International Journal of Advanced Research and Review

www.ijarr.in

MANAGEMENT OF CALCIFIED CANAL

Kaif ali afsar[1], Abhisheik khare[2], Faraz ali[3], Mohammad imran khan[4]

[1]oral pathology, kaif66234@gmail.com
[2]oral pathology, dr_abhi_khare@yahoo.co.in
[3]oral pathology, faraz.ali256@gmail.com
[4]oral pathology, imranplz@yahoo.co.in
Corresponding author name: Dr. KAIF ALI AFSAR, 529/291ka near metro grinding, khurram nagar lucknow. Email: Kaif66234@gmail.com

ABSTRACT

Dental traumatic injuries may lead to several clinical complications. pulp canal calcifications is one of the complication of dental trauma.[1] Pulpal calcifications are calcified masses in dental pulps of healthy, diseased, and even unerupted teeth. They are not only difficult to locate, but their negotiation and the creation of a glide path takes considerably long time. Ztooth becomes symptomatic endodontic treatment needed to be done.[3]

Keywords: Calcified canal, c files, chelators.

INTRODUCTION

Goal of endodontic treatment is to completely eradicate micro-organisms and disinfect root canal. This is obtained by biomechanical preparation, use of irrigants, intracanal medicament. A complete disinfection of calcified canal, complex root anatomy is quite difficulte.[4] Calcification which is uncontrolled due to failure of enzyme pyrophosphatase, reduction in capillary permeability and blood supply causes calcifications. Root canal in teeth in which calcific deposits blocking access to the canal (s), treatment efforts are often hindered. An effort to locate the residual canal might remove large amounts of dentin and there is a risk of root fracture and perforation. American Association of Endodontists defined Calcific Metamorphosis as "Apulpal response to trauma characterised by rapid deposition of hard tissue within the canal space." This is also known as obliteration of pulp canal, Dystrophic Calcification, Diffuse Calcification and Calcific Degeneration. calcified canals Negotiation is a challenge and requires patience, proper access opening of canal orifice , good magnification, illumination and proper armamentarium. Calcification of canal is defined as deposition of calcified material within the pulp chamber partially or completely. It may ends in complete calcification asa result of dentin deposition inside the tooth.[5] the exact cause of the formation of pulpal calcifications are not well understood. Dental trauma, aging, various systemic diseases such as cardiovascular diseases could be causes of calcifications. May be due to the chronic irritation to the pulp due to deep cries and restoration and some pulp capping agent such as $Ca(OH)_2$ have been proposed as possible implicated factors in the development of pulpal calcifications.[6-8]

Case report

A male patient reported to the private clinic with chief complains of discoloration of upper front teeth. Xray was done and found that calcified root canal was associated with upper anterior teeth. Root canal treatment was planned for tooth no 21. Access opening was carried out using round bur To achieve patency within canal, file 10 were used, but initally patency could not be achieved due to calcified canal. With help of chelating agents 17% EDTA gel and 3% Naocl solution and small size C file #6 , 8, 10 canal negotiation was carried out to achieve patency. Working lengh was then determined and canal was instrumented. Naocl, EDTA was used as intermittent irrigant. Canal was obturated using cold lateral condensation technique followed by permanent restoration.

Management

x ray examination was done and on radiographic examination calicification occurs at middle of canal of tooth no 21. Local anesthesia was administered "2% lignocaine with 1:80,000 epinephrine".(2)Access preparation was done with high speed round bur (BR 45) and modified using EX24 bur. No canal orifice was visible upon access opening initially. On exploration the orifice founds more towards lingually. File. No. 10k file was inserted to confirm the opening of canal. File was in canal but not upto working length. File was 8- 9 mm short of working length due to calcification of canal. (figure 1)Isolate the tooth ad filled the canal with3% Naocl and agitates for 40 - 45 sec white cheesy material coming out I increments, washed the canal with normal saline and then agitated by pitting 3% Nalco in canal.

With the help of 17% EDTA gel 6 no C file inserted into the canal, C file # 6 (wind and watch motion) was reaching approximate length , took an xray by keeping C file #6 in the canal and found that the file had reached the till working length. Figure 2

Then canal prepare with C file # 8 and #10 with the help of 17 % EDTA gel and intermittent irrigation done with normal saline. After this canal prepare with K fike #10 #15 , #20 , during this normal saline and 17 % EDTA gel used as intermittent irrigant. Final canal prepration done with F3 hand protaper system till working length and obturate the canal with gutta percha.

