CASE REPORT

Treatment of Internal Root Resorption in Maxillary Lateral Incisor: A Case Report

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ABSTRACT:
A clinician encounters a variety of pulpo-pathologic conditions. Resorption is one such condition. By definition it is a condition associated with either a physiologic or a pathologic process resulting in loss of dentin, cementum or bone. Internal as well as external resorption signifies a very complex pathological interaction of the cells of pulp, periradicular and periodontal tissues. An insidious process that is generally found in teeth with a long standing chronic inflammation of the pulp, caries related pulptis, traumatic injuries, and iatrogenic causes. Generally a tooth with internal root resorption is asymptomatic and this condition is diagnosed on routine radiographic examination. Accurate diagnosis and immediate institution of treatment in this condition is important to improve the prognosis of such teeth.

This case report having resorptive defect in the middle 1/3rd of maxillary left lateral incisor which was treated non-surgically with endodontic treatment. The step back technique for bio-mechanical preparation was used and obturation was carried out with hybrid technique where apical 1/3rd till resorptive defect was obturated and the defect was backfilled with thermoplastized gutta-percha. A six-month follow up demonstrated clinically asymptomatic and adequately functional tooth, with radiographic signs of healing.

Keywords: Gutta-Percha, Resorption Lacunae, Thermoplastized.

INTRODUCTION
Internal root resorption is a rare finding, usually asymptomatic, slowly progressing, and detectable upon routine radiographic examination.\textsuperscript{1} An oval enlargement of the root canal space in radiograph is seen in affected tooth. The resorption lacuna, a continuation of the distorted outer borders of the root canal is confirmed by different angulations techniques of radiographs.\textsuperscript{2} A deviation from the standard procedure is required for diagnosis and management of internal resorption. The key to success in arresting the process of internal resorption is total removal of pulp horn. The cause of internal resorption is not fully understood.\textsuperscript{3} Suggested contributing factors are trauma, persistent chronic pulpitis as well as orthodontic treatment.\textsuperscript{4} Late diagnosis is because the tooth is asymptomatic. Chronic inflammatory process in the pulp tissue combined with the loss of the protective layer of odontoblasts and predentin is assumed to cause dentinal resorption. Activated multinucleated giant cells that are adjacent to the granulation tissue in the inflamed pulp resorb internal aspect of root canal.\textsuperscript{5} Teeth in which the resorptive process reaches the cervical area of the crown may have a pinkish color, known as ‘pink tooth’ resulting from granulation tissue ingrowths.\textsuperscript{6}

Radicular portion it often goes unnoticed until it has perforated the external surface. Stage at which the process is detected & treated affects the prognosis. Extermination of entire pulpal tissue is the main motive of its treatment. The
presented case elicits the challenges encountered in diagnosing, treatment planning, cleaning shaping and achieving a three dimensional obturation.1,2

CASE PRESENTATION
A 50 year old female patient came to the Department of Conservative Dentistry and Endodontics, with a chief complaint of food lodgment in upper left front teeth since 3 months. The patient had no significant medical history. Patient had past dental history of endodontically treated tooth maxillary left canine before 3 months. Intra oral examination revealed caries in maxillary left lateral incisor. Vitality Test was performed in relation with 22, which showed no response. Intraoral periapical (IOPA) Radiographic interpretation revealed the presence of an oval shaped radiolucency at the junction of coronal & middle one third of the root in 22 which was suggestive of internal resorption (Figure 1). A diagnosis of pulp necrosis with internal root resorption was made.

In first appointment rubber dam was placed and access cavity was prepared in 22. The canals were completely negotiated, working length IOPA was taken (Figure 2). The biomechanical preparation was done with hand K-files using step back technique and EDTA was used as a lubricant to remove the necrotic debris. In between the instrumentation, the canal was irrigated with 3% sodium hypochlorite and saline. The apical portion of the canal was enlarged to no. 60 K-file. Ultrasonic agitation with 3% sodium hypochlorite was done to clean the lacunae area. Canal was dried with sterile paper points. The access cavity was sealed with Cavit.

In the next appointment, evaluation of upper left lateral incisor was done and the tooth was found to be asymptomatic. The canal was dried with sterile paper points. Radiographic control to assess the good fit of the master gutta-percha cone was carried out. Final irrigation with 3% sodium hypochlorite and saline was done, root canal was dried with sterile paper tips followed by application of AH Plus sealer (Dentsply Maillefer, Baillagaues, Switzerland) with help of lentulo spiral. Obturation of the apical third of the root with gutta-percha was done with help of finger and hand plugger, till resorptive defect. Thermo plasticized injectable gutta-percha (ULTRAFIL® 3D Hygenic, Coltène, Whaledent) backfilled technique was used in the resorption lacunae to completely fill the wide canal space (Figure 3). The access cavity was sealed with Cavit.

Patient was recalled for post endodontic restoration in maxillary left lateral incisor. At the last appointment post endodontic restoration was done with composite resin restoration (Figure 4). Patient was kept on follow up for 6 months to check the prognosis of treatment. After 6 months IOPA showed
The etiology of internal resorption is not fully understood. Risk factors considered are trauma and chronic pulpitis. Gabor et al in their study had found internal resorption to be a frequent finding in teeth with pulp inflammation or necrosis. None of the samples in their study with healthy pulps revealed any sign of internal resorption.

The etiology in this case was attributed to dental caries, which resulted in internal resorption followed by pulp necrosis. An active internal resorptive process can not be ruled by a negative sensitivity test as the coronal portion of the pulp may be necrotic whereas the apical pulp which includes the resorptive defect may remain vital. If the pulp becomes necrotic after a period of active resorption it shall give a negative sensitivity result, radiographic signs of internal resorption & apical breakdown. As all the above features were observed in the present case a diagnosis of pulp necrosis was made. A radiograph can never be a sole diagnostic tool. The diagnosis of internal resorption should be confirmed throughout the treatment. Any bleeding from the canal should be ceased by expiration of pulp. Perforation can be suspected by clinician if any bleeding is present in second visit. Perforation in the present case can be ruled out by absences of bleeding in both the appointments.

For thorough removal of necrotic debris from the irregular canal space ultrasonic irrigation was used. Rodig et al have shown ultrasonic irrigation to be more effective than syringe irrigation in removal of debris from extensions in straight root canals. A thermoplastic injectable gutta-percha with backfilled obturation technique was preferred over lateral condensation as the former produces movement of gutta-percha, filling irregularities & accessory canals.

Cone beam computed tomography (CBCT) can be used for diagnosis & management in complex cases of suspected perforative defects. Bhuva et al have shown that CBCT has a superior diagnostic ability & also resulted in an increased likelihood of correct management of internal resorptive lesions. Thus modifications can be made to treatment procedures in view of additional information obtained from CBCT.

Lastly if internal resorptive cavities is excessively large. It increases the probability of root fractures during functional loading. A light transmitting post is used to manage such cases. The defect in the presented case was not extensive & showed adequate dentin thickness on radiographic examination so root reinforcement was not needed.

**CONCLUSION**

Early detection, appropriate treatment planning, removal of inflammatory pulp tissue & three dimensional obturation are the factors affecting the success of management of internal root resorption.
REFERENCES