

Glass ionomer cements (GICs) are known for their ability to bond to untreated enamel. Adhesion results from a chemical interaction between GIC and apatite crystals. SEM investigation and a microleakage study were used to test whether etching of enamel would improve adhesion at the GIC-enamel interface. Seventy-two human molars and premolars were divided into three equal groups and sealed according to the manufacturer's instructions: Group 1: enamel was cleaned and etched 40 sec with 37% phosphoric acid. GIC sealant (Fuji-III-GC) was applied. Group 2: enamel was cleaned and etched for 40 sec with 37% phosphoric acid. As a control, resin sealant (Heliobond[®]-Vivadent[®]) was applied. Group 3: enamel was cleaned. GIC sealant (Fuji-III-GC) was applied. Twenty teeth from each group were thermocycled in water (120 cycles between 0° and 56°C) and stained with 0.5% methylene blue solution. Using a diamond blade, teeth were cut in a buccolingual direction into five sections. Microleakage was evaluated by measuring dye penetration at the sealant-enamel interface. Significant differences in amounts of microleakage were found between the three groups ($P < 0.001$). In 18 of 20 etched and GIC-sealed teeth minimal microleakage was detected. In 15 of the 20 teeth sealed with resin no microleakage was observed. In 17 of 20 unetched GIC-sealed teeth extensive dye penetration to more than one-half of fissure depth was observed. Appearance of the sealant-enamel interface was investigated using SEM. Differences in adaptation of GIC-sealant to fissure enamel between etched and unetched enamel correlated with the amount of microleakage. Results suggest that the adaptability of GIC-sealant to fissure enamel is enhanced by etching prior to application.

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Twenty-five years of research to use lasers in pediatric dentistry. Corpas-Pastor L •: Postdoctoral Program in Pediatric Dentistry, School of Dentistry, University of Puerto Rico.

The purpose of our study was to classify, compare, and discuss the applications of lasers in dentistry to propose future basic and clinical research projects in pediatric dentistry. A search was made between the years of 1965 and 1990 mainly using both *Index Medicus* and *Index of Dental Literature*. Those papers with out well-defined methods and those where conclusions did not come directly from the analysis of the results were eliminated. 237 selected papers were classified. 25.7% referred to the use of lasers in oral and maxillofacial surgery (painless excision, hemostasis, and coagulation with CO₂, Nd-YAG, and Ar laser). 19.4% referred to preventive dentistry (caries prevention, increase of fluoride fixation, removal of incipient carious lesions with Nd-YAG, AsGa, and excimer laser). 16.03% referred to

operative dentistry (destruction and sterilization of carious lesions, enamel and dentin etching with CO₂, Nd-YAG and excimer laser). Other uses included: holography, oral medicine, and welding in prosthodontics (13, 9.3, and 4.7%). Hence, we suggest that lasers could be used in pediatric dentistry to: fix fluoride to enamel, to prevent and treat carious lesions, to etch enamel, to perform pulpomies, and oral surgery — it is a fast, painless, secure, and well-tested method. Nevertheless, there are polemics about the pulpal effects and more research should be conducted.

Transcutaneous electrical nerve stimulation for pain management during cavity preparations. Harvey M, Elliott M •, Henteleff H, Zullo T: University of Pittsburgh.

Conventional local anesthesia via injection has several disadvantages: needle phobia, latent anesthesia and possible parasthesia, and systemic toxic reactions. The purpose of this study was to evaluate the effectiveness of transcutaneous electrical nerve stimulation (TENS) in pain reduction during cavity preparations. Twenty dental patients ages 8–14 years were treated for Class I amalgam restorations of the mandibular first permanent molars using TENS in place of injectable local anesthesia. Computer randomized assignments were made for 10 experimental and 10 control patients. The control patients were treated in a double blind protocol with an inactive TENS apparatus. The patient's pain perception was rated by patient visual analogue and verbal descriptor scales. Also, pain responses were rated by the operator verbal descriptor scale. Gender interactions were statistically analyzed. Using the patient visual analogue scale, the ANOVA test indicated a significant difference ($P < 0.01$) in patient ratings between the TENS experimental and control group. Significantly lower pain ratings were demonstrated for the TENS experimental group. No gender interaction was demonstrated by the pain ratings. Therefore, it can be concluded that there was a statistically significant decrease in the pain perceptions of pediatric patients during Class I amalgam cavity preparations in mandibular first permanent molars when using TENS versus no local anesthesia. This study showed a high correlation between the use of TENS and lower pain ratings.

Root canal treatment with ZOE and KRI paste: a retrospective study in primary molars. Holan G, Fuks A •: Hadassah Faculty of Dental Medicine.

Maintaining a successfully root-treated primary molar has the advantage of preserving the natural tooth, the best possible space maintainer. The purpose of this study was to assess the success rate of nonvital primary