



RESEARCH ARTICLE

MANAGEMENT OF HYPERCEMENTOSIS: A CASE SERIES

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ABSTRACT

Hypercementosis is an abnormal thickening of cementum which may be generalized or localized. Localized hypercementosis is usually characterized by nodular enlargement of apical third of root. This cementum may be either hypocellular or cellular in nature. The aetiopathogenesis of hypercementosis is ambiguous. An endodontist may experience difficulty, in these cases in adequate shaping and obturation limit because this cementum may be non permeable to endodontic instruments. Chances of instrument separation in such cases is higher. The separated fragment should be bypassed and that the canal should be treated according to standard endodontic procedures. In the present case series hypercementosis was present in mandibular 1st molar, maxillary premolars were treated successfully.

INTRODUCTION

Cementum is a mineralized conjunctive tissue present between dentin and periodontal ligament which covers the root dentin in a firmly adhered way. Its main function is to protect the root and link it to bone through collagen fibers. Cementum is constituted by approximately 50% of inorganic substances and 50% of water and organic material. Similarly to bone tissue, its organic matrix is composed of mainly type 1 collagen and may undergo resorption and neoformation under pressure. Excessive deposition of non-neoplastic cementum over root cementum alters root morphology can be called as hypercementosis or cementum hyperplasia and was first described by Gardner and Goldstein in 1931. This cementum may be either hypocellular or cellular resembling bone (osteocementum). Generally, the cementum-like substance is deposited in concentric layers on either the entire root or only at apical portion^{1,2,3,4}. Pinheiro

the radiographic apex at the root's lateral surface. An endodontist may experience difficulty, in these cases, for reaching the adequate shaping and obturating limit because this cementum may be non permeable to endodontic instruments. In hypercementosis it is difficult to establish a relationship between the external anatomy of the apical third and the diameter of the main foramen or the number of apical foramina; these morphological characteristics could explain the difficulties in estimating the working length radiographically. Chances of instrument separation in such cases is higher. The separated fragment should be bypassed and that the canal should be treated according to standard endodontic procedures. In case of incorporating this technique of bypassing the fractured segment then good quality of obturation is mandatory so that the obturating material or sealer flows and seals the spaces between the flutes of separated file and canal wall. It is important highlighting that root canal shaping and obturating below the adequate limit will cause the retention of either a contaminated area or inflamed tissue within root canal which will lead to endodontic treatment failure.

It may represent additional sites for bacterial colonization during pulp contamination, contributing to the occurrence of chronic apical periodontitis resistant to the endodontic treatment^{5,6,7}. This case series describes treatment of mandibular 1st molar and maxillary premolar with hypercementosis.

CASE REPORT -1

A 47 years old male patient was referred to the Department of Conservative Dentistry and Endodontics with chief complaint of pain in the right lower back region of jaw since 3 months. Clinically temporary cement was noted along with incomplete access opening. Tooth was tender on percussion. Patient gave history of RCT with 46, 2 months back. Radiographic examination revealed incomplete root canal treatment with 46, distal root had hypercementosis with calcified and un-negotiated apical 3rd of canal and instrument separation. Periapical rarefaction with both the roots was noted. It was diagnosed that 46 had symptomatic apical periodontitis so re-root canal treatment was planned.

PROCEDURE

The tooth was isolated with a rubber dam. Endodontic access was re-entered with a round diamond bur in a high speed arotor handpiece. Previous cement restoration was removed from pulp chamber. Radiographic examination showed instrument separation in distal canal at the junction of middle and apical third of canal. With # 8k file inserted in canal slowly and carefully, and tried to negotiate. Once there was a catch felt, the file was not removed at that point. A small in and out movement along with copious irrigation of the root canal was done.

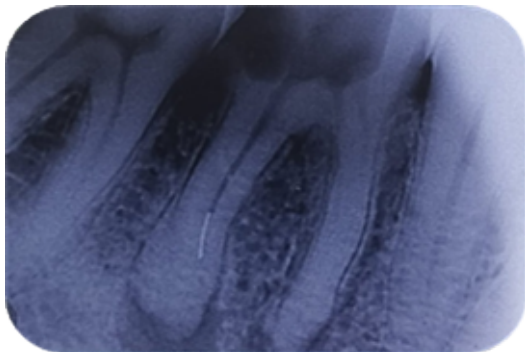


Figure 1. Preoperative Rvg

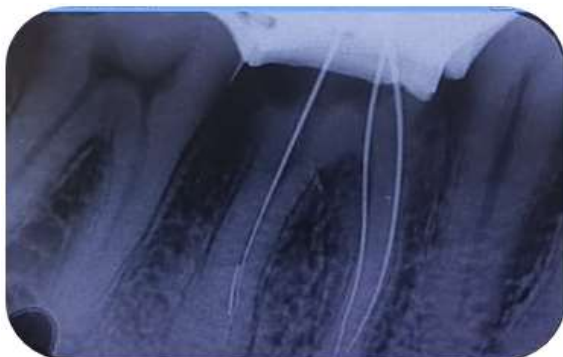


Figure 2. File bypassed and working length determination

Instrument was bypassed and the patency of the canal was obtained with # 10k file. 17% EDTA gel and liquid was used as a lubricating agent. In between copious irrigation with 5.25% sodium hypochlorite solution and saline was done. Working length was determined with apex locator. (Figure 2). Cleaning and shaping of mesial canals were done with no. 25/4% NiTi files and distal canal was prepared till

Thorough irrigation was done in between with 5.25% sodium hypochlorite to remove debris and smear layer followed by saline. The canals were dried with paper points and intra canal dressing of calcium hydroxide was given for 7 days and the tooth was temporized. After seven days, access cavity was re-entered and the canals were irrigated thoroughly with 5.2% sodium hypochlorite followed by normal saline. Final wash was done by using 2% chlorhexidine for its sustainable effect. Master cone selection 25/6% for the distal canals and 25/4 % for both the mesial canals were done (Figure 3) and canals were obturated with cold, lateral compaction of gutta percha cones with epoxy resin sealer. A post obturation radiograph was taken (Figure 4).



