ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 08, pp.36266-36268, August, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

MANAGEMENT OF EXTERNAL INFLAMMATORY RESORPTION IN MAXILLARY TOOTH WITH 3 YEARS FOLLOW UP: A CASE REPORT

***Prachi Mital, Ashwini B Prasad, Deepak Raisingani, Harshita Gwalani and Harshit Srivastava**

Department of Conservative Dentistry and Endodontics, Mahatma Gandhi Dental College and Hospital, Jaipur, India

ARTICLE INFO

Article History:
Received 26th May, 2016
Received in revised form
23rd June, 2016
Accepted 05th July, 2016
Published online 20th August, 2016

Key words:
External Root Resorption, Trauma, Inflammatory Resorption, Biodentine.

ABSTRACT

A correct diagnosis and an understanding of the etiology and dynamics of the processes involved in tooth resorption is critical to effective management. Some transient trauma induced resorptions require no treatment but should be carefully monitored to check for any complications such as infection. Infection induced tooth resorptions require the removal of the invading micro-organisms by endodontic therapy including intra-canal medication that can eventually facilitate repair of the resorbed tooth structure. The hyperplastic invasive tooth resorptions pose considerable challenges in management due to the complexity and aggressive nature of the resorptive process. With careful case selection and complete inactivation of resorptive tissue, successful management can be achieved. This Case report explains management of external inflammatory root resorption with recently introduced material Biodentine. Radiographical follow up for upto 3 years showed the good healing of the defect and bone formation.

Citation: Prachi Mital, Ashwini B Prasad, Deepak Raisingani, Harshita Gwalani and Harshit Srivastava, 2016. "Management of external inflammatory resorption in maxillary tooth with 3 years follow up: A case report", *International Journal of Current Research*, 8, (08), 36266-36268.

INTRODUCTION

Root resorption is a major dental problem because it affects the root structure of the teeth, negatively affecting the prognosis thereof. Even though physiological root resorption is inevitable; the pathological resorption may lead to tooth loss (Jerin *et al*., 2015). Andreason classified tooth resorption into two broad categories namely – Internal and External. External root resorption is a continuous destructive loss of tooth structure, initiated by a mineralized or denuded area of the root surface (Abdelmoumen *et al*., 2015). It can further be classified into surface resorption, external inflammatory resorption, external replacement resorption, external cervical resorption and transient apical breakdown (Patel S *et al*., 2007). External (Infection – Related Resorption) Inflammatory Root Resorption represents a combined injury to pulp and periodontal ligament (PDL) and where bacteria, primarily located in the pulp space and in dentinal tubules, stimulates osteoclastic activity on the root surface. This type of resorption can affect all parts of the root. Infection – related resorption is typically diagnosed 2 to 4 weeks after injury and appears as progressive cavitations involving the root and adjacent alveolar bone (Ingle *et al*., 2008). The tooth undergoing infection-related root resorption will have increased mobility and have a dull percussion tone. Sometimes the tooth may be extruded. Vitality testing gives no response, and sometimes a sinus tract develops. Various materials like glass ionomer, light-cured resin composite, mineral trioxide aggregates (MTA) are used to treat such resorption (Bogen, Kuttler 2009).A new bioactive cement, Biodentine (Septodont, St. Maur-des-Fosses, France) is a valid option, as it acts as a substitute for dentin. It shares both its indications and mode of action with calcium hydroxide and MTA, without any drawbacks. Biodentine is also used to seal perforations in the furcal area and it induces the repair of the periodontium and new cementum formation (Malkondu *et al*., 2014) (Priyalakshmi *et al*., 2014). The past decade has revealed the use of loupes for endodontics as one of the most routinely used source for better magnification which ranges from 2.5x to 4x. Therefore, the present case report describes the management of right maxillary central incisor with external inflammatory resorption non-surgically under loupes using Biodentine.

****Corresponding author: Prachi Mital***
Department of Conservative Dentistry and Endodontics, Mahatma Gandhi Dental College and Hospital, Jaipur, India

Case Report

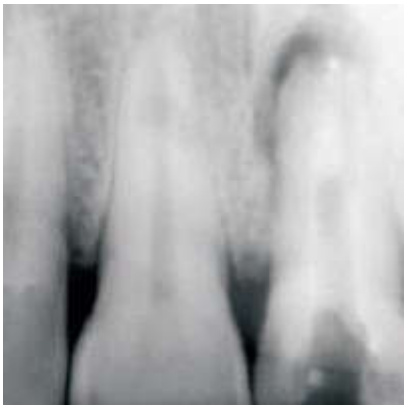
A Fifty five year old healthy male patient reported to the Department of Conservative Dentistry and Endodontics,

