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MORPHOLOGICAL CHANGES IN COATED ND-YAG LASED ENAMEL

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ABSTRACT

The objective of this pilot study was to: (1) Evaluate with scanning electron microscopy (s.e.m.) the enamel surface alteration microscopic patterns after laser etching and acid etching technique, and (2) suggest the Nd-YAG laser power output necessary for effective enamel-bracket bonding technique.

4 caries free human premolars were extracted and stored in saline water. Enamel etching were performed by using a Nd-YAG laser (American Dental Laser) with pulsed energy type and variable power (up to 3 W.) delivered by optic fiber. Every specimen underwent a different etching procedure. Samples were immersed in tridistilled deionized water, rinsed, and sputtered with a layer of gold in an "ETEC gold sputtering BIO RAD, Mod. E 5200", by using 18 mA. for 100 seconds. Morphology of each specimen was evaluated by s.e.m.

The results show that the highest laser doses tried (20 pps/ 1.50 Watts), by using both primers, causes a fused enamel with melting and many pits of variable diameter, giving a drilled aspect. There are some microfractures that seemed to be narrower than the ones obtained with the 20pps /1.50 dosage. Higher number of pits and narrower microfractures appears by using black ink as laser primer.

Here, more research should be suggested about the clinical relevance of microfractures before using laser on patients, but for our purpose, double exposition at 15 pps/ .75 Watts with black ink as primer will be chosen as the laser dosage to be used in the following bond strength test.

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