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Human pulp response to direct pulp capping and miniature pulpotomy with MTA after application of topical dexamethasone: a randomized clinical trial

Introduction: The aim of this randomized clinical trial was to compare the histologic pulp tissue response to one-step direct pulp capping (DPC) and miniature pulpotomy (MP) with mineral trioxide aggregate (MTA) after application of dexamethasone in healthy human premolars.

Methods & Materials: Forty intact premolars from 10 orthodontic patients, were randomly chosen for DPC (n=20) or MP (n=20). In 10 teeth from each group, after exposure of the buccal pulp horn, topical dexamethasone was applied over the pulp. In all teeth the exposed / miniaturely resected pulp tissue was covered with MTA and cavities were restored with glass ionomer. Teeth vitality was evaluated during the next 7, 21, 42 and 60 days. Signs and/or symptoms of irreversible pulpitis or pulp necrosis were considered as failure. According to the orthodontic schedule, after 60 days the teeth were extracted and submitted for histological examination. The Kruskal-Wallis and Fisher's exact tests were used for statistical analysis of the data (P=0.05).

Results: Although dexamethasone specimens showed less inflammation, calcified bridge, pulpal blood vasculature, collagen fibers and granulation, tissue formation were not significantly different between the groups (P>0.05).

Conclusion: Topical dexamethasone did not hinder pulp healing, but reduced the amount of underlying pulpal tissue inflammation after DPC and MP in healthy human premolars.

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