

Nonsurgical healing of a periapical lesion with metapex as an intracanal medicament: A case report¹Dr Amol Badgire, Professor, PG Guide, MIDSR Dental College, Latur²Dr Ramchandra Kabir, HOD, PG guide, MIDSR Dental College, Latur³Dr Pooja Kendre, PG student, MIDSR Dental College, Latur⁴Dr Anita Kale, Professor, PG guide, MIDSR Dental College, Latur**Corresponding Author:** Dr Pooja Kendre, PG student, MIDSR Dental College, Latur**Citation of this Article:** Dr Amol Badgire, Dr Ramchandra Kabir, Dr Pooja Kendre, Dr Anita Kale, “Nonsurgical healing of a periapical lesion with metapex as an intracanal medicament: A case report”, IJDSIR- March – 2024, Volume –7, Issue - 2, P. No. 39 – 42.**Copyright:** © 2024, Dr Pooja Kendre, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.**Type of Publication:** Case Report**Conflicts of Interest:** Nil**Abstract**

Nonsurgical management of a large periapical lesion with Metapex as an intracanal dressing and root canal therapy. Periapical lesions typically develop in non-vital teeth as a result of chronic pathogenic microorganism aggression into the root canal, and can appear radiolucent on periapical radiographs. Depending on the individual, treatment for such lesions can be non-surgical or surgical. In the era of minimally invasive dentistry, non-surgical endodontic approaches are highly recommended for periapical healing. This case report demonstrates the healing of a large periapical lesion with metapex as an intracanal medicament at various time intervals, followed by root canal therapy.

Keywords: Root Canal Therapy, Non-Vital Teeth, Dentistry.**Introduction**

Periapical lesions are caused by a severe inflammatory response to microorganisms around the tooth root and

root canal. Periapical lesions may perforate into the oral cavity, affecting hard tissue or the maxillary sinus. The infection around the root and tooth causes bone resorption due to local osteomyelitis. Furthermore, cellulitis in soft tissue that causes swelling in the face is a common symptom of severe local jawbone osteomyelitis. Traumatic injuries to the teeth can result in granulomas or cysts associated with periapical lesions.¹

Radicular cysts are inflammatory cysts that form in the oral cavity at the apices of teeth with necrotic pulp. They can also be found on the lateral aspects of the roots in relation to lateral accessory root canals. The most common odontogenic cyst of the oral cavity is the periapical (radicular cyst), which develops from epithelial residues (Malassez cell rests) in the periodontal ligament as a result of inflammation, usually after the death of the dental pulp. Radicular cysts are associated with non-vital teeth and are commonly visible

on radiographs. This cyst remains the same size or grows larger over time. Radicular cyst with a male/female ratio of 1.35:1. The lesion was most commonly seen in patients aged 11 to 30 years. Maxillary anterior teeth were the most commonly affected (50.68%).²

The following non-surgical methods can be used to treat a periradicular lesion: aspiration-irrigation technique, tissue repair, decompression therapy, aspiration-root canal therapy, and calcium hydroxide method. According to Murphy (1991), non-surgical endodontic therapy has a success rate of 94.4% for complete or partial healing. Up to 85% treatment success has been reported for periapical lesions following endodontic therapy alone, implying that most periapical lesions, including abscesses, respond to endodontic therapy alone, as discussed by Nair (1999).³

Case Report

A 40 year-old female patient was reported to the Department Of Conservative Dentistry and Endodontics at MIDSR Dental College and Hospital, with pain and palatal swelling in the maxillary left anterior region. Patient had a history of trauma to her anterior teeth about 2 years ago. The color and appearance of buccal mucosa was normal. There was no gingival or extraoral swelling. A periapical radiograph revealed a large periapical radiolucency (~1.5×1.5cm in diameter) apparently involving the apices of teeth #22 Fig1(A). A non surgical endodontic treatment was planned as it being the most conservative approach, with the continuous monitoring of the lesion at various follow up time period. The treatment plan was explained to the patient. In the first appointment access opening was performed and there was a suppurative yellowish fluid was draining out of the access cavity. After the pus has drained completely, working length was determined Fig1 (B) and cleaning and shaping was done using 3% sodium hypochlorite

and normal saline and step back preparation done till 70 K file. At the point when the drainage stopped totally, calcium hydroxide dressing was placed Fig1(C). And After 7 days metapex dressing was placed Fig1(D). The medicament was reestablished multiple times in the term of 1.5 months. After 2 months, a dynamic involution of periapical radiolucency was observed radiographically. The tooth was then obturated after confirming the canal is dry. Obturation was done with gutta percha cones and zinc oxide eugenol sealer using lateral condensation technique, Fig1(F) sealing the cavity with a temporary filling material which was later replaced by composite resin filling material. Patient stayed asymptomatic during post-treatment recalls. 3 months post treatment radiographic follow up uncovered practically complete goals of endodontic treatment with nearly complete involution of periapical radiolucency.

