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Getting to The Roots of Endodontic
Towards Asean Economic
Community

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DEPARTEMEN ILMU KONSERVASI GIGI
FAKULTAS KEDOKTERAN GIGI
UNIVERSITAS MAHASARASWATI DENPASAR
Jl. Kamboja 11 A Denpasar
Telp (0361) 7462701 / (0361) 7424079
Email: aecbali16@gmail.com
PROSIDING

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Editor:

Dr. drg Dewa Made Wedagama, Sp.KG

Prof. Dr. drg Latief Moodzto, MS., SpKG(K)

drg M. Rulianto, MS., SpKG(K)

Dr. drg Dian Agustini Wabbyuningrum, SpKG

Dr. drg. Ira Widjastuti, M.Kes., SpKG(K)


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ENDODONTICS SURGICAL TREATMENT OF ROOT CANAL FILLER MATERIAL EXTRUSION: CASE REPORT.

Harris Rahmati, Ratna Meidyawati

1 Post Graduate Student, Department of Conservative Dentistry, Faculty of Dentistry, Universitas Indonesia

2 Staff, Department of Conservative Dentistry, Faculty of Dentistry, Universitas Indonesia

INTRODUCTION

Endodontic surgery is the last choice to heal inflammatory processes in the periapical zone after failure of root canal treatment. This procedure consists of exposing the apex of the involved tooth, achieving curettage of periapical tissues, cutting the apex, ultrasonically preparing said apex and finally placing a suitable material to seal the cavity. Ideally, this procedure should remove irritant agents from the root canal systems and periapical tissues, as well as isolate and seal bacteria which would be unreachable by other means, so as to allow tissue regeneration or reparation.1

The main factor causing extrusion of the root canal's filler material to periapical tissue is instrumentation penetrating or passing through the apical foramen. This produces additional tissue inflammation, neurotoxic effects, and a foreign body reaction.2 In most cases, extrusion of root canal's filler material has not caused clinical problem; while in several cases it can cause not only mild to severe inflammatory reaction in the periapical tissues up to the sinus cavity, but also anesthesis, paresthesia, hypoesthesia, hyperesthesia and dysesthesia as a result of material extruded out of the apex. The consequences of overfilling can result periodontitis apicalis caused by the transport of bacteria; foreign body reactions; usually seen when radiographic examination Management of such cases necessitates either an orthograde root canal re-treatment, or the need for surgical intervention.3

Objectives: The aim of this paper is to report a surgical treatment of extruded root canal filling material.

CASE AND MANAGEMENT

A 48 years old female patient came to the Conservative Dentistry Clinic Universitas Indonesia with main complaint pain in the upper anterior region over the last one months and also gave a history of root canal treatment for the left maxillary incisors 1 year ago. Clinical examination revealed temporary restoration at the palatal tooth 21, using straight sonde and k file obtained fact that root canal filler material was hard and white. The periodontal status of left maxillary incisor was labial palatal and mesial probing depth < 3 mm, but dis-
tal side probing about 5 mm and none were mobile. Radiographs examination revealed that maxillary left incisors had a radiolucent periradicular lesion around a heavy mass of extruded material (figure 1), at the one-third cervical to the middle of the root canal is not filled with root canal filling material. Based on clinical and radiographic examination, diagnosis of granuloma because of extrusion root canal filler on previous treatment. The medical history of the patient was noncontributory. It was then decided to endodontically treatment to seal part of cervical the incisor. Surgical management of the lesion following treatment was mandatory to completely remove the extruded material from the periradicular space. After complete explanation of the treatment procedure, risks and benefits, informed consent was obtained from the patient.

Figure 1. radiolucent periradicular lesion around of extruded material

Endodontic Treatment

At the one-third cervical to the middle of the root canal debridement was done using 2.5% NaOCl irrigation. Obturation was done using thermoplasticized core material using Elements Obturation Unit™ (SybronEndo, Orange, Calif) (figure 2).

