Surgical approach for treating an extensive internal resorption with retrograde MTA placement: A Case report

Vartul Dwivedi* MDS; Rahul Bhartia** BDS

* Sr Lecturer, Department of conservative dentistry and endodontics, Peoples Dental Academy, Bhopal (MP). ** PG Student, Department of conservative dentistry and endodontics, Peoples College of Dental Sciences, Bhopal (MP).

Address for correspondence: E-2/298 Arera Colony, Bhopal (MP). PIN: 462016
Phone: +91 9926969788.
Email: doctorvartul@gmail.com

Abstract: Endodontic treatment of teeth with perforating internal root resorption represents a clinical challenge. A case of internal resorption with buccal perforation was found in a maxillary central incisor. This report presents a case with a history of trauma and root perforation due to extensive internal resorption and very poor prognosis because of unfavourable crown-to-root ratio that was successfully treated by a surgical intervention.

Keywords: MTA, resorption, retrograde.

INTRODUCTION

Internal root resorption is a condition in permanent teeth 1, characterized by progressive loss of tooth substance starting from the root canal wall.1 Trauma, caries, and restorative procedures have been suggested to be contributory factors, but it also occurs as an idiopathic dystrophic change2 causing transformation of normal pulp tissue into granulomatous tissue with giant cells, which resorb dentin. This transformation is thought to stem from chronic inflammation of the coronal pulp3 caused by continuing bacterial stimulation 4.

Mineral trioxide aggregate (MTA) has been widely used as root-end filling material, pulp capping agent and perforation repair material. MTA is a material mainly consists of calcium, silica, and bismuth oxide and barium oxide (provides radio opacity). 5, 6, 7

Several case reports have been treated with Mineral Trioxide Aggregate for nonsurgical and surgical treatment of internal resorption with perforations.8,9 However, few of the cases represented surgical intervention for treating internal resorption with unfavourable crown-to-root ratio.10 So this case report presents a case with a history of trauma 10 years back and root perforation due to severe internal resorption and poor prognosis because of unfavourable crown and root ratio which was being successfully treated with surgical approach and retrograde MTA placement.

CASE REPORT

A 26 year old male patient was reported to the post graduate endodontic department for the treatment of 11 & 21. His medical history was insignificant & his chief complaint was discolouration & broken upper front tooth. Past dental history revealed history of trauma 10 years back while playing cricket. On clinical examination discoloration of 11 and Elli’s class II fracture was seen in relation to 21 .There was Grade II mobility and deep periodontal pocket was present with respect to 11, while the
sensibility test was done, no response was obtained from 11 and 21. Radiographic examination showed extensive internal resorption with root perforation in relation to 11 and apical radiolucency with respect to 22. Based on clinical and radiological examination, the prognosis of 11 was considered to be poor and the patient was advised to go for extraction of 11 followed by root canal treatment of 21 and thereafter implant or fixed prosthetic restoration. The patient completely disagreed with the treatment option and was willing to save 11 also. Therefore, after administering 2% lidocaine with 1:80000 epinephrine (Darupakhsh, Tehran, Iran) as anaesthetic solution, the access cavity was prepared, followed by instrumentation and irrigation of the root canal. While the root canal was instrumented severe bleeding was encountered, so the root canal was dressed with a thick calcium hydroxide paste (Golchak, Tehran, Iran) for two weeks. At the second visit the bleeding had not stopped and surgical interventional was recommended for overcoming the bleeding. The patient was instructed to use 0.2% chlorhexidine mouth wash from 48 h before surgical intervention. A full mucoperiosteal flap was prepared. After raising the flap no bone was observed on the labial aspect of right maxillary central incisor. The canal was irrigated with 2% Chlorhexidine and granulation tissue was removed from within the root canal. After achieving complete haemostasis, half of the canal was filled retrogradly with white MTA, ProRoot MTA (Maillfer, DENTSPLY, Switzerland). The coronal half of the root canal was filled with Calibra® (DENTSPLY Caulk). Then the flap was sutured (4/0 Silk sutures, GC, Tehran, Iran) and the anterior teeth were splinted by wire composite resin for 2 weeks. Patient was given conventional postsurgical instructions in addition to use soft diet during next couple of days after surgery. After 5 days the sutures were removed and the access cavity was restored with composite resin. Two weeks after surgery the splint was removed. 21 was treated with conventional root canal treatment. Twelve months later patient was completely symptom free with normal mobility as well as 2-3 mm gingival pocket depth at all aspects of the tooth and radiographic image showed favourable healing. Two years after surgical intervention, the aesthetic was improved by providing fixed prosthetic restoration.

Fig.1 Preoperative photograph

Fig.2 Flap Raised

Fig.3 MTA Placement
DISCUSSION:

This case represents successful treatment of extensive internal resorption and root perforation by surgical intervention and retrograde placement of MTA.

Internal root resorption in permanent teeth is a complex interaction of inflammatory and resorbing cells, resulting in the formation of multinucleated giant cells and resorption of dental hard tissues 4. Traumatic injury, infection and orthodontic treatment have been suggested as etiological factors for internal resorption 11. In advanced stages, it is often very difficult to distinguish external from internal root resorption4, 11 and aiming at a more predictable outcome some clinicians suggest extraction of the tooth and implant treatment 12. However, maintenance of the tooth, especially in the anterior region, is of utmost importance for the patient from socioeconomic and especially psychological standpoints12, 13.

Several case reports have been published with nonsurgical and surgical treatment of internal resorption and root perforation with MTA.

Different approaches exist in the treatment of a perforating internal resorption. Ideally, nonsurgical treatment of perforating resorption is always advocated. 14 However in present case persistent bleeding was present and was not controlled even after placement of Ca (OH)2 dressing. So surgical intervention followed by retrograde placement of MTA was taken as the treatment of choice.

Root canal therapy combined with surgical correction may be the only option in some cases.15, 16 Moreover in a case series study; Caliskan and Turkun16 have reported 3 out of 28 cases needed surgical intervention for treating internal resorption cases that did not respond to nonsurgical treatment.

MTA is known as a biocompatible material that may induce cementum formation around the furcal perforation in animal study17. The clinical applications to human subjects also have proved that MTA is good for solving the problem derived from perforation-it is not interfered in the presence of moisture and inhibits the activity of bacteria19.

It has been generally accepted that MTA has osteo-inductive and osteo-conductive ability. [5,6] Patel et al19 in their review of literature recommended MTA as the material of choice for treating internal resorption in case of root perforation due to the pathologic process. In the present case, MTA was used as root canal filling material which was placed as root end and root canal filling material.

The importance of short and long time follow-up in teeth with a history of trauma has been emphasized for preventing unfavourable results.19
The present ed case illustrates a successful surgical treatment of a perforating internal resorption that remained asymptomatic for 2 years following treatment. Patient is very satisfied after fixed prosthetic restoration of his very own teeth despite poor prognosis at the early evaluation.

REFERENCES: