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**Evaluation of Different Pulpotomy Techniques in Primary-Teeth: a Randomized Controlled-Trial**

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**Objectives** Primary teeth play roles in the development of permanent teeth and jaws, the provision of functions such as feeding and speaking and the maintenance of aesthetics; therefore, they contribute to the physical and psychological development of the child. The primary teeth and mouth should be healthily maintained until their physiological resorption occurs and permanent teeth erupt. The purpose of this randomized controlled clinical trial is the clinical, radiographic and restorative evaluation of different pulpotomy techniques for primary teeth with deep dentin caries lesions.

**Methods** 170 lower first and second primary molar teeth in 81 volunteers with an age between 5-9 years, which had pulp perforation during the removal of dental caries, were evaluated in the first phase of this two-phase study. The teeth were divided into a total of five groups, including one control (ferric sulphate) and four study groups (Biodentine<sup>®</sup>, laser, low level laser therapy and atmospheric pressure cold plasma) and the restoration procedures were completed. Follow-up was continued for 24 months at intervals of six months. The resulting data was statistically evaluated. Statistical significance range was accepted as  $\alpha < 0.05$  for all data.

**Results** After 24 months of follow-up, clinical and restorative success rate was 100% in all groups. The highest radiographic success rate was 100% in the Biodentine<sup>®</sup> group, while the lowest radiographic success rate was found in the ferric sulphate group with 79.4%. In the radiographic evaluation, it was seen that there was a statistically significant difference between study groups ( $p < 0.05$ ).

**Conclusions** Within the limitations of this study, Biodentine<sup>®</sup>, low dose laser, and ABSP applications are preferable methods for pulpotomy treatments. The effect of the pulpotomy method should be considered in the selection of the restorative material to be applied after pulpotomy treatment.