Mahatma Gandhi Dental College, Jaipur with pain, mild discoloration and labial gingival inflammation in the maxillary right central incisor. The patient reported a history of trauma, 23 years ago with no relevant medical history. The tooth responded positive to percussion test and negative to thermal and electric pulp tests. An IOPAR revealed radiolucency (3x3mm) along the apical and lateral surface of root and surrounding bone with loss of lamina dura suggesting external root resorption. In relation to tooth and root canal showed in IOPAR wide open apex with irregular borders at the root apex (Figure A). Considering both radiographic and clinical findings, the diagnosis was External Inflammatory Resorption. With the patient's consent, conventional root canal therapy was performed in that tooth (Figure B). The root canal was irrigated with 0.5% sodium hypochlorite (NaOCl), 0.1 ml of 10% Ethylene Diamine Tetra Acetic Acid (EDTA) and 0.9% sterile saline with precautions during cleaning and shaping. Calcium Hydroxide dressing was given for 2 weeks and access cavity was temporarily sealed.

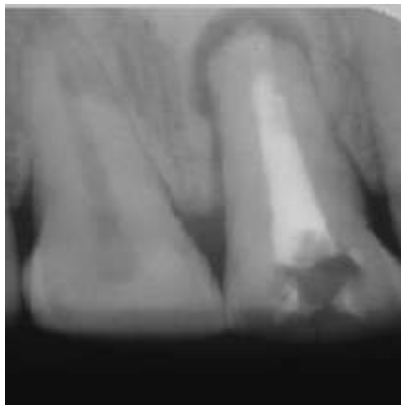
The patient was recalled after 2 weeks and the root canal was re-entered and irrigated alternatively with 0.5% NaOCl and sterile saline. As the patient was asymptomatic, apexification with Biodentine was planned. The root canal was dried with sterile absorbent paper point. Biodentine capsule was mixed according to manufacturer instructions and capsule material with its creamy consistency was inserted into the root canal with a messing gun and, was condensed with finger pluggers to form an apical plug of 5 mm (Figure C). After ensuring complete set of cement (setting time 12 – 15 mins), the remaining canal was obturated using gutta percha with the roll cone technique and access cavity was sealed with glass ionomer cement. Patient was instructed to come for recall visit after 1 week (Figure D). After the treatment, the patient did not follow the regular visits for check-up, but when returned to the department after 18 months, the patient was asymptomatic and reported no pain or swelling during this period. On the same appointment, intra-oral periapical radiographs were evaluated, closure of apex with healing of the resorption defect was

A. Pre-operative IOPAR irt 11

B. Working length determination

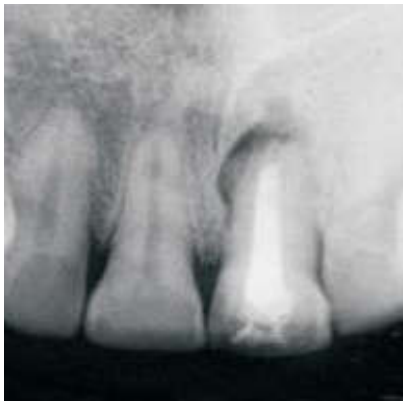


C. Biodentine Plug



D. Remaining root canal obturated with gutta percha

E. 18 months follow up



F. 3 year follow up

appreciated (Figure E). 3 years follow up revealed good healing of both the soft and the hard tissues with indication of bone and root formation with uniform borders (Figure F).

DISCUSSION

Bone undergoes resorption and apposition as part of a continuous remodelling process, the roots of permanent teeth are normally not resorbed. Only the resorption of roots of deciduous teeth, before they are shed is a physiological process (Hammarstrom L, Lindskog S. 1985). Dental trauma is the most common etiological factor for external inflammatory resorption. Etiology for inflammatory root resorption is initial resorption that has penetrated the cementum and dentinal tubules, toxins released from bacteria present in the dentinal tubules and/or the infected root canal diffuses through the exposed tubules to the PDL. This results in continuation of the osteoclastic activity and associated inflammation in the PDL, leading to resorption of adjacent alveolar bone also. The process usually continues and root dentin is resorbed, until the root canal is exposed. This case is interesting from an etiological standpoint as the patient presented with one of the recognized predisposing factors that is traumatic injury corroborating these findings. The various other factors contributing to the persistence and progression of inflammatory root resorption are luxation injuries to the periodontal apparatus (Trope M. 1998) (Naziya Butt *et al*., 2014), root canal infection (Trope M. 2000), inadequate root canal filling and foreign body reaction which can occur due to overextended root canal filling into the periradicular tissues (Koppang *et al.,* 1989).

