



Endodontic Management of Calcified Canal in the Maxillary Lateral Incisor: A Case Report

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Abstract

The success of endodontic therapy depends on appropriate access cavity, cleaning, shaping, and root filling techniques. Pulp canal calcification occurs following traumatic injuries to teeth. The root canal space can be obliterated by calcified tissue deposits in canal. Generally calcified tooth does not show any symptom, but when tooth becomes symptomatic root canal therapy is the only treatment option. The negotiation of calcified canal is very difficult to dentist. Iatrogenic errors such as perforation, instrument fracture is very common during calcified canal location and negotiation.

Keywords: Calcified Canal; Canal Obliteration; Canal Negotiation; Root Canal; EDTA

Abbreviations

EDTA: Ethylene Diamine Tetra acetic Acid; IOPA: Intraoral Peri Apical Radiograph

Introduction

Trauma is the main cause of root canal calcification. Calcification of root is defensive mechanism of body against trauma. Canal may be partially calcified or completely calcified [1]. It is believed that calcification of canal occurs due to damage to the neurovascular supply of pulp during trauma.

According to American association of endodontist- "A pulpal response to trauma characterized by deposition of hard tissue within the canal space" is called Calcific metamorphosis. this is also called diffuse calcification.

According to Kronfeld and Boyle [2] two distinct types of calcifications occur in the pulp: (1) diffuse or linear calcifications present in radicular pulp (2) pulp stones (denticles) commonly found in the coronal region. Denticle may be true or false on the basis of their structure.

Case Report

A 21-year-old female patient reported to the department of conservative dentistry and endodontics, at faculty of dental sciences with the chief complaint of pain in front region of upper jaw for the past 7 days. Patient medical history was non-significant. On Clinical examination maxillary left lateral incisor tooth was tender on percussion. Radiographic examination revealed maxillary left lateral incisor root canal is calcified (Figure 1).

On the basis of radiograph maxillary left lateral calcified tooth require endodontic treatment. Tooth was anaesthetized using 2% lignocaine hydrochloride with 1:80,000 adrenalin, after that tooth was isolated with rubber dam. Access cavity was carried out using round bur. initially canal orifice was not visible. On probing with DG-16 explorer catch was present toward lingual side. After that #8 C-file was inserted to confirm the canal opening with the help of IOPA (Figure 2). IOPA showed file was in canal but 6mm short of working length due to calcified canal.

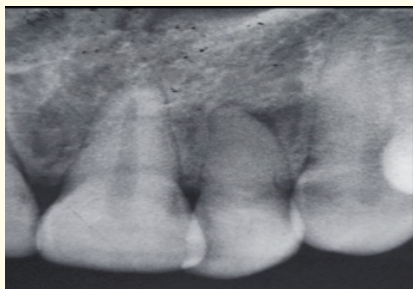


Figure 1: Preop radiograph of maxillary lateral incisor



Figure 4: Master cone radiograph.

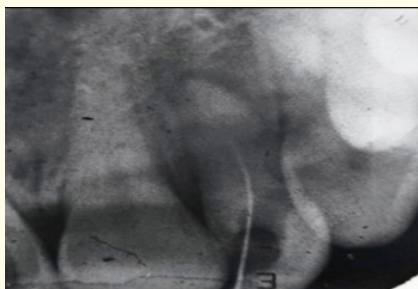


Figure 2: C file #8 short of apex 6mm.

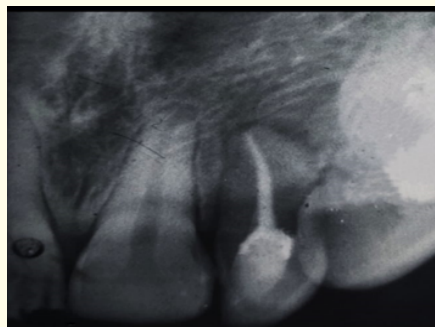


Figure 5: Master cone radiograph.

To negotiate the calcified canal, canal was filled with chelating agent 17% EDTA liquid and #8C file used. After achieving canal patency working length was determined using #10 k file with the help of apex locator (J. MORITA-DENTA PORT ZX) and IOPA radiograph (Figure 3).

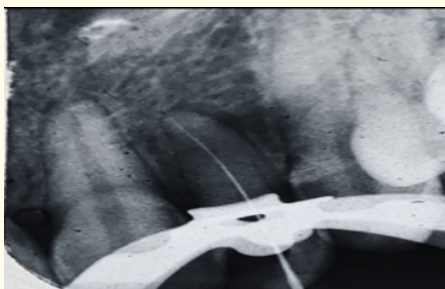


Figure 3: Working length radiograph.

BMP was done with the help of protaper rotary instrument upto# F2 file. 5.25% NaOCl and 17% EDTA was used for irrigation.

Canal was dried with the help of paper points, F2 cone gutta purcha was inserted (Figure 4) to the full working length. Obturation was done (Figure 5) using AH plus sealer. Coronally tooth was restored with composite resin.

Discussion

The exact reason behind root canal calcification is not known. It is believed that calcification of canal occurs due to damage to the neurovascular supply and disruption of blood vessel of pulp during trauma. Blood clot which becomes a nidus for calcification in the canal. Tooth color changes and loss of pulpal space in IOPA indicates calcification in teeth [3]. Dental operating microscope and CBCT are very helpful in calcified canal treatment.

Methylene blue dye or champagne bubble test used for the detection of orifice under microscope [4]. To prevent excessive dentin loss or perforation more than one angulated radiograph should be taken to ensure central alignment in access preparation [5].

Generally, # 6,8,10 file used as pathfinder files for negotiation of calcified canal. Because of smaller diameter these files are highly prone to fracture. To prevent fracture, these files # 6,8,10 should be used alternatively [6,7].

Many different file systems such as quadrangular cross section also used to prevent file breakage in calcified canals [8]. Slight push and gentle watch winding motion should be used. During BMP, in

calcified canal chelating agent and irrigation should be used to, soften calcified mass in the canal.

Conclusion

Success of root canal treatment therapy totally depends on disinfection of canal till apex. To achieve negotiation in calcified canal can be challenging, but it can be managed. If proper armamentarium used.

Conflict of Interest

The author has no conflicts of interest to declare.

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