

## Management of large periapical lesion with Non surgical endodontic treatment – A case report

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**Abstract:** Microbial invasion into the root canal system either through caries, trauma or any other developmental anomaly result in pulpal inflammation and if left untreated subsequently develops pulp necrosis. In presence of pulpal irritants periapical tissue responds by formation of zones of fish. Further progression of inflammation in periapical tissue leads to formation of large periapical lesion. Such cases can be treated both surgically and non- surgically. The present case report highlights the role of triple antibiotic paste in resolution of large periapical lesion by non surgical endodontic modality

**Conclusion:** Non Surgical Endodontic treatment is the first choice for management of Large periapical lesion. Triple antibiotic paste as an intracanal medicament promotes faster healing of periapical lesions

**Key Word:** Periapical lesion, Ttriple Antibiotic paste, Lateral condensation.

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### I. Introduction

Bacterial entry into root canal system disrupts the defence mechanism of the pulp tissue resulting in pulpal inflammation and further necrosis and periapical inflammation. The primary goal of endodontic treatment is to eliminate the microbial load from the root canals and possibly prevent reinfection by sealing it with inert root filling material.<sup>1</sup> When thorough disinfection of entire root canal is achieved periapical healing is expected as osseous regeneration takes place. Large periapical lesion can be cyst or granuloma. The debate arises between endodontist and oral surgeon on management of such large periapical lesion. Surgeons believe in curetting out the cyst like lesion, while endodontist emphasize on non surgical endodontic therapy for such cases. Several studies in literature have exhibited healing of large periapical lesion communicated with root canal by simple endodontic therapy.<sup>2</sup>

Role of intra-canal medicament cannot be neglected in such cases. Calcium hydroxide , chlorhexidine and triple antibiotic paste have shown promising results in resolution of periapical lesion.<sup>2-4</sup> The present case report highlights the importance of irrigation and adequate disinfection of root canal by triple antibiotic paste and suggests that surgical intervention for elimination of large periapical lesion is not necessary. Irrespective of the size of lesion every case should be given an opportunity to heal by conservative means. If it fails surgical enucleation remains the last resort.

### II. Case Report

A 20 year old male reported to Department of Conservative Dentistry and Endodontics complaining of pain and swelling in lower anterior region of jaw since two months. Patient's medical record showed history of road traffic accident 10 years back with non significant medical history. On clinical examination, there was buccal swelling associated with 31 covered with normal mucosa and slight discolouration of teeth. Tenderness on palpation and percussion was noted with 31 along with normal mobility. Vitality test was negative with 31 while all adjacent teeth tested positive suggestive of vital teeth. Radiographic examination revealed irregular large periapical radiolucency with apex of 31 measuring 8 \* 10 mm with no corticated border. (Figure 1) It was diagnosed as symptomatic apical periodontitis and non surgical endodontic treatment was planned. Emergency access opening with 31 was done under rubber dam and purulent discharge was noticed oozing out from the canal. Patency filing with #10 k file was done and working length was estimated with help of an electronic apex locator. The canal was further instrumented till rotary Protaper F2 under copious irrigation with diluted 3% sodium hypochlorite and saline. The canal was dried with paper points and access was sealed with temporary cement. After 3 weeks, persistent discharge of pus was seen from the canal. Hence different treatment strategy was adopted. Canals were irrigated with 1ml of 17 percent aqueous EDTA and activated with EndoActivator for 30seconds to remove smear layer. 3 percent sodium hypochlorite was again flushed and activated for another 30 seconds. Triple antibiotic paste as an intra-canal medicament was considered. Canals were dried with paper points and coated with mixture of 1:1:1 ciprofloxacin, metronidazole and minocycline (100mg in 0.5ml total

volume). Three dressing of the paste was given over period of three months till dry canal was achieved. After final rinse of 3 percent sodium hypochlorite, canal was dried and obturated with gutta-percha and Ah plus sealer by using lateral condensation technique.(Figure 2) Access cavity was sealed with composite restoration. Periodic follow up after two years revealed resolution of periapical lesion.(Figure 3)



Figure 1: preoperative Radiograph showing large periapical lesion



Figure 2: post obturation radiograph after 3months of start of therapy



Figure 3: 2 year follow up showing resolution of lesion

### III. Discussion

The treatment modality for large periapical lesion include endodontic therapy, decompression technique , aspiration technique , apexum procedure and surgical enucleation. Accurate diagnosis is must for success of each treatment. Large periapical lesion can often be true or pocket cyst or a granuloma. True cyst are often entirely lined by epithelium , while pocket cyst although enclosed by epithelium are open to root canal via apical foramen or lateral canal.<sup>5</sup> The progression and growth of these cysts are slow but it results extensive destruction of surrounding osseous structures if left unattended.

Literature suggests that pocket cyst and granulomas occurring in oral cavity can be treated by simple endodontic therapy alone, while true cyst requires surgical intervention owing to its self sustaining nature.<sup>6</sup> The larger the size of the lesion more likely it to be a true cyst and hence endodontic therapy alone would be inadequate. Hence distinguishing the case from granulomas and true cyst is of utmost importance to devise an appropriate treatment plan.

Non surgical endodontic treatment should be preferred modality over surgical method as it avoids possible damage to important vital structures around the lesion, eliminates fear, apprehension, pain and potential medical complication associated with the procedure. Should the conservative approach fail then, the surgical approach must be considered.<sup>5</sup>

Endodontic microbes and their released toxin induce inflammatory response in periapical tissues. Complete disinfection of the canal would eliminate the microbes that are responsible for periapical lesion. Use of rubber dam eliminates oral bacterial contamination and use of concentrated irrigants like Sodium Hypochlorite causes irreversible inactivation of bacterial enzymatic sites thus inhibiting its growth. Moreover in present study we used triple antibiotic paste (TAP). Deeper aspect of infected dentinal tubules in root canal harbour obligate anaerobic bacteria, which can be eliminated by Metronidazole in TAP. As endodontic microflora is complex hence minocycline and ciprofloxacin were needed to sterilize the infected root dentine.

Research has shown that TAP has successfully helped in elimination of routine endodontic pathogen both in vitro and in vivo. Moreover it has been used in regenerative endodontic procedures and in cases of large periapical lesion as well.<sup>7</sup> In present case fresh mixture of three antibiotