

Surgical Management Of A Compromised Case Of Invasive Cervical Resorption -A Case Report

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Abstract

Root resorption is physiological process in deciduous tooth and in permanent tooth it is a pathological process.Pathological resorption if untreated results in premature loss of affected teeth. Early diagnoses and timely intervention needed to increase the predictability of the teeth. This case report is about the two maxillary central incisor, one with extensive cervical resorption and another with internal resorption occurred following trauma. Eventhough extensive cervical resorption was a compromised case with poor prognosis , short term follow up of two year showed that proper debridement of granulation tissue and restoration of the defect has helped in retention of tooth.The maxillary incisor with internal resorption was managed by thermoplastized obturation

technique.Both the tooth in two year follow up showed periodontal health within normal limit

Keywords: Invasive cervical resorption,Internal resorption,Glass ionomer cement ,Thermoplastized obturation

Introduction

Root resorption is a major challenge faced by the endodontists. According to the Glossary of American Association of Endodontists , resorption is a condition associated with either a physiologic or a pathologic process resulting in loss of dentin, cementum or bone ¹. Classifications play an important role in diagnosis and treatment planning. Invasive cervical resorption (ICR) is a type of external tooth resorption which is uncommon and often aggressive and involves any tooth of the permanent dentition ². It is defined as a localized resorptive process

that involves the surface of root below epithelial attachment and coronal aspect of the supporting alveolar process, namely the zone of connective tissue attachment³. Because of its cervical involvement and invasive property, these type of resorptive defect may lead to the loss of tooth structure. The etiological factors can be traumatic injuries, orthodontic tooth movement, orthognathic and dento-alveolar surgery, periodontal treatment and internal bleaching⁴. ICR is often asymptomatic , mostly diagnosed during radiographic evaluation and commonly seen in the cervical area, but it may occur anywhere in the root⁵ .At the early stages, it may be somewhat symmetrical but later can become asymmetrical⁶. A successful outcome for such cases generally involve early diagnosis and management. When ICR is diagnosed, three choices are considerable for treatment: No treatment with eventual extraction when the tooth becomes symptomatic; Immediate extraction; or Access, debridement, and restoration of the resorptive lesion⁷. Various materials have been promoted to seal the resorptive defect such as mineral trioxide aggregate (MTA), glass-ionomer cement (GIC), calcium enriched mixture (CEM) etc. This case report is about a management of compromised case of extensive invasive cervical resorption in maxillary central incisor .It was managed by surgical intervention followed by restoration to seal the defect .

Case Report

A 63 year old male patient was referred from prosthodontic department for evaluating the prognosis regarding upper front teeth. On clinical examination, cervical defect was noticed on palatal aspect in relation to 11(Fig 1) .Patient had a history of trauma in relation to upper front teeth 30 years back .No history of pain or swelling noticed till now. He had undergone extraction in relation to 12 and 22 following trauma that occurred 30 years back and was replaced with a cantilever bridge on

both sides supported by 13 and 23 .He had no relevant medical history .Pulp vitality test shows no response in relation to 11, 21 .Tenderness on percussion was negative for the same .Radiograph of 11 shows extensive radiolucency in the cementum, dentin and root canal extending from coronal one third of root to middle third of root. Root canal in the apical third was not tracable in the radiograph(Fig 1). Radiographic of 21 shows evidence of pulp chamber calcification along with small internal resorptive defect in the coronal one third of tooth. The root canal in middle and apical third was slightly tracable in 21(Fig 1). No periapical changes noticed in both tooth. Based on the finding it is diagnosed as Heithersay class 4 invasive cervical resorption in relation to 11 and internal resorption in relation to 21. Patient was explained about the poor prognosis of 11 and possible treatment plans .As the patient wanted to retain the tooth ,the treatment was planned accordingly as access, debridement, and restoration of the resorptive lesion in 11 .Internal resorption in 21 was planned to manage by root canal treatment. Consent was obtained from the patient after explaining treatment plan to the patient.

Under local anesthesia, the access opening of 21 was done. Initial, only internal resorptive defect was accessed later calcified canal was identified and debrided . 3% NaOCl was used for irrigation along with ultrasonic agitation . Later, it was rinsed with saline and dried with paper points. Calcium hydroxide paste closed dressing was given for a time period of 2 weeks. During the next visit ,obturation was done by lateral compaction upto resorptive defect and the defect area was obturated using thermoplastized gutta percha(Fig 2) .

Access cavity of 11 was prepared .As file could negotiate only upto the resorptive defect ,surgical intervention to restored the resorptive defect was planned .Triangular full thickness flap was raised on the palatal aspect and

hemostasis was achieved. A large circular resorptive area containing granulation tissue was seen. Debridement of resorptive area was done with spoon excavator and round bur at slow speed .After thorough debridement , the defect was conditioned with 17% EDTA to remove remnants of resorptive tissue. Restoration done through access opening with capsule glass ionomer cement (GIC) and restored the perforative defect .Care was taken to conform glass ionomer cement to the shape of the root and keep it within the confines of the root outline . Platelet rich fibrin membrane placed on the root surface .Flap repositioned and suture placed(Fig 3).A periodontal pack was placed. The patient was recalled and assessed at 1, 6, 12 months and two years (Fig 4). At all times, the patient was asymptomatic and periodontal health was within normal limit during all recalls.

