeabilized, immersed in 50% silver nitrate solution for 8 hours and sectioned with Isomet saw. The teeth were exposed to Photoflood light (G.E.) for 5 minutes to reveal the dye. Leakage was observed under stereomicroscope and evaluated with scores. Results were analyzed with ANOVA (p>1%) and Tukey's test (p=5%) and showed that group 2, 3 and 4 had similar results and statistically lower than group 1. These results suggested that CO<sub>2</sub> laser may be useful for dental etching, under irradiation parameters used in this study. Further studies are required to verify efficient and safety irradiation conditions and test other restorative materials.

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