

Case Report

Management of Non-Perforating Internal Resorptive Defect Using a Thermoplasticized Obturation Technique: 12-Months Follow-Up

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ABSTRACT

Internal resorption is either a physiological or pathological destruction of the intra-radicular dentin and dentinal tubules along the canal walls as a result of clastic activity. This case report demonstrates management of internal resorption using thermoplasticized obturation technique with Obtura II. Follow-up intraoral periapical radiographs showed adequate repair of the resorption and periapical rarefaction. The tooth remained asymptomatic for 12 months.

Keywords: Internal resorption, Pulp inflammation, Obtura II.

INTRODUCTION

Chronic pulpal inflammation and bacterial invasion of the pulp tissue often asymptotically result in internal root resorption. Clastic activity of multinucleated giant cells adjacent to granulation tissue has been associated with resorption. [1] Diagnosis is generally drawn from routine radiographic screening of the patients. Patient may experience pain or discomfort if the granulation tissue gets exposed to the oral environment. [2] Compared to external resorption, internal resorption is somewhat a rare finding. Differentiation of the two types of resorptive defects from each other is challenging. Off-angled radiographs implementing paralleling technique help differentiating the two. [2]

The pathology has been predominantly associated with vital teeth. [3] Debridement of active lesions often results in profuse bleeding impairing field

visibility. Moreover, the clastic cells create an irregularly defined defect that poses significant difficulty in chemomechanical tooth preparation. This may eventually result in persistence of organic debris and microbes into the irregularities. [4] Use of multiple calcium hydroxide dressings has been primarily suggested as a mean for disinfection in internal resorption. [2]

For the long term success of the canal treatment, the space should be perfectly sealed three dimensionally. This is difficult to achieve in case of internal resorption. The obturating material should demonstrate sufficient fluidity to seal the resorptive area. Literature advocates the use of various thermoplastic gutta percha obturating techniques to fill the resorptive defect. Obtura II system has been shown to produce significantly better results than thermafill, cold lateral compaction, soft-core core system and hybrid technique. [5]

The present case report employs the use of Obtura thermoplastic technique to repair an internal resorption defect in upper right lateral incisor of a 25 yr old male patient.

CASE REPORT

Patient presented to the Department of Endodontics, PGIDS, Rohtak with a chief complaint of broken right upper front tooth. Patient gave a history of trauma 10 years back. The corresponding side canine was found to be

missing. Medical history of the patient was non-contributory. Mobility and probing depths were within normal physiological limits. Tooth was non-responsive to electric pulp testing and was non-tender on percussion. In the conventional periapical radiography, non-perforating internal resorption as a well-circumscribed, fairly oval radiolucency was seen affecting the right maxillary lateral incisor in the middle third of the tooth (figure 1). Also, the root of lateral incisor was seen to be apically resorbed (figure 1).

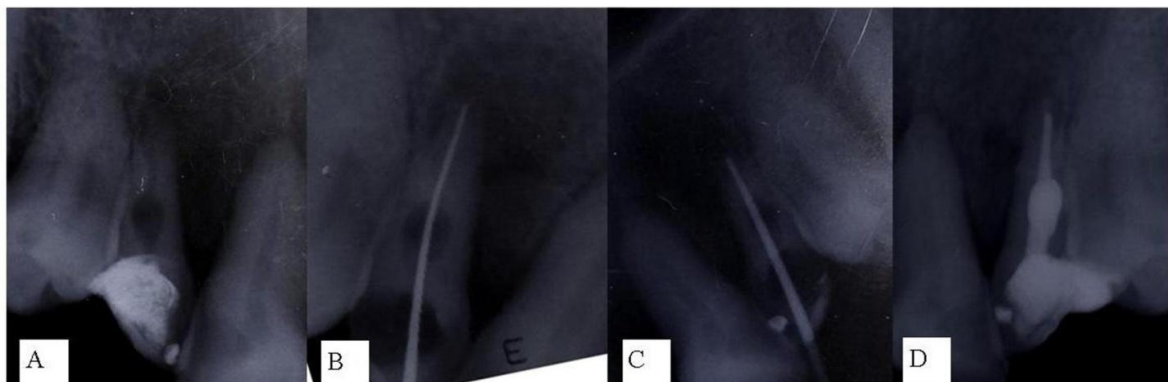


Figure 1: (A) Pre-operative Radiograph (B) Working Length determination (C) Master cone Radiograph (D) Immediate Post-operative Radiograph

