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Case Report

ENDOSURGICAL MANAGEMENT OF A LARGE PERIAPICAL LESION IN MAXILLARY ANTERIOR REGION – A CASE REPORT

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A B S T R A C T

Introduction: Clinic success in endodontic treatment, rarely exhibits 66%, if debridation is the only criterion of evaluation. Contamination of the pulpal and periradicular tissues with microorganisms generates infections.
Aim: The aim of this work was the evaluation of the healing of chronic perirapical lesion using MTA.
Material & method: A multi-visit endodontic therapy was done with the affected tooth. Root canal preparation and Obturation was carried out uneventfully. Eventually a backfill was done using thermoplasticized gutta-percha followed bySurgical management of the cyst was done, which included cyst enucleation and apicectomy and MTA placement.
Results: Patients were evaluated with radiographs in the first appointment, at 3 and 6 months after MTA was placed in the canal.
Conclusion: MTA allows complete apical bone healing

INTRODUCTION

Conventional root canal treatment is primarily aimed at eliminating causative bacteria completely. Various treatment modalities are present for large peri-apical lesions ranges from non-surgical root canal treatment or apical surgery to extraction. Non-surgical root canal treatment considered as the first treatment modality for teeth with large peri-apical lesions.When the treatment become unsuccessful in resolving the periradicular pathosis, additional treatment in the form of surgical intervention required.

A residual dental or radicular cyst arises from epithelial remnants stimulated to proliferate by a inflammatory process originating from pulpal necrosis of a non-vital tooth that is no longer present. The natural history begins with a non-vital tooth which remains *in situ* long enough to develop chronic periapical pathosis such as a dental or radicular cyst. Over the years, the cyst may regress, remain static or grow in size.
Present case report is of an individual with a large radicular cyst that happened to involve nearly half of his maxilla.

CASE REPORT

A 28 year old male reported to the department of conservative dentistry and endodontics, sharad pawar dental college, sawangi with the chief complaint of a palatal swelling.

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He gave a history of trauma 2 years back with no history of fractured tooth for which no treatment was sought. Post trauma he had pain in relation to the upper anteriors which subsided without medication. He gave a history of swellingfrom approximately 1 ½ years along with pus discharge from gums. Clinically, there was diffuse palatal swelling extending from the left central incisor to the distal aspect of 2nd premolar, (Fig 1)

Fig 1 Palatal swelling

which was fluctuant on palpation and indicates a loss of integrity of palatal bone.Buccally there was a localized swelling and sinus tract in relation to 25(Fig 2)

Fig 2 Sinus tract with 25

Hard tissue examinationwere seems Discolored 21,22. Vitality Tests were carried out (Heat/ Cold & EPT) which elicited a negative response in relation to 21,22,23,24,25. An occlusal view radiograph.(Fig3)

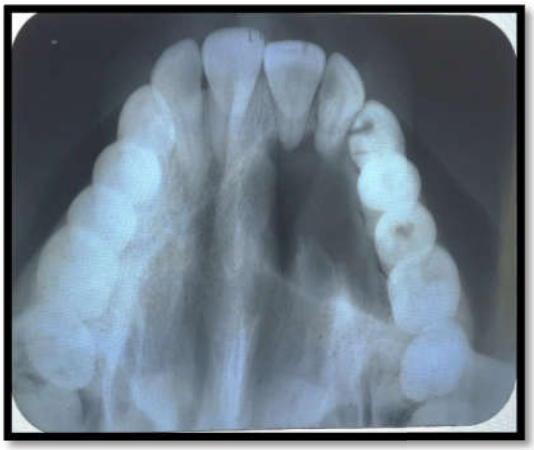

Fig 3 preoperative occlusal radiograph

of themaxilla revealed a well defined periapical radiolucency (approx 6 cm in diameter) involving Left maxillary anteriors . From these above clinical findings we reached a provisional diagnosis of ***infected radicular cyst***in relation to 21,22,23,24,25.

The differential diagnosis included

- Nasopalatine Cyst
- Globulomaxillary Cyst
- Dentigerous Cyst
- Odontogenic keratocyst.
- Infected Radicular Cyst

Histological reports confirmed that it was Infected radicular cyst

Treatment Plan

The treatment plan included root canal therapy with respect to 21,22,23,24,25. Surgicalmanagement of the cyst was planned which included cyst enucleation and apicectomy and MTA placement in(fig 4)relation to 21,22,23,24,25.

Fig 4 Apiciectomy and MTA placement with 21,22,23,24,25

Treatment options for discoloration in relationto 21,22 included walking bleach.

Endodontic Therapy

A multi-visit endodontic therapy was planned with respect to 2122 2324 & 25. Root canal preparation and Obturation was carried out uneventfully in relation to 21 22 2324 & 25. Eventually a backfill was done using thermoplasticized gutta-percha (Calamus dual, Dentsply).

Surgical Phase

For surgical enucleation of the cyst, a buccalapproach was adopted and a full thickness flap was raised (Fig 5 & 6)

Fig 5 6 Incision and Flap reflection

Cyst enucleation was carried outin toto. The histopathology report confirmed the diagnosis of an infected radicular cyst. Immediatepost surgical & 1 yr follow up radiographs are given below (Fig 7,8).