Figure 2. Obturation on one-third cervical to middle of root canal

Surgical management

One week after obturation, the patient was scheduled for endodontic surgery. After infiltration local anesthesia using pentocain (parhus) containing lidocaine HCL 20 mg and adrenaline 0.0125 mg, a labial fullthickness mucoperiosteal trapezoidal flap was raised over the root apex. Already existing pathological cortical bone window was expanded until underlying pathology was adequately exposed and sufficient space was available for thorough curettage. A soft lesion was revealed involving the apices left incisors. The lesion was curetted, and all granulomatous tissue was eliminated. The extruded and hard cement like fragment was found immediately beneath the mucosa. The extruded endodontic filling material and its remnants were removed using an excavator (Figure 3).
After decontamination and drying of the root cavities, retrograde obturation was completed placing BioDentine with cement stopper (figure 5). Following granuloma removal, a large osseous defect was evident that had to be filled up using biocompatible material. Allobatan bone graft was used to place it directly into the defect (figure 6). After placement allobatan bone graft the mucoperiosteal flap was interrupted sutured postoperatively (figure 7). Periodontal pack be used to protect surgical area (figure 8). Radiograp post surgery taken (figure 9). One week after surgery patient was constantly monitored postoperatively to remove sutured and initial healing examination (figure 10).

After granuloma lifted all from the apices. Then, 3 mm of root ends were resected perpendicular to the long axes of the roots with a fissure bur (D&Z, Diamant, Germany) at low speed under a continuous saline spray. Root-end preparations were made in inscors teeth using ultrasonic scaler retro tip (Satelec P5Newton) to a depth of 3 mm confirmed with radiographic (Figure 4).

Figure 3. Extruded endodontic filling material and its remnants were removed using an excavator.

Figure 4. Root-end preparation using ultrasonic scaler and confirmed using radiographic.

Figure 5. Retrograde obturation using Biodentine™.

Figure 6. Bone graft using allobatan.
The cytotoxicity due to extruded cement or gutta percha can induce periradicular inflammation, or necrosis of the periodontal ligament, and for this reason overfilling should be avoided as much as possible because it can lead to failure of short term treatment or a negative long term prognosis. According to the American Dental Association, overfilling by more than 2mm past the radiological apex represents a technical error ascribable to over-instrumentation, inadequate measuring, or a lack of an apical stop. Overinstrumentation, in particular, may extrude infected material contained in the canals beyond the apex, interfering, or impeding the healing process of the periapical tissue.¹

The extruded material in this case may be Mineral Trioxide Aggregate (MTA). Extruded MTA may not harden and may be associated with ongoing periapical irritation. Extruded set MTA when encapsulated in the mucosa and not surrounded by bony matrix may act as mechanical irritant on palpation² Biodentine™ new materials tricalcium silicate-based cement restorations. Indications of use biodentine™ the same as the MTA, this is because it has the same basic ingredients, namely tricalcium silicate. This material can be used among other things for apexification case because this material has a good closing ability, it can function as an apical plug, also in cases of perforation because this material has the ability to bond well with dentin. In case resorption root of this material is also able to cover the damage caused to the root and

**CONCLUSIONS**

The presence of foreign materials, such as extruded root-filling materials, in the periapical area might complicate post-treatment healing of the periapical tissue.²
stop further damage. Besides it can also be used as a filler material in the root tip apex resection treatment for this material induces tissue healing periodontium as well as for the case of pulp capping because this material is able to provide a good seal on the exposed pulp.

Allobatan bone graft (BATAN Research Tissue Bank) have biocompatible and not cytotoxic against body tissue, and is able to improve the process of cell differentiation and mineralization of bone (osteoblasts) in the process of bone regeneration.

CONCLUSION

Based on examination result one week post surgery to assure initial healing process, seemed mucoperiosteal flap closes properly, no sign of swelling. Radiographic assessment root end closure using biodentine succesfull to seal apical area. Control every week during the first month and every month to assess post-surgical healing.

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