



Case Report

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# Case Report on Management of Fractured Root and Root Resorption Using MTA



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## Abstract

Root fracture occurs due the horizontal impact and forces are in transverse to oblique direction. Root fracture is the uncommon injury that occurs in 0.5-7% of all dental trauma cases. Middle third fracture is the most common among the root fracture. Treatment options various for different types of fracture. Biocompatible material which has excellent sealing property and tissue regeerating capacity should be used. This case deals the management of horizontal root fracture with root resorption using a biocompatible material.

**Background:** Horizontal root fracture occurs in most of dental trauma cases that too in maxillary anterior teeth due to tooth position, early intervention and treatment is required. Delay in treatment lead to resorption. Proper endodontic treatment and biocompatible material should be used for treating this type of case.

**Methods:** Orthograde endodontic management of external inflammatory root resorption was attempted.

**Results:** Healing with hard tissue formation occurred in this case after one month. This denotes the positive outcome of the treatment.

**Conclusion:** The primary objective of endodontic treatment is to prevent and intercept pulpal/periradicular pathosis and to preserve the natural dentition when affected by pathosis. Treatment outcome is positive for this case.

**Keywords:** Horizontal root fracture; MTA; Resorption; Trauma

## Introduction

Root fracture accounts only 0.5-7% of all dental trauma cases [1-3]. Root fracture is defined as "fracture involving dentin, cement and pulp" [1]. Maxillary central incisor is commonly involved in fracture cases (approximately 68%). The next in frequently involved teeth are the maxillary lateral incisors (27%) followed by mandibular incisors (5%) [4,5]. Horizontal root fracture is commonly involved middle third of root [6]. An impact forces on the top of the root and frontal forces affect the compression zone labially and lingually/ palatally, thus dividing the root into coronal and apical segment leads to root fracture [7]. Diagnosis should be done based on proper clinical diagnosis and radiographic evaluation. Mobility of tooth and pulp vitality should be checked during clinical examination. On radiographic evaluation, radiolucent line will be visible separating the apical and coronal segment [8,9]. To finalize the fracture detection two or three radiographs taken at different angulations to be done.

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The treatment of horizontal root fracture depends on the location of the fracture, mobility and vitality of tooth. Coronal segment fracture shows severe mobility and extraction of

fracture segment. Apical third root fracture display no mobility and generally require no treatment. Middle third root fracture has a favourable prognosis. If the coronal segment is displaced, the initial management should be repositioning the fragment, followed by stabilization to allow healing of the surrounding periodontal tissues [1]. If treatment gets delayed for root fracture led to resorption near fractured segment. The AAE Glossary of Terms defines Resorption as physiologic or pathologic loss of dentin, cementum, and/or bone not immediately due to caries or trauma (AAE Glossary). Resorption occurs when developmental precementum or predentin are lost or damaged and inflammation of the adjacent soft tissues allows for clastic cell invasion [10]. Andreasen classified tooth resorption as Internal (inflammatory, replacement and surface), external (inflammatory, replacement, surface and cervical) and combined [11]. There are two stages in resorption: degradation of inorganic matrix followed by disintegration of organic matrix [12]. Internal root resorption is a progressive destruction of intraradicular dentin and dentinal tubules along the middle and apical third of canal wall as the result of clastic activity. Earlier management lead to good prognosis [13-25].

Calcium hydroxide is commonly used intra canal medication for disinfecting the root canal system. Application of calcium hydroxide paste at the interval of seven days eliminate or reduce the bacterial content after biomechanical preparation. When used in resorption management case its alkaline pH actively influences the local environment around a resorptive area by reducing osteoclast activity and stimulating repair. The alkaline calcium hydroxide neutralizes the acidic environment which exists in the region of resorption, reversing the reaction and thus stimulating hard tissue formation. The diffusion of hydroxyl ions released by calcium hydroxide through the dentinal tubules that directly communicate with periodontal space would increase the pH of periodontal space from 6.0 to 7.4 - 9.6. MTA is a biocompatible material which has high pH and sealing capacity, low solubility, ability to present in the presence of the blood and incudes the odontoblastic differentiation by activating the transforming growth factor beta 1 (TGF-b1).

### Conclusion

This paper insight case report on management of fractured root and perforating root resorption using MTA.

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