Fig 7 Immediated postoperative occlusal radiograph

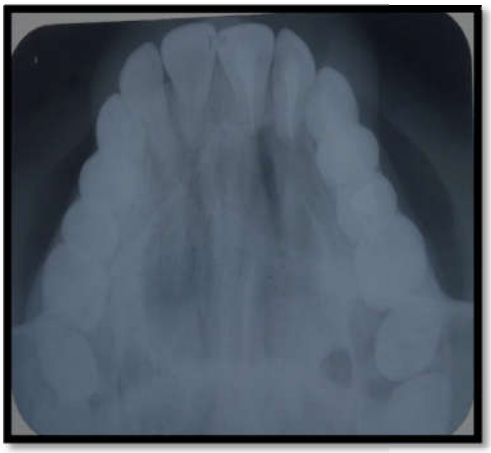

Fig 8 Occlusal radiograph(1 year follow up)

DISCUSSION

Cysts constitute about 17 percent of the tissuespecimens submitted to oral pathology biopsyservices. The periapical cyst is the most common odontogenic cyst about 52.3-70.7 percent of allodontogenic cysts followed by the dentigerous cyst about 16.6-21.3 percent of all odontogenic cystsand odontogenic keratocyst, or OKC about 5.4- 17.4 percentof all odontogenic cysts.(Ali *et al*.2003) The choice of treatmentmay be determined by various factor such as theextension of the lesion, relation with noblestructures, evolution, origin, clinical characteristicof the lesion with cooperation and systemic conditionof the patient .(Ribeiro *et al*.2004) The treatment of these cysts arestill under discussion and many professionals optfor a conservative treatment protocol by means of endodontic technique (Hoen, 1990; Rees, 1997).

Therefore, in large lesions the endodontic treatment alone is not efficient and it should be associated to a decompression or else a marsupialization or even enucleation (Neaverth; Burg, 1982; Hoen *et al*., 1990; Rees, 1997; Danin 1999). In this regard, it issuggested that the treatment of the apical periodontal cysts should be defined according tothe clinical and x- ray evaluations according to eachcase. (Ribeiro *et al*.2004, Valois *et al*.2005) Taking into account the patient's apprehension regarding the presence of a swelling and also the lesions size & extent a surgical procedure was opted. However in this case a root end resectionprocedure would have resulted in a compromised crown root ratio. Hence a treatment plan was formulated to create an apical matrix using MTAand thus preserve the existing crown root ratio. As to the fabrication of apical plugs, Torabinejad andChivian (1999) recommended carrying the MTA with a large amalgam carrier to the root canal and then condensing the material to the apical end ofthe root with pluggers or paper points.(Coneglian *et al*.2007) MTA, whenused as a root-end filling material, showed evidence of healing of the surrounding tissues. Some studies have shown that osteoblasts have a favorable response to MTA as compared to IRM and amalgam. With longer duration, new cementum was found on the surface of the material.MTA is a widely accepted retrograde filling material which is biocompatible, has antibacterial action and reduces microleakage. (Girdea *et al* .2006, Camilleri 2006) MTA plugs of mm thicknesshave been shown to be the most efficientwith respect to root canal sealing ability andresistance to displacement.(Coneglian *et al*.2007,Giuliani *et al*.2002)

The endodontic treatment was carried out in multiple visits with interim calcium hydroxide dressings. The placement of root canal dressings betweensessions in root canal treatment of teeth with chronic periapical lesions is important for reducing bacteria beyond levels obtained with mechanical preparation, particularly by penetration of areas that are unreachable by instruments or irrigation solutions (dentinal tubules and ramifications), Calcium hydroxide has also shownclinical efficiency in reducing exudate due to its hygroscopic properties. Takahashi *et al*, analyzedthe pH and the concentration of calcium ions inthe periapical are and he concluded that at least 2 weeks are necessary for calcium hydroxide bactericidalactivity. (Leonardo *et al* 2002)

Following the build up of the apical matrix a backfill was done using Thermoplasticized Guttapercha (Calamus dual, Dentsply). The lateral condensation methodusing cold gutta-percha may result in voids betweenthe cones and lack of a homogeneous sealingmass.(Tanomaru *et al*.2007) Root canal obturation with injected thermoplasticized gutta-percha as a backfill introduced by Yee *et al*. It has various advantages like;obtaining a homogenous obturating mass andsuccessfully filling irregularities in the root canals,while promoting a better apical seal.(Gençoðlu *et al*.2007,Tanomaru *et al*.2007)

A surgical procedure like enucleation of a large cyst can result in complications like:

- Hemorrhage
- Pain And Swelling
- Ecchymosis
- Infection

CONCLUSION

The clinical case reported in this present article was managed successfully by endodontic therapy with emphasis on debridement, disinfection and three dimensional obturation of the root canal system which was followed by surgery. The authors recommend non surgical management of large periapical lesions in view of clinical evidence present. However in specific situations where the size and extent of the lesion is of critical importance, surgery is a viable option with good prognosis. An endodontist should have thorough knowledge about materials and various treatment options and techniques involved in management of such cases.

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