

Case Report

Management of Internal root resorption in maxillary lateral incisor with Thermoplasticized gutta-percha technique: A case report

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ABSTRACT

Internal root resorption is relatively a rare type of resorption as result of chronic inflammatory process resulting in loss of dental tissues. The affected tooth is usually asymptomatic so the condition usually lies undiagnosed, further leading to perforation. Early diagnosis of this condition and appropriate treatment is necessary to enhance prognosis of the teeth. The case report demonstrates management of maxillary lateral incisor with internal resorption with conventional nonsurgical endodontic therapy combined with calcium hydroxide medication; irrigation with ultrasonic (Endoactivator) and obturation with MTA based sealer (MTA Filapex) and thermoplasticised gutta-percha (Calamus) with regular follow up for one year.

Introduction

Tooth resorption is defined as a state with either a physiological or a pathological process resulting in loss of dentin, cementum or bone.¹ Internal root resorption is described as a resorptive defect within internal aspect of the root due to necrosis of odontoblasts resulting from chronic inflammation and bacterial invasion of the pulp tissue.² Various factors that may contribute to cause resorption include trauma, caries and restorative procedures, but sometimes it could be idiopathic too.

Internal resorption occurs very rarely, but however the prevalence has been estimated to be between 0.01% and 1%.³ Thoma K concluded internal root resorption in 1 out of 1,000 teeth examined. It is more often observed in males than in females and most commonly

affected teeth are maxillary incisors.⁴ The defect in internal resorption is usually circumscribed and oval shaped. Clinically the affected tooth is usually asymptomatic and discovered by chance on routine radiographic examinations or by looking at the clinical sign of a 'pink spot' on the crown.⁵ In 1830 Bell first reported internal resorption since then several case reports have been published with various treatment modalities to manage it.⁶ However the present paper demonstrates management of maxillary lateral incisor with internal resorption with conventional nonsurgical endodontic therapy combined with calcium hydroxide medication, irrigation with ultrasonic (Endoactivator) and obturation with MTA based sealer (MTA Filapex) and thermoplasticised gutta-percha (Calamus) with regular follow up for one year.

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Case report

A 35 year old female patient was referred to department of conservative dentistry and endodontics, Sri sai college of dental surgery, Vikarabad. Patient had a chief complaint of carious teeth in upper anterior tooth region. Patient even gives history of trauma to upper front teeth 2 years ago. On oral examination there was caries irt 21, 22 and both the teeth were mild tender on percussion. Upon vitality testing (cold and heat test) both 21 and 22 failed to respond. Radiographic examination revealed a well-defined radiolucent defect at mid root level irt 22 and there was periapical lesion irt 21. Based on clinical and radiographic examination diagnosis of pulpal necrosis with periapical abscess was established irt 21 and pulpal necrosis with internal resorption was established irt 22.

Treatment

Access cavity preparation was done using a no.#2 round bur, then pulp tissue was extirpated and working length was established using radiograph irt 21,22. (21=23mm,22=22mm). Working length was again reconfirmed using apex locator (Root ZX II, J Morita). Later cleaning and shaping of canal was done up to ISO size 60 (Master apical file) in crown down technique. Copious irrigation was done during cleaning and shaping with 3% sodium hypochlorite and saline alternatively. Later the canals were dried thoroughly with absorbent points and calcium hydroxide paste (RC-CAL, Prime dental products) closed dressing was given for a time period of 2 weeks. During the next visit the dressing was removed and canals were dried, obturation was done in 21 with cold lateral condensation with a Fillapex sealer (MTA

based root canal sealer, Angelus). In 22 after master cone X-ray was taken canal was coated with Fillapex sealer and sectional obturation done till resorptive area and the remaining of canal was obturated using a thermoplasticized gutta-percha technique with Calamus obturating system (Dentsply Tulsa). Post obturation radiograph was taken to confirm the filling of warm gutta-percha into the resorptive defect area. Later coronal area was restored with composite restoration and crowns were given irt 21,22. One year follow up revealed clinically asymptomatic and adequately functional tooth, with radiographic signs of healing.

Discussion

Internal resorption is usually a complex pathologic condition of tooth. It could be associated to several factors like trauma, caries and many others, however sometimes it is idiopathic and cause cannot be determined. The treatment of tooth with internal resorption is usually complicated as there will be difficulty in removing the tissue from defect of resorptive cavity. If the tissue remnants are left it may lead to failure of treatment.

One of the main challenges during preparation is brisk bleeding from canal especially when the resorption defect is active.³ Therefore while treating a tooth with internal resorption more emphasis is given in removal of soft tissue from defect using various irrigants than instrumentation as over instrumentation may lead to perforation from defect area. Effective cleaning of the resorptive area with solvents having tissue dissolving capacity is preferred.⁷ It is well known that soft tissue dissolution can be best achieved by using high concentration of sodium hypochlorite. Therefore 3% sodium hypochlorite was used for irrigation. Irrigation

Figures



Fig 1 -Diagnostic Radiograph



Fig 2 – working length for 22



Fig 3 – Master cone



Fig 4 –Obturation (X ray on same day)



Fig 5 – Follow up after 1 year

can be further enhanced by various agitation devices like sonic and ultrasonic agitation tips and hence endoactivator was used. Following this placement of intracanal medication like calcium hydroxide is usually suggested for a period of 1-2weeks, because of its high alkalinity it will inhibit clastic activity that causes resorption.³ Therefore in the present case

calcium hydroxide dressing was given for a duration of 2 weeks. Several studies have found that sodium hypochlorite and calcium hydroxide are very effective and have additive or even synergistic effect in dissolution of the resorptive and other tissues.^{8,9}

Finally coming to obturation it could be best achieved by warm gutta-percha techniques either thermomechanical or thermoplasticised techniques to the best enhance the filling of resorptive defect area.^{7,10,11} Calamus which is a form of thermoplasticised obturating system was used along with MTA Fillapex sealer. MTA sealer when used could seal off any minute perforations that might be created accidentally on the thin walls of defective root and enhance the prognosis. However several case reports have been published using MTA for obturation rather than gutta-percha because of its antimicrobial properties and better seal. In cases where resorptive area is perforated MTA would be material of choice.^{3,12,13}

Prognosis of teeth usually depends on size of the resorptive defect. Larger the defect resistance of tooth decreases to forces and there is increased tendency to fracture. Smaller the defect better is the prognosis.^{10,11}

Summary

Internal resorption is very uncommon type of resorption of tooth, it is frequently diagnosed by chance during routine radiographic examination. Diagnosis is usually simple but sometimes may require advanced diagnostic techniques like CBCT. Early diagnosis and treatment of tooth would inhibit resorption prevent further damage of tooth due to it. With the advent of modern techniques and materials even cases with perforation could be managed with a fairly good prognosis.

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