An access opening was prepared under rubber dam isolation. Profuse bleeding was encountered upon entry. The root canal was negotiated to full working length and instrumented with stainless steel hand files until an apical stop of ISO#50 could be created. The canal was frequently irrigated with 1.3% sodium hypochlorite followed by a final rinse of 5 ml sterile saline. After thorough debridement calcium hydroxide dressing was placed. The access opening was temporarily sealed with Cavit G (3 M ESPE, St Paul, MN).

After 10 days the root canal was re-entered and thoroughly irrigated with sodium hypochlorite followed by sterile saline. 17% EDTA was left flooded into the canal for 5 minutes followed by a 5 ml saline rinse. The root canal was dried using paper points. System B thermoplastic obturation technique was

used to fill the defect 3-dimensionally. The flowable gutta percha was compacted into the canal with endodontic pluggers using light apical pressure (figure 2). The quality of obturation was confirmed radiographically and the access opening was permanently sealed.

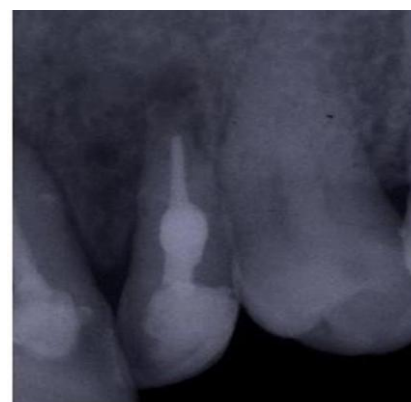


Figure 2: 1-year follow-up radiograph

DISCUSSION

In internal resorption, dentin is usually replaced by a soft tissue with clastic cells resulting in a balloon-shaped lesion starting from the radicular pulp. [6] A round or ovoid radiolucent area is visible in the root canal depicting that the pulpal wall is destroyed, whereas cementum and periodontium is being spared, at least initially. [6] Etiology is unknown in majority of the cases but a history of trauma can usually be derived from the patients. Inflammation of the coronal pulp due to infection or as a result of trauma is thought to be the most logical reason explaining the cause of the lesion. [7]

Internal root resorption is generally asymptomatic and is diagnosed clinically through routine radiography as was done in this case. Radiographs taken from different angulations help distinguishing internal resorption from external resorption. If the position of the defect remains fairly the same, internal resorptive defect occurs, and if the defect position is seen to change with a change in angulation, external resorption is present. [2] Vital pulp is usually associated with the active lesion, thus a positive pulp sensitivity testing is possible. The coronal pulp is often necrotic but the apical pulp may retain its vitality. [8] Traditionally, a pink tooth has been thought of as pathognomic of internal root resorption. But it may also be a feature of cervical subepithelial external inflammatory root resorption that needs to be ruled out before a diagnosis is reached upon. [9]

Chemomechanical debridement of the teeth affected by internal resorption seems difficult to accomplish due to inaccessibility of the defect to instrumentation and irrigation. An intracanal antibacterial medicament should be used to improve disinfection of the resorption defect. Calcium hydroxide as an intracanal medication has been able to

promisingly eradicate and disinfect the root canal. [2]

Due to inaccessibility of the defect walls, it may be difficult to completely obturate the canal efficiently and adequately. Flowable thermoplastic gutta percha techniques have thus been examined and evaluated. [4,5] Obtura II system was seen to perform significantly better than many other thermoplastic techniques in sealing the resorptive cavities. [4,5]

Timely and efficient sealing of the resorptive defects prevents bacterial contamination between the periodontium and the root canal space. The treatment of this case involved removal of the granulation tissue followed by calcium hydroxide root canal medicament. The pulp space was three dimensionally obturated using Obtura system allowing the gutta percha to flow and fill the irregularities of the cavity. The treatment of the defect was considered successful as evidenced by clinical and radiographic findings after 12 months.

CONCLUSION

Root resorption can lead to extraction of the involved tooth if not managed timely and efficiently. Thermoplasticized obturation using Obtura II system may be successfully employed to obturate internal resorptive defects.

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