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| **FIRST AUTHOR**/LAST AUTHOR/**JOURNAL**/YE**AR** | **Tucker RL, Nguyen W et al.****JVD**/20**21 38(1)** |
| **TITLE**(main words in **BOLD**) | **A Systemic Review Comparing Mineral Trioxide Aggregate to Other Commercially Available Direct Pulp Capping Agents in Dogs**  |
| **ABSTRACT** | Vital pulp therapy (VPT) and direct pulp capping (DPC) are procedures regularly performed in dogs for the management of acute tooth fractures and as part of management for traumatic malocclusions. The purpose of this review is to apply an evidence-based medicine approach to systematically review and evaluate the scientific literature evaluating the efficacy of mineral trioxide aggregate (MTA) to other commercially available materials used for VPT in the permanent teeth of dogs. The 9 studies meeting inclusion criteria were reviewed and each studies evidence was classified using a grading system modified from the Oxford Centre for Evidence-Based Medicine. For the studies meeting inclusion criteria, MTA consistently performed as well or better than other commercially available products in terms of calcific barrier formation and biocompatibility. This review found a lack of consistency between the studies making a direct comparison of the results unreliable. Future studies would benefit from the implementation of a standard scoring system for histology, equivalent and longer study duration times and the correlation of histological and radiographic data. |
| **KEYWORDS** | direct pulp capping, pulpotomy, pulp therapy, pulp capping, mineral trioxide aggregate, calcium hydroxide, direct adhesive resins, TheraCal, bioactive endodontic cements, bioceramics |
| GENERAL SUBJECT | Dental materials |
| SPECIFIC SUBJECT | MTA – Pulp capping agent |
| **HYPOTHESIS/AIM** | Systemic review of 9 manuscripts |
| METHODOLOGY | Review – Oxford Centre for Evidence-Based Medicine |
| **RESULTS/OUTCOME** | 5,3% caries in dogs – less frequently; Pulpotomy – Pulp removal; Direct pulp capping – without removal of pulpal tissue; CH (Calcium hydroxyd) – gold standard in humans, excellent antibacterial properties (high pH); disadvantages: irritation, necrosis, direct beneath, high solubility in oral fluids, dissolution over time, lack of inherent adhesive properties; tunnel defects in dentin barrier and microleakage, great variability in reported cases of CH, MTA introduced in 1993: excellent biocompartibility, bioactivity, and sealing ability; set not affected by fluids/blood, bond to dentin, non-absorbable, disadv.: long setting time, tooth discolorization, costs, handling, Pulp exposure no greater than 48h and follow-up minimum 28 days, direct pulp capping |
| **KEYPOINTS/CONCLUSION** | MTA better in biocompartibility and calcified barrier formation (because of excellent sealing ability=bond to dentin; Biodentin (BMTA) thicker than PMTA; EMTA lower % of calcium silicate – lower barrier and mor inflamm.; Age is not an important factor |
| CONTEXT / SIGNIFICANCE | Greater release of calcium and hydroxyl ions induces beneficial inflammatory reaction; prolonged is negative; bacterial leakage around restorative margins considered to be the key contributing factor to chronic pulpal infection following VPT |
| **IMPORTANT FIGURES/TABLES** | Table 1. Grading Scheme Used to Score Quality of Evidence.Levels of evidence For therapeutic studiesLevel I High quality randomized controlled trial (RCT)Systematic review of level I RCTLevel II Lesser quality RCTProspective comparative studiesSystematic review of level I or II studiesLevel III Case-control studyRetrospective comparative studiesSystematic review of level III studiesLevel IV Case seriesLevel V Expert opinion |
| **REFERENCES** (-3 most) | Luotonen N, Kuntsi-Vaattovaara H, Sarkiala-Kessel E, Junnila JJ, Laitinen-Vapaavuori O, Verstraete FJ. Vital pulp therapy in dogs: 190 cases (2001-2011). J Am Vet Med Assoc. 2014;244(4): 449-459. |
| COMMENT |  |

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