

Dentistry 2019: Clinical and radiographic comparison of revascularization and apexification of immature teeth

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It is no doubt that management of traumatic immature permanent teeth poses a great challenge to the clinician as incorrect treatment at the time of trauma can lead to further worsening of the situation and development of periapical lesion and cessation of tooth development. Conventional root canal treatment is difficult to perform and the outcome is uncertain. Traditionally, the apexification procedure has consisted of multiple and long-term applications of calcium hydroxide [Ca(OH)₂] to create an apical barrier to aid the obturation. Recently, artificial apical barriers such as those made with Mineral Trioxide Aggregate (MTA) have been used in teeth with necrotic pulps and open apices. More recently, procedures referred to as regenerative endodontics have received much attention as an option for these teeth. The aim of this presented article is to compare clinical and radiographic CBCT (Cone Beam CT) between MTA apexification and revascularization in immature traumatic permanent incisors teeth. Method: The sample of the presented study was consisted of 30 children (7-9 years old) had irreversible pulpitis or necrotic immature permanent upper incisors and divided into two groups. Study group 15 teeth were treated with pulp revascularization and positive control group 15 teeth were treated with MTA apexification. Clinical examinations, standard periapical X-ray and CBCT were done to tested groups before and after follow up period 18 months.

The purposes of this retrospective study were to evaluate the clinical and radiographic outcomes of mineral trioxide aggregate apexification and revascularization in non vital immature permanent teeth and to analyze factors influencing treatment outcome.

Forty-six cases (29 cases of apexification and 17 cases of revascularization) were recruited into this study. Patients' preoperative and postoperative information was analyzed. Treatment outcomes were categorized as a success or failure and functional retention. Further root development was assessed in terms of the share changes in root length and root width.

This retrospective cohort study compared clinical and radiographic outcomes of endodontic treatment performed in immature nonvital permanent teeth by apexification (calcium hydroxide or apical barrier with mineral trioxide aggregate) versus revascularization. Various authors have demonstrated the regenerative process in immature, non vital teeth by

revascularization induced maturogenesis. The aim of this case report is to match lime apexification and pulp revascularization induced maturation procedures within the same patient, in two different teeth. the proper maxillary central incisor during this individual was treated with conventional lime induced apexification procedure followed by guttapercha obturation, and therefore the left maxillary central incisor was treated by pulp revascularization induced maturation procedures. 24 months follow-up shows root elongation and apical closure within the tooth treated with revascularization induced maturation procedures. Revascularization induced maturogenesis, where indicated, can provide several advantages over conventional apexification procedures. Management of immature non vital teeth poses a great challenge to the clinician. Most of the clinicians rely on traditional calcium hydroxide apexification. Calcium hydroxide induced apexification has its own limitations such as: long term therapy for barrier formation; and, strengthening or reinforcing of the thin fragile blunderbuss canals is not achieved. Instead, its long term therapy has shown to make the tooth brittle due to its hygroscopic and proteolytic properties. Even after apexification procedure, the clinician has to go for conventional root canal obturation as the barrier formed is often porous and not continuous. Mineral trioxide aggregate (MTA) has also been used to provide an artificial barrier; however, it also has the limitations of non-reinforcement of root canal dentin and a high cost.