Discussion

Necrotic pulps serve as nidi for growth of microbes. These organisms then release toxins into the periapical region, causing the inflammatory response and bone resorption. Inflammatory endodontic lesions can range in size from 5 to 8 mm in diameter. Lesions up to 10 mm in diameter are classified as granulomas, while those larger are classified as cysts. There are various nonsurgical and surgical procedures available for managing endodontic lesions. The key factors in achieving a successful outcome are cleaning and shaping the root canal, as well as microbial eradication. Nonsurgical root canal treatment should be done first, which has 42 to 74% healing of lesions.⁴

Radiographic features show a well-defined unilocular radiolucency periapical to a pulp-involved tooth. A radicular cyst's margin is radiopaque and has hyperostotic borders that continue into the lamina dura. However, in infected or rapidly enlarging cysts, the

radiopaque margin may be absent or poorly visible. The chronic radicular cyst may cause the resorption of the offending tooth root. Despite being infected, the present case had a clear radiopaque border and no root resorption, which helped to confirm the provisional diagnosis of radicular cysts.⁷

Full debridement is difficult with root canal irrigation, which was accomplished with 3% NaOCl, but it should be accompanied by the use of an intracanal calcium hydroxide drug to reduce bacterial count. *Candida albicans* is commonly found in endodontic insusceptible and secondary infections, as well as in periradicular lesions. 3% NaOCl has shown some bactericidal activity against *C. albicans* and *E. faecalis*. Calcium hydroxide medicament has obviously gained notoriety as an intracanal medicament due to its high alkalinity and bactericidal effects, including the elimination of bacterial endotoxins. It is proposed that the base time should be 2-3 weeks for $\text{Ca}(\text{OH})_2$ to stay in the root canal, as this may impact its sufficiency depending on the scattering of the hydroxyl particles at proper fixations in the root canal.⁶

A definitive fix occurs when calcium hydroxide diffuses through the apical foramen, activating abundant inflammatory activity to cut off the cystic epithelial lining, followed by connective tissue invagination. Furthermore, Souza et al. proposed that calcium hydroxide has fourfold activity after peaking: anti-inflammatory activity, acid neutralization, alkaline phosphatase activation, and antibacterial action. Periapical wounds slowly fill with fibrovascular granulation tissue as activated macrophages extract damaged periapical tissue.⁶

In the present case report, the the large periapical cyst like lesion were successfully treated using endodontic treatment and metapex as intracanal medicament

between the appointments. Approximately 70% of periapical lesions appear to resolve within two years of treatment. Metapex, a silicone oil-based calcium hydroxide paste with 38% iodoform, is a well-known intracanal dressing. It contains silicone oil as a vehicle and has a pH that is said to be effective in killing *Enterococcus faecalis*. Oily vehicles are said to enhance calcium hydroxide's antimicrobial properties against *Enterococcus faecalis* and other bacteria. Calcium hydroxide's antimicrobial effects are associated with its high pH of 12.5, which is said to have a destructive effect on cell membranes and protein structures.⁵

Surgical treatment should have included removal and possibly apicectomy of the diseased periapical tissue. For children an operation will normally be painful and more stressful than traditional endodontic treatment. Truth be told, apicectomy will decrease the usable length of a young permanent tooth, hampering the proportion of the crown & root. This entanglement would be deflected by following a traditionalist technique that would permit healing and develop mature configurations of the root canal and apices.

Conclusion

Management of radicular cyst is dependent on a variety of factors such as the size of the lesion, the individual's physical health, age, mental health, and so on. In this case report, the radicular cyst was managed nonsurgically with the help of proper intracanal medication, so we conclude that surgical treatment is indicated only when nonsurgical treatment is not practically possible or unlikely to provide the desired outcome.

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Legend Tables

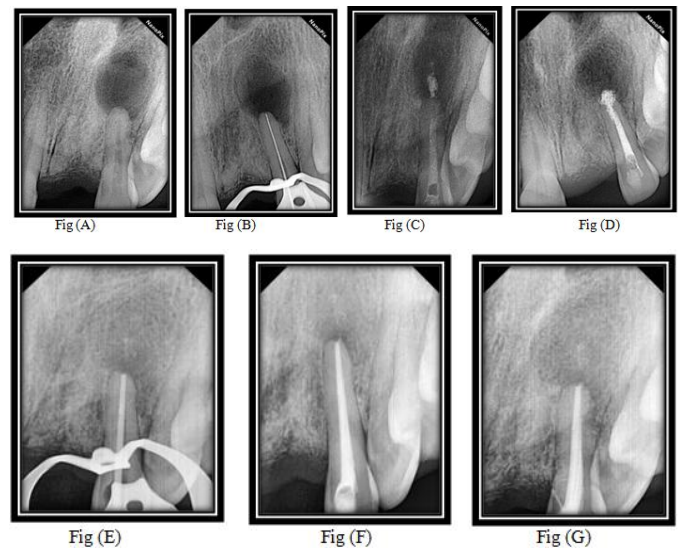


Fig.1: Showing a step-by-step procedure of cyst treatment. A) Pre-operative Radiograph B) Working length Determination C) CA (OH) 2 Dressing given for 7 days. D) Metapex Dressing E) Master Cone selection F) Post operative G) complete healing of periapical bony lesion after 3 month follows up.