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Abstract of the Scientific Literature

Effects of Argon Laser and Fluoride on Primary Tooth Caries

Dental caries is the most common chronic childhood disease, as documented by the U.S. Surgeon General in the report *Oral Health in America*. Recently, laser irradiation has been touted in the prevention of dental caries in permanent teeth by reducing enamel solubility and dissolution rates. The purpose of this study was to evaluate topical fluoride and low-fluence argon laser treatment effects on in vitro caries formation in primary tooth enamel.

Twenty primary molars with caries-free buccal and lingual surfaces were selected and divided into 4 groups. Group 1 served as the control with no treatment; group 2 had argon laser irradiation only; group 3 had an acidulated phosphate fluoride treatment (1.23% for 4 minutes) before laser treatment; and group 4 had laser then fluoride treatment. In all instances of laser treatment, exposure was limited to 10 seconds.

The teeth had an acid-resistant coating applied, leaving buccal and lingual windows exposed, and were immersed in an artificial caries medium. Following a 10-day exposure to this medium, teeth were sectioned longitudinally, and the in vitro lesions created were evaluated for depth.

The results showed that argon laser alone or a combination of a laser with fluoride in either order of application resulted in a significant reduction in lesion depth. The combination of fluoride and laser was more effective than the laser alone.

Comments: This procedure is relatively simple and noninvasive. Pediatric dentists need to explore and keep abreast of caries-preventive regimes and innovative techniques. With the incorporation of argon laser irradiation, a practice can exhibit "cutting-edge" technology and provide a major step toward creating "cavity-free" patients by imparting significant caries resistance to primary teeth.

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40 references