Figure 3. Master cone with 46

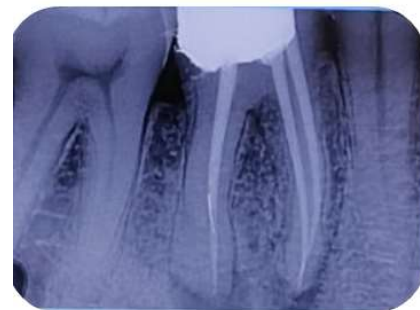
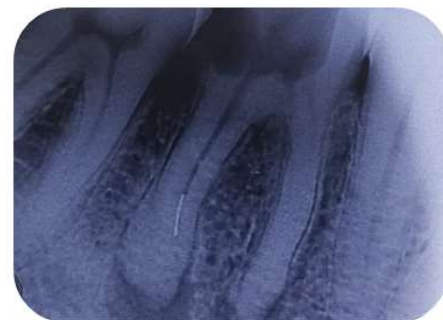
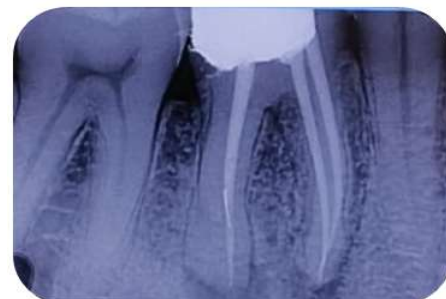


Figure 4. Obturation With 46



PREOPERATIVE RVG



CASE REPORT 2

A 45 years old male patient was referred to the Department of Conservative Dentistry and Endodontics with chief complaint of pain and food lodgement in the left lower back region of jaw for the past 1 month. Clinically deep mesial caries was present. Tooth was tender on percussion. Radiographic examination revealed deep dentinal caries involving pulp. Periodontal ligament widening along with mild hypercementosis with distal root was seen with 36.



Figure 5. Preoperative Rvg



Figure 6. Working Length Determination With 36



Figure 7. Mastercone With 36



Figure 8. Obturation With 36



Figure 9. Post Obturation RVG With 36



PREOPERATIVE RVG



POSTOPERATIVE RVG

It was diagnosed that 36 had symptomatic apical periodontitis so root canal treatment was planned. Same procedure was followed and root canal treatment was completed with 36

CASE REPORT- 3

A 30 years old male patient was referred to the Department of Conservative Dentistry and Endodontics with chief complaint of pain in the upper left back region of jaw for the past 2-3 months. Clinically sinus tract was present in between 24,25. Patient gave history of swelling 1 month back. Radiographic examination revealed periapical lesion & severe hypercementosis was seen with 24 and 25. It was diagnosed that 24 and 25 had symptomatic apical periodontitis so root canal treatment was planned. Same procedure was followed and root canal treatment was completed with 24,25.



Figure 10. Preoperative Rvgwith 24,25



Figure 11. Working length determination with 24,25



Figure 12. Mastercone With 24,25

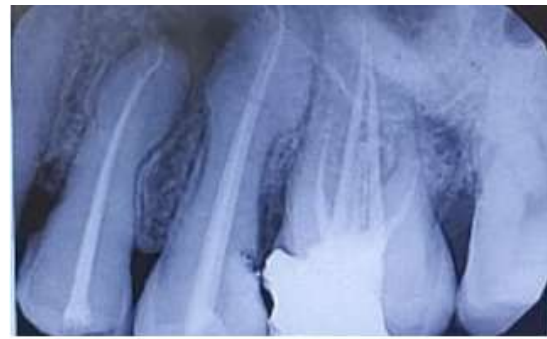


Figure 13. Obturation With 24,25

DISCUSSION

Apical periodontitis with hypercementosis was rarely reported in reviews. Several authors suggest that a chronic periapical infection is one of the most common local factors that may contribute to the development of hypercementosis, which generally affects a single root with a bulbous pattern or nodular enlargement. The periapical pathosis can be explained by a mild, chronic and low grade infection in the root canal system. Furthermore, with hyper-cementosis, the roughness of the root surface could promote bacterial contamination that leads to localized bone loss. It is important to make an adequate diagnosis, establish or identify etiological factors and eliminate them^{8,9,10}. Hypercementosis is completely asymptomatic and is considered as a finding in the radiographic examination. It may be associated with other types of pathologies, such as apical periodontitis¹¹. In one case report, hypercementosis was associated with instrument separation and a periapical lesion due to a possible failure in previous root canal procedures. Instrument bypass technique by using endodontic file along with copious irrigation was verified. It was found that this technique is simple and less invasive. In 2nd case report mild hypercementosis was present. In 3rd case report severe hypercementosis was present. Root canal procedure was carried out for all the cases with due precautions to avoid instrument fracture and zipping etc.

CONCLUSION

In hypercementosis, apical foramen may be shifted laterally. If the cemental canal is calcified and present with apical periodontitis it should be cleaned thoroughly during shaping including both dentin and cementum canals. To avoid mechanical and biological problems, it is necessary that root canal be cleaned in its entire extension, by removing an equal amount of dentin from the canal walls, at its three dimensions, following its own anatomical path. Also, the foramen should undergo patency during all root canal preparations. Instrument separation in hypercementosis is a procedural mishap which can lead to undue obstacle in success of endodontic treatment. Clinician should have proper knowledge about root canal anatomy, root canal treatment and instrument bypass techniques for successful outcome.

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