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**Title:** Effect of pre-warming and/or delayed irradiation on marginal integrity of resin-modified glass-ionomers in cervical restorations

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**Abstract:** Objectives: Based on the results of recent studies the acid-base reactions and light-activated polymerization processes of resin-modified glass-ionomers (RMGI) compete with and inhibit each other. On the other hand, external energy influences some properties of RMGI. The present in vitro study evaluates the effect of pre-warming and/or delayed irradiation on marginal integrity of RMGI in cervical restorations.

**Study design:** Standard Cl V cavities were prepared on buccal aspects of sixty human maxillary premolars. Each cavity was treated with cavity conditioner (CC) for 10 seconds, rinsed, and gently air-dried. The RMGI (Fuji II LC I: Improved Version) was applied to the prepared cavities as dictated by the study protocol: Group 1: according to the manufacturers’ instructions; Group 2: a delay of two minutes in the light-curing procedure; Group 3: pre-warming of the encapsulated material (90 seconds, 40ºC); Group 4: pre-warming of the capsules plus a 2-minute delay in the light-curing procedure. Microleakage scores were determined using dye penetration technique. Kruskal-Wallis and Mann-Whitney U tests were used for statistical analysis (α=0.05).

**Results:** The enamel groups exhibited statistically significant differences (P=0.036). The highest marginal integrity was observed in Group 2. Dentin groups did not exhibit any significant differences (P=0.122). However, the best marginal integrity was also observed in Group 2.

**Conclusion:** Although pre-warming might jeopardize the marginal integrity of RMGIs in cervical restorations, delaying the light-curing process might improve it, especially in enamel. Further studies are warranted.

**Keywords:** dentin; enamel; irradiation delay; marginal integrity; pre-warming; resin-modified glass-ionomer.

**Presentation:** Oral