

CASE REPORT

"Say no to surgery"-nonsurgical management of periapical lesions

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ABSTRACT

Introduction: Periapical lesions develop as sequelae to pulp disease. It is accepted that all periapical lesions should be initially treated with conservative nonsurgical procedures. It is a general belief that large periapical lesions will not heal by nonsurgical endodontic treatment and needs surgical intervention. **Aim:** Non-surgical or conservative management of large periapical lesions. **Method:** Endodontic treatment with the placement of calcium hydroxide as intracanal medicament. **Result:** Enhanced healing of the periapical lesions with successful resolution of signs and symptoms both clinically and radiographically. **Conclusion:** Non surgical endodontic treatment performed with adequate cleaning and shaping, irrigation, canal disinfection and judicious use of intracanal medicament can result in the regression of large periapical lesions.

Keywords: Healing, radiolucency, calcium hydroxide, endodontic treatment

INTRODUCTION

Bacterial infection of the dental pulp may lead to periapical lesions.¹ Periapical radiolucency is the most pronounced clinical hallmark of these lesions.² They are generally diagnosed either during routine dental radiographic examination or following acute pain in a tooth.³ When endodontic treatment is performed to accepted clinical standards, a success rate of around 90% can be expected.⁴ The ultimate goal of endodontic treatment should be to return the involved teeth to a state of health and function.⁵ All inflammatory periapical lesions should be initially treated with conservative nonsurgical procedures.⁶ Surgical intervention is recommended only after nonsurgical techniques have failed.⁷ Besides, surgery has many drawbacks, which limits its use in the management of periapical lesions.^{8,9} Various nonsurgical methods have been used in the management of periapical lesions including conservative root canal therapy without adjunctive treatment, passive decompression of the lesion, active non surgical

decompression technique using the Endo-eze vacuum system, needle aspiration of the cystic fluid using a buccal palatal approach, aspiration through the root canal, methods using intra canal calcium hydroxide, lesion sterilization and repair therapy (LSTR) and apexum procedure.¹⁰ A high percentage of 94.4% of complete and partial healing of periapical lesions following nonsurgical endodontic therapy has also been reported.¹¹ This article presents case reports of non-surgical management of large periapical lesions.

CASE REPORT 1

A 20-year-old male reported to the Department of Conservative Dentistry and Endodontics, Regional Dental College, Guwahati with a swelling in his left mandibular region. He reported a history of pain in the lower left region 1 month back. He consulted a general dentist, where caries excavation in the left mandibular first molar (tooth 36) was done followed by temporary restoration (**Figure 1**). On intraoral examination, there was a hard swelling of the buccal vestibular cortex in the concerning region covered with normal mucosa. Radiographic analysis indicated the presence of a large periapical radiolucency involving distal and mesial roots along with the furcation area with respect to 36. Root canal treatment of 36 was planned and informed consent was obtained from the patient. Rubber dam was applied and the access cavity was prepared. A haemorrhagic, purulent exudate was found from the distal canal of tooth 36. Working length was determined both electronically and radiographically. Cleaning and shaping was performed with rotary files up to X2 (Protaper Next) along with copious irrigation with 3% sodium hypochlorite. Thereafter, Calcium Hydroxide paste was placed as an intracanal

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medicament which was replaced after every 3 weeks for 3 and 6 months (**Figure 2**). When on examination after 6 months resolution of periapical radiolucency was observed. As the teeth showed no pain on percussion, soft tissues were found healthy and the canals were dry, obturation was completed. On examination after 9 months the radiographs showed complete bony healing with well-defined trabecular (**Figure 3**).



Figure 1 Preoperative radiograph



Figure 2 Calcium hydroxide placement



Figure 3 Postoperative radiograph (follow up after 9 months)

CASE REPORT-2

A male patient 24 years of age, reported to the Department of Conservative Dentistry and Endodontics, Regional Dental College, Guwahati with the chief complaint of swelling and intermittent pain in relation to upper front teeth. A history of accident 2 years back involving trauma to tooth was recorded. There was slight bearable pain since one year and swelling since 2-3 days which has been increasing progressively. On oral examination, a small swelling was seen on the labial aspect with respect to 11 and 12. On radiographic examination, a large radiolucency in the periapical area was seen in relation to 11 and 12 (**Figure 4**). Pulp vitality showed 11 and 12 to be non-vital. Root canal treatment was planned with respect to 11 and 12. Rubber dam was applied and access opening was done. Pus drainage was seen through the root canals. After thorough irrigation, tooth was sealed with a temporary restoration. In the following visit, the working length estimation and a thorough chemo-mechanical preparation were done using Ni-Ti K files. The root canals were irrigated with 3% sodium hypochlorite and the canals were dried with sterile paper points. Later, calcium hydroxide paste was placed in the root canal as intracanal medicament every 3 weeks for 3 months (**Figure 5**). Obturation was then completed with gutta percha using cold lateral condensation technique after ensuring that the canals were dry. Resolution of periapical radiolucency was observed on radiographs at 3, 6, 9 months follow up visits (**Figure 6**).



Figure 4 Preoperative radiograph



Figure 5 Calcium hydroxide placement



Figure 6 Postoperative radiograph (follow up after 9 months)

DISCUSSION

Management of large periapical lesions has been a subject of debate among various researchers for a long time as the treatment options range from non surgical endodontic treatment with long-term $\text{Ca}(\text{OH})_2$ therapy to various surgical interventions. A thorough instrumentation along with copious irrigation paves the path for a successful root canal treatment. Intracanal medicaments help in disinfecting bacteria contaminated canal. Calcium hydroxide, is a routinely used intracanal medicament and as an interappointment dressing for management of periapical lesions, non-surgically. It is a strong alkaline substance, with a pH of approximately 12.5. In an aqueous solution, calcium hydroxide dissociates into calcium and hydroxyl ions. It is used in various clinical situations such as to promote apexification, to repair perforation, to enhance healing of periapical lesions, to control root resorption, and in the weeping canals. A calcium hydroxide-based paste was used as an antibacterial dressing and to enhance the healing of the periapical lesions in the above mentioned cases. It is suggested that the action of calcium hydroxide beyond the apex may be fourfold: (i) anti-inflammatory activity; (ii) neutralisation of acid products; (iii) activation of the alkaline phosphatase; and (iv) antibacterial action. It has also been reported that treatment with calcium hydroxide resulted in a high frequency of periapical healing, especially in young patients.¹² In the above cases radiographic signs such as density change within the lesion, trabecular reformation and lamina dura

formation confirmed healing, particularly when associated with the clinical finding that the tooth was asymptomatic and the soft tissue was healthy.

CONCLUSION

Non surgical endodontic treatment performed with adequate cleaning and shaping, irrigation, canal disinfection and judicious use of intracanal medicament can result in the regression of large periapical lesions. However, longer follow up periods are extremely recommended to ascertain that complete healing has taken place.

Conflict of interest: None.

Author declaration: We declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors.

Consent from patient: Taken.

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