

PEDODONTICS



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ABSTRACT

Regenerative Endodontics is a biologically created method planned to substitute afflicted structures such as dentin, root structures as well as cells of the pulp dentin complex. Regeneration of dental tissue is likely from a pre-existing dental stem cells in an appropriately sterilized root canal system in presence of suitable growth factors and scaffold medium. Blood clot tempted by over-instrumentation inside the root canal system turn as ultimate three dimensional scaffold medium and a rich source of growth factors which favors from stem cell multiplication and differentiation. This report presents the case of a 10-year-old patient with a nonvital young permanent tooth which was managed by pulp Revascularization.

Keywords: pulp revascularization, nonvital young permanent teeth, open apex.

INTRODUCTION

Endodontic management of young permanent tooth is a challenge to one. Conventional endodontic treatment consists in the development and application of techniques designed to accomplish the chemical-mechanical preparation of root canals in order to eliminate an infection, many times difficult to combat due to the complexity of the root canal system². However, this process is more complicated in cases of immature teeth with open apices, whose canal walls are tenuous due to the thin layer of dentin, along with the anatomy of an open apex, making it difficult to accomplish the complete obturation of the canal, and with the real risk of solid and plastic material overflow into the periapex².

The most popular technique to manage such cases is by apexification with the use of calcium hydroxide. Recently MTA is used to create apical barrier followed by placement of a bonded core within the canal this will give strength to weakened roots¹. Even though both these approaches have been used successfully over the years, both modalities have few important well documented drawbacks, one of which is the lack of continued root development.

One way to treat open apex teeth is the apexification technique that is made in pulpless teeth and which promotes apical closure, and can be obtained with the insertion of a MTA (Mineral Trioxide Aggregate) barrier or with periodical exchanges of calcium hydroxide, enhancing further obturation. It is called as apexogenesis and main target is preservation of vital pulp tissue so that the continued root development with apical closure may occur². Nevertheless, some studies have shown that this protocol can also be used in non-vital teeth. The procedure is called pulp revascularization and is controlled by disinfection protocols respecting the root canals, being indicated the use of sodium hypochlorite irrigation (NaOCl) followed by a combination of ciprofloxacin, metronidazole and minocycline antibiotics to be used as intracanal medication.

Regeneration is based on the principles of Tissue Engineering which require a correct spatial assembly and dynamic interactions between distinct stem cells, growth factors/morphogens and scaffolds to form a functional pulp dentin complex. Clinically Regenerative Endodontic Procedure consist of 1st phase of disinfection by suitable medicaments followed by 2nd phase of treatment by blood clot induction or autologous fibrin matrix like platelet rich plasma or platelet rich fibrin implantation in the canal and periodic follow ups³.

This report presents the case of a nonvital young permanent central incisor in a 10-year-old boy which was treated by revascularization.

CASE REPORT

A 10-year-old male reported with a complaint of fractured upper front tooth with the history of fall from bike one year ago. On clinical examination, the right upper central incisor presented with a complicated crown fracture (Fig. 1) and was tender on percussion with no abnormal mobility. The tooth did not respond to cold test or electric pulp test (EPT) (Fig. 2). Radiographic examination revealed the tooth to have an incomplete root with an open apex with no signs of any periapical changes (Fig. 3). Patient did not sought treatment for the same until now.



Fig. 1 Complicated crown fracture in relation to upper right central incisor





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