Biodentine is tricalcium silicate cement with reduced setting time and better mechanical properties compared to MTA (Menezes *et al*., 2005). Raskin et al. appreciated good sealing ability of Biodentine to resist micro-leakage in cavity margins below the cemento-enamel junction (Alhodiry *et al.,* 2014). Guneser et al explained Biodentine having higher push-out bond strength than MTA and considered it to be more reliable perforation repair material even in presence of various endodontic irrigants. Various other studies have showed that Biodentine enhances human dental pulp stem cell proliferation, migration and adhesion abilities (Guneser *et al.*, 2013) (Luo *et al*., 2014). For these reasons, Biodentine was the material of choice for the external repair of root resorption of the maxillary right central incisor in this case. After 3 years of follow-up, no signs or symptoms of existing pathologies were present, and complete radiographic healing with visible lamina dura, periodontal ligament space and complete root apex formation was observed in a fifty-five-year-old patient. To our knowledge this is a unique scenario where a case characterized by previous history of trauma, with subsequent root resorption followed by non-surgical intervention achieved a complete healing.

Conclusion

Proper diagnosis, case selection, and management can lead to the successful outcome and long-term retention of the tooth. Although this case report presents a favourable outcome, further studies are required to support the use of Biodentine to fill external inflammatory defect.

REFERENCES

Alhodiry, W., Lyons, M.F., Chadwick, R.G. 2014. Saliva and blood contamination on the bi-axial strength and setting time of two calcium-silicate based cements: Portland cement and Biodentine. *European Journal of Prosthodontics and Restorative Dentistry* 22: 20-23

Bogen, G., Kuttler, S. 2009. Mineral Trioxide Aggregate Obturation: A review and case series. *Journal of Endodontics,* 35(6):777-790

Ehsen Abdelmoumen, Sonia Zouiten Skhiri, Abdelatif Boughzela. 2015. Use of Biodentine™ in the treatment of invasive cervical resorption: A case report. *International Journal of Research and Development,* 1:11

Guneser, M.B., Akbulut, M.B., Eldeniz, A.U. 2013. Various endodontic irrigants on the push-out bond strength of Biodentine and conventional root perforation repair materials. *Journal of Endodontics* 39: 380-384

Hammarstrom, L., Lindskog, S. 1985. General morphologic aspects of resorption of teeth and alveolar bone. *International Endodontic Journal*, 18(2):93-108

Jerin, Shoba, Nithya, Sheena, Shibu. 2015. Management of invasive cervical resorption with Biodentine: A case report. *Journal of Research in Dentistry* 3: 661

John, I. Ingle, Leif K Bakland, J Craig Baumgartner. 2008. Pathologic Tooth Resorption. *Ingle's Endodontics6*:1358-1382

Koppang, H.S., Koppang, R., Solheim, T., Aarnes, H., Stolen, S.O. 1989. Cellulose fibres from endodontic paper points as an etiological factor in post endodontic periapical granulomas and cysts. *Journal of Endodontics*15: 369-372

Luo, Z, Li, D., Kohli, M., Yu, Q., Kim, S., et al. 2014. Effect of Biodentine on the proliferation, migration and adhesion of human dental pulp stem cells. *Journal of Dentistry* 42:490-497

Malkondu, O., Kazandağ, M., Kazazoğlu, E. 2014. A review on Biodentine, a contemporary dentine replacement and repair material. *BioMed Research International,* ID 160951: 1-10

Menezes, R., da Silva Neto, U.X., Carneiro, E., Letra, A., Bramante, C.M., Bernadinelli, N. 2005. MTA repair of a supracrestal perforation: a case report. *Journal of Endodontics* 31: 212-214

Naziya Butt, Sangeeta Talwar, Sarika Chaudhry, Ruchika Roongta Nawal, Seema Yadav, Anuradha Bali. 2014. Comparison of physical and mechanical properties of mineral trioxide aggregate and Biodentine. *Indian Journal of Dental Research* 25: 692-697

Patel, S., Pitt Ford, T. 2007. Is the resorption external or internal? *DentalUpdate*34: 218-229

Priyalakshmi, S., Ranjan, M. 2014. Review on Biodentine – A bioactive dentin substitute. *IOSR Journal of Dental and Medical Sciences,*13:13-17

Trope, M. 1998. Root resorption of dental and traumatic origin: classification based on etiology. *Practical Periodontics and Aesthetic Dentistry* 10: 515-522

Trope, M. 2000. Luxation injuries and external root resorption - etiology, treatment, and prognosis. *Journal ofCalifornia Dental Association* 28: 860-866.

****