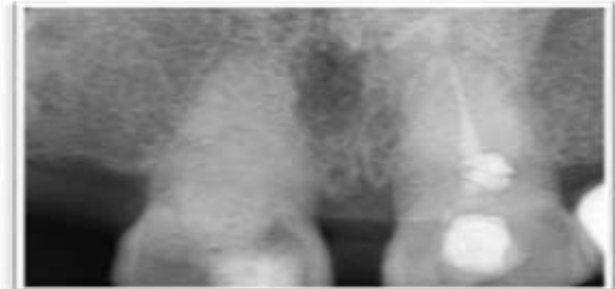
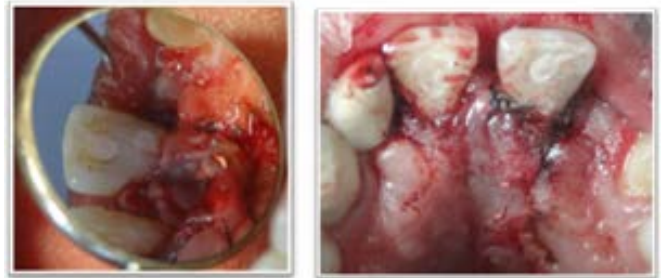
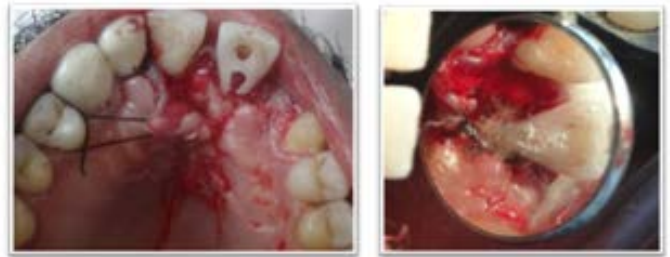


Fig 3: 3a) Flap elevation
3b) restoration of defect by glass ionomer cement
3c) PRF membrane placement
3d) Flap closure and Suture placement
3e) post operative radiograph



Fig 1: Pre-operative intraoral and radiographic image



Fig 2: Thermoplasticized obturation



Fig 4: two year follow-up of intra-oral image and radiograph

Discussion

Internal resorption is the result of an inflamed pulp and the clastic precursor cells recruiting through the blood vessels. Treatment of internal resorption is quite predictable when identified in very early stage as it is easy to control the

process of internal root resorption via severing the blood supply to the resorbing tissues with conventional root canal therapy. High concentration of sodium hypochlorite can be used for soft tissue dissolution. Irrigation can be further enhanced by various agitation devices like sonic and ultrasonic agitation methods. Based on this concept, 3% sodium hypochlorite along with passive ultrasonic agitation was used as irrigation regimen in internal resorption management. Following this, placement of intracanal medication like calcium hydroxide is usually suggested for a period of 1-2 week because of its high alkalinity it will inhibit clastic activity that causes resorption⁸. 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 tissues⁹. Finally coming to obturation it could be best achieved by warm gutta-percha techniques either thermomechanical or thermoplasticised techniques to best enhance the filling of resorptive defect area¹⁰. So obturation was done with thermoplasticised gutta percha in this case.

According to AAE Endodontic case difficulty assessment form and guidelines, the canal not visible or indistinct canal path comes under high difficulty case. Considering patient age, difficulty level and absence of periapical lesion, restoration of resorptive defect was planned without further attempt to negotiate the apical third of the canal in 11.

Different modalities have been suggested by several authors for the treatment of invasive cervical root resorption. The basic aim of treating ICR is the complete removal of resorptive tissue and the restoration of the defect area¹¹. Successful management of each case must be related to the etiology. The etiological factor for the

resorption in the present case might be due to traumatic injury. The affected teeth remained untreated for a long period of time resulting in a extensive resorptive defects. Extensive ICR has very poor prognosis, and the tooth is recommended to be extracted. A Cochrane systematic review recommended that decision-making for treatment should be based on combination of clinician's experience and the patients preferences, where appropriate¹². Even though the prognosis was poor, as patient want to retain their natural tooth, surgical root repair was planned. Surgical treatment of varying degrees of ICR generally involves periodontal flap reflection, curettage, granulation tissue removal, and restoration of the defect with suitable material, such as MTA, resin-modified glass ionomer cement, CEM and biodentine¹¹. Although MTA is a promising root repair material, in our cases, MTA could not be used because of its poor handling characteristic, can cause tooth discolouration, difficult to contour root form and can be scraped during scaling procedures. The restorative material used for root restoration should be biocompatible, have a matching coefficient of thermal expansion (COTE), and provide root reinforcement¹³. In this case, we used conventional Type II GIC for restoration of resorptive defect. The advantages of using GIC is that it chemically adheres to tooth structure, biocompatible once set, has matching COTE to tooth, is antimicrobial, and provides root reinforcement¹⁴. Guided tissue regeneration techniques are based upon controlling the epithelial proliferation by allowing a barrier material between the gingival tissue and the exposed root surface and supporting alveolar bone. This prevents the colonization of exposed root surfaces by gingival cells and proliferation of periodontal ligament cells. Based on this concept platelet rich fibrin was placed before flap repositioning.

Here maxillary central incisor with extensive cervical resorption demonstrate periodontal stability in two year followup visit .Thus with this short time follow up case report we can conclude as surgical restorative treatment of the extensive cervical resorptive lesion may result in short term success and tooth retention .

Conclusion

Invasive cervical resorption is an aggressive form of resorption that can lead to loss of tooth .In this case report ,the compromised case of maxillary incisor with invasive cervical resorption was managed by proper debridement and restoration of resorptive defect which helped in retention of tooth with acceptable periodontal condition in two year follow up .Eventhough Hiethersay Class 4 Invasive cervical resorption fall in difficult category in achieving predictacle outcome , with this short time follow up we can conclude as timely intervention ,proper debridement of granulation tissue and restoration of the resorption defect can increase the longevity of the tooth .

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