DISCUSSION

Calcified metamorphosis is commonly seen in patients who have had injuries like concussion and subluxation16 These obliterations were found to be either fibrotic or bone like in primary teeth or bone like.[9] Mechanism behind canal calcification is not clear. It is believed when trauma occurs it leads to disruption of blood vessel. Clot formation occurs which acts as source for calcification in root canal. 4 - 24% teeth show varying degree of calcification due to trauma. Radiographically loss of pulpal space, discoloration of teeth is suggestive of calcification in teeth.[10]

Root canal treatment of calcified canal is quite challenging for dentist. Iopar with correct angulation play a very important role in determining the location of calcification. Access cavity preparation should be made such that excessive loss of dentin is avoided.[11] Law of color change, i.e pulp chamber will be darker compared to root dentin. This will help to identify entry in pulp chamber. While using 3 % Naocl keep in mind that the tooth should be properly isolate and do not put Naocl in canal with forcefully otherwise it may cause periapical irritation and pain that

can be lead to hypo accident in some cases. 3) Multiple angulated radiograph should be taken in deep access preparation to ensure central alignment and no loss of excessive dentin or perforation. Negotiation of calcified canal, narrow constricted canal is a challenge toward dentist. Usually negotiation is done with use of file #6,8,10 which has small diameter therefore used as pathfinder files. Due to small diameter these files lack rigidity and may fracture if excessive watch winding force is applied. So to prevent fracture of this file and further complication alternate use of file # 6,8,10 should be done.[12 -13] Gentle watch winding motion to file with slight push pull motion should be used. Files should be checked before insertion and discarded when sign of distortion appears. Negotiation of calcified canal in this case done with C file #6 ,#8 , #10 with the help 17 % EDTA gel (chelating agent) and normal saline used as intermittent irrigant. There is different file systemic proposed for negotiation of calcified. Such file has quadrangular cross section to increase rigidity of file to prevent its breakage.[14] Decalcifying, chelating agents and irrigants should be used during biomechanical preparation to soften canal dentin and facilitate passage of file like 17 % EDTA gel, 17% EDTA irrigant.[15] Calcification usually occurs from corona to apical direction. Therefore if file is negotiated well at coronal and middle third, instrumentation in apical third becomes easier. Schindler & Gullickson stated if negotiation of canal is not achieved and tooth is symptomatic. root end resection under microscope should be treatment of choice.[16-18]

CONCLUSION

Calcifications of tooth could be a consequence of trauma, aging or may arise from chronic inflammation of the pulp due to caries, trauma or medication in close proximity; such as using Ca(OH) 2 in pulp capping.[2] Negotiation and management of calcified canals can be challenging, they can be managed if a proper protocol is followed. Operator's skill, patience, and a proper armamentarium are the requisites to overcome the difficulties posed by these unforgiving canals for their successful treatment. The calcification of root canals is a challenge for the dentist and causes a lot of difficulty due to its calcification. The locating of the canal becomes difficult due to calcification and hence instrumentation also. These difficulties can however be managed by using various instruments to negotiate the canal.

The prognosis of root canal treatment in these cases depends on continued health of the pulp or periapical area on the apical side of the blockage. In the absence of symptoms or evidence of apical pathogenesis. It is satisfactory to instrument and fill the canal to the level that was negotiated followed by regular recall of the patient (after 1,3,6 &12 month respectively). If there is evidence of persistent symptoms and periapical pathogenesis it will be appropriate to undergo a periapical surgery with a retrograde filling.

Fig.1- Diagnostic radiograph

Fig.2 – file #10 short of apex 8-9 mm

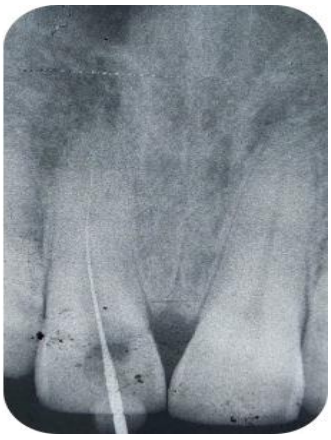

Fig.3-file #6 till apex

Fig.4- GP fit with 21

Fig.5-oturation with 21

Fig. 6-part of calcified material

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