

Here is a study that supports what many Crystalmark Air Abrasion users have known all along:

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The Effect of Er,Cr:YSGG Laser and **Air Abrasion on Shear Bond Strength of a Fissure Sealant to Enamel**

Masoumeh Moslemi, DDS, MSc, Leila Erfanparast, DDS, MSc, Reza Fekrazad, DDS, MSc, Niko Tadayon, DDS, MSc, Hamed Dadjo, DDS, Mohammad Mostafa Shadkar and Zahra Khalili

Purpose. The authors conducted an in vitro study to evaluate the shear bond strength of a fissure sealant to enamel pretreated with erbium,chromium:yttrium, scandium,gallium,garnet (Er,Cr:YSGG) laser or **air abrasion** followed by acid etching.

Methods. The authors sectioned extracted sound premolars mesiodistally and used the buccal and lingual surfaces for experimental analysis. They divided specimens randomly into three groups of 15 each according to the enamel surface pretreatment methods: group A, 37 percent phosphoric acid; **group B, air abrasion** followed by acid etching with 37 percent phosphoric acid; group C, irradiation with Er,Cr:YSGG laser followed by acid etching with 37 percent phosphoric acid. After applying a bonding system, the authors bonded cylinders of sealant to the enamel surfaces by using transparent gelatin tubes (0.7 millimeter in diameter and 1 mm in height) and then polymerized them. They stored all specimens in distilled water at 37°C for 24 hours. They tested shear bond strength by using a universal testing machine with a crosshead speed of 0.5 mm per second. The authors analyzed the data by means of one-way analysis of variance and Tukey-Kramer post hoc tests ($\alpha = .05$).

Results. **The bond strength of group B (**air abrasion!**)specimens was statistically higher than those of group A and group C specimens** ($P < .05$). The authors found no statistically significant differences in shear bond strength between surfaces treated with Er,Cr:YSGG laser and those treated with acid etching alone ($P > .05$).

Conclusion. **Pretreatment of enamel surfaces with **air abrasion** increased the bond strength of fissure sealant,** but pretreatment with Er,Cr:YSGG laser did not increase the effectiveness of conventional acid etching of enamel in sealant bonds.

Key Words: Laser conditioning; **air abrasion**; Er,Cr:YSGG laser; shear bond strength; pit-and-fissure sealant

Abbreviations: **Er,Cr:YSGG:** Erbium,chromium: yttrium,scandium,gallium,garnet • **Er:YAG:** Erbium: yttrium,aluminum,garnet