

# SINGLE VISIT APEXIFICATION- A CASE REPORT

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## Abstract

**B**ecause of time constraints, financial concerns, psychological status, or aesthetic demands of the patient there are times when traditional apexification can not be performed. This case report describes an alternative technique using bone graft and MTA powder to develop an apical barrier in a pulpless tooth. This technique is an easy and efficient method requiring only a single visit to develop an apical stop to facilitate dense obturation.

**Keywords:** Apexification, Open Apex, MTA.

## Introduction

Impact injuries to immature permanent teeth always present an endodontic challenge. If the pulp is infected or inflamed irreversibly, then full pulpectomy and root canal filling should be done. If the perimeter of the apex is greater than that of the body of the root canal, there is no apical constriction for condensation. Calcium hydroxide apexification has become the standard treatment choice to grow an apical stop<sup>1</sup>.

Apexification is a method to induce development of the root apex of an immature, pulp less tooth by formation of osteocementum or other bone like tissue<sup>2</sup>.

## Case Report

An 16-yr-old girl suffered painful symptoms in his left central incisor and required evaluation and treatment. She had a history of having suffered a traumatic incident few years back.

Clinical Examination shows that the tooth was slightly tender to palpation in the buccal vestibule and exhibited (+1) mobility. The palatal and labial soft tissues surrounding the anterior teeth were not lacerated or palpation-sensitive. Periodontal probing was normal. Only left central incisor was percussion-sensitive. The teeth were not luxated and no osseous fractures were detected. Radiographic Examination showed the root was immature. Ellis Class-III fracture was seen (Fig. 1).

The tooth was isolated using rubber dam. Access was prepared using Endo-Z bur (Dentsply Maillifer). Finally, working length was confirmed by taking a radiograph (Fig. 2) and circumferential filing was done by using 80 no. H- file. The canal was biomechanically cleaned by using sodium hypochlorite and normal saline and was then dried by using paper points. Then a TCP plug was packed

at the apex (Fig. 3) and the canal walls were cleaned and dried again. Then, a thick mix of MTA was prepared and applied to the apical portion of the canals using a hand plugger<sup>3</sup> (Fig. 4) A moist cotton pellet was placed over the thick mix of MTA and patient was recalled next day for final obturation. Final obturation was done by using thermoplastized GP and a root canal sealer. (Fig. 5) (ADSEAL- Meta Biomed Co., Ltd. Seoul Korea) and the bonded compsite.

## Discussion

This case is an example of immature root apex subsequent to trauma and oral contamination without endodontic induction. It seems that the magnitude of the injury caused a severe pulp disease that progressed to the periapical tissues. Despite this complication apical closure finished completely, probably due to residual odontogenic cells of the apical portion of the pulp that remained vital and active. A similar situation could have occurred with Hertwig's radicular sheath. The good blood supply that characterizes young permanent teeth could be responsible for the permanence of these odontogenic structures that could have been involved in the apexification of the incisor.

One report showed that Tri calcium phosphate (TCP) tended to encourage apical closure in mature permanent teeth, with open apices within 6 months. Another study found that Tri calcium phosphate (TCP) was as effective as Ca(OH)<sub>2</sub> for inducing apical closure in human teeth with flaring apices. Compared with multivisit Ca(OH)<sub>2</sub> apexification, one-step TCP apexification reduced the time of treatment, the number of visits and radiographs, and treatment disappointments<sup>4</sup>.

MTA is an appropriate material for apical sealing of mature root canals with open apices, which may impose technical challenges in obtaining adequate obturation because of apical perforation, over-instrumentation, resorption, or former surgical treatment<sup>5</sup>. Successful prognosis from conservative treatment with MTA for such difficult cases without surgical treatment would be of great benefit for patients<sup>6</sup>.

## Conclusion

MTA obturation of canals with open apices is a viable alternative to the use of calcium hydroxide to induce apical closure.

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## Figure Legends

Fig. 1 Preoperative Radiograph

Fig. 2 Working Length Estimation

Fig. 3 Placement Of Bone Regenerative Material with the use of Amalgam Carrier

Fig. 4 Placement Of Mineral Trioxide Aggregate with the use of Hand Plugger,

Fig. 5 Final obturation done with the use of Thermoplastized Gutta Percha and ADSEAL sealer

Fig. 6 Intraoral Radiograph taken after six- months.

