

Case Report

Non-surgical management of a periapical lesion with Metapex as an intracanal medicament: A case report with 6 months follow up

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ABSTRACT:

Background: In a non-vital tooth, periapical lesion can occur through an inflammatory response. The treatment of choice for these periapical lesions should be a conservative non-surgical approach. Non-surgical endodontic therapy has shown a success rate of 94.4% with complete or partial healing. **Case description:** The present clinical case shows a large periapical lesion in 14 years old female patient which was healed with non-surgical approach using Metapex (which is a calcium hydroxide and iodoform paste) as an intracanal medicament. **Conclusion:** Healing was seen after 6 months without invasive treatment.

Keywords: Periapical lesion, Metapex, Non-surgical management.

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INTRODUCTION

A non-vital tooth produces an inflammatory response at the root apex which later forms a periapical disease. Due to the pulp necrosis, the root canal acts as an area of growth for microbes. The main goal of root canal therapy is to eliminate the microbial growth emerging through the apical foramen and prevent its further spread.^[1] The primary aim of any treatment should be a painless and conservative approach.^[2]

Different non-surgical ways of managing a periradicular lesion include orthograde root canal therapy, decompression therapy, method using calcium hydroxide, aspiration-irrigation technique, lesion sterilization and tissue repair.^[3] Non-surgical endodontic therapy have shown a success rate of 94.4% with complete or partial healing as described by Murphy (1991).^[5] Up to 85% treatment success has been reported for periapical lesions after endodontic therapy alone which implies that most periapical lesions including abscesses respond to endodontic therapy alone, as also discussed by Nair (1999).^[4]

Mostly host defense prevents the infection spread in the canal, to the bone. If the circulation is

compromised, host defense mechanism cannot reach the microbes residing inside the tooth in the necrotic condition of the root canal.^[5] In such cases, a bacteria free canal at the time of obturation is the primary aim and to achieve this calcium hydroxide is used as therapeutic medication due to its high alkalinity tissue dissolving effect, causes induction of repair by hard tissue formation and bactericidal effect.^[6] To improve the properties of calcium hydroxide the mixture of other substances have been added. These substances can be vehicles that can speed up ionic dissociation, substances that aid the filling of pulpal cavity due to their consistency, substances used as antimicrobial medium and media that enhance radiopacity. Metapex, a combination of calcium hydroxide and 38% iodoform using silicone oil as base is very popular.^[7]

CASE REPORT

A 14 year old female patient reported to the Department of Paedodontics and Preventive Dentistry, Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow with the chief complaint of broken tooth in upper front region. Patient had history of fall from bicycle about 4 years

back due to which its crown chipped off. On clinical examination, the maxillary right central incisor, 11, was found non-vital and discoloured which was suggestive of Ellis Class IV with crown fracture. The tooth was non-tender. No response was observed on pulp vitality testing with digital electronic pulp tester. An IOPAR of tooth 11 revealed diffused periapical radiolucency (Figure 1). Non-surgical endodontic therapy with Metapex was planned.

Local anaesthetic, 2% lignocaine hydrochloride with adrenaline 1:80,000 (Lignox 2%) was administered. Rubber dam isolation was done. Access cavity was prepared. Working length was determined with apex locator and confirmed with radiograph. Cleaning and shaping with 2% hand files following step back technique was done using copious irrigation with 5.2% NaOCl and normal saline in between instrumentation. Triple antibiotic paste was used as an intracanal medicament and cavity was sealed with Cavit. Patient was prescribed medications for 5 days.

After a week, tooth was re-entered. Irrigation of canal was done with normal saline and dried with paper points. An intracanal medicament, Metapex was used and extruded periapically so as to heal the periapical lesion and access cavity was sealed with Cavit. Patient was recalled after 1 month, 3 months and 6 months intervals. On every recall visit, an IOPAR was taken to evaluate the healing of periapical lesion. After 1 month slight regression of periapical lesion was seen (Figure 2) but after 3 months, regression in the lesion was evident (Figure 3). Finally after 6 months follow up, IOPAR revealed complete healing of the lesion (Figure 4). Thus, obturation was done with gutta-percha using endomethasone as root canal sealer following lateral condensation technique (Figure 5). Cavity was sealed with Glass Ionomer Cement (GIC) and core build-up was done with composite resin followed by Porcelain fused to metal (PFM) crown and patient was quite satisfied with the treatment.

Figure 1: PRE - OP IOPAR.

Figure 2: IOPAR AFTER 1 MONTH.

Figure 3: IOPAR AFTER 3 MONTHS.



Figure 4: IOPAR AFTER 6 MONTHS.

Figure 5: IOPAR AFTER OBTURATION.



DISCUSSION

Trauma to the teeth and supporting structures can occur due to falls or accidents. These traumatic injuries are more common in boys as compared to girls with ratio varying from 2:1 to 3:1. Maxillary central incisors are the most commonly affected teeth followed by maxillary laterals and molars being posteriorly placed are the least commonly affected.^[8] In this case a complicated crown fracture is seen i.e. involving the pulp. Ellis and Davey classified these kind of fractures as class IV fractures. Further on

taking a radiograph, periapical lesion was seen which can be due to presence of necrotic pulp.^[9] Necrotic pulp act as nidus for microbial growth and these organisms subsequently release toxins into the periapical region that trigger the inflammatory reaction and bone resorption.^[10] Periapical lesions may vary in size from 5 to 8 mm in diameter. Granulomas are considered till 10 mm diameter and larger ones as cysts. Various nonsurgical and surgical procedures can be chosen for management of endodontic lesions. Cleaning and shaping of the root

canal and eradication of microorganisms are the key factors in achieving a successful outcome.^[11]

In younger individuals, surgical choices are considered unpleasant and more aggressive than nonsurgical endodontic treatment.^[12] Further, the less-invasive nature of such procedure reduces psychological trauma and increases patient compliance.^[11] Due to its better disinfection potential, mixture of $\text{Ca}(\text{OH})_2$ and iodoform paste i.e. Metapex was used as an intracanal medicament. In this case, resolution of the lesion took 6 months after medicament was placed. Radiographical assessment of bone healing was evidenced by increased density, trabecular reconstruction, and lamina dura formation. Coronal leakage could compromise prognosis and hence should be avoided. So after obturation, bonded composite restorations were placed immediately. Metapex paste was selected as the intracanal medicament as there is ample literature evidence for its ability to heal periapical inflammation and form apical calcific barrier.^[12] To effectively eliminate bacteria in the dentinal tubules, intracanal medication should remain in the canal for at least seven days. The antibacterial effect is due partly to its high pH 12 of $\text{Ca}(\text{OH})_2$, which neutralizes the acidic medium and prevents the growth and survival of many oral bacteria. Calcium hydroxide (CH) disrupts the microbial cell wall lipopolysaccharides in gram-negative organisms and hampers membrane transport mechanisms, resulting in cell death. The primary advantage of CH is its ability to kill microorganisms in the absence of direct contact by absorbing the CO_2 required for bacterial growth and by releasing hydroxyl ions that diffuse into dentinal tubules.^[13]

Metapex contains 60% CH and 38% iodoform in silicone oil. Silicone oil acts as a vehicle and iodoform increases the availability of the active agent for a prolonged duration. Not only is iodoform effective as a medicament, it has also been shown to be host-tissue friendly and is a potent antibacterial agent. Hence, often used as a resorbable obturating material in primary teeth.^[13]

CONCLUSION

In this case, non surgical intervention using Metapex as an intracanal medicament was found to be effective in treating the periapical lesion.

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