Efficacy of Mineral Trioxide Aggregate and Photobiomodulation on Pulp Capping of Dogs' Teeth

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ABSTRACT

AIM: The present study assessed the effect of mineral trioxide aggregate (MTA) and photobiomodulation (PBM) on pulp capping of exposed pulp of dogs' teeth.

METHODS: Forty-eight teeth in three mongrel dogs were randomly divided into two major study groups; Group I where MTA was used as a pulp capping agent and Group II in which both MTA+PBM were used. The groups were equally subdivided according to the observation period following completion of pulp capping into Subgroup (A) 1 week, Subgroup (B) 2, and Subgroup (C) 16 weeks. The teeth were examined for histological inflammatory response as well as dentine bridge formation.

RESULTS: With regard to inflammatory response at 1 week significantly, less intense inflammation was observed in MTA+PBM (Group II) compared to the MTA (Group I) for the same period with no significant difference for between Group I and Group II for other time intervals. As for dentin bridge formation, PBM+MTA groups showed statistically significant thicker dentine bridge formation at 16 weeks than MTA alone group for the same time period with no significant difference for between Group I and Group II for other time intervals.

CONCLUSIONS: Under the conditions of this study, PBM appeared to be a beneficial adjunct in dental pulp capping procedures in which MTA was the pulp capping material.

Keywords: Photobiomodulation; Dentinal bridge; Direct pulp capping; Mineral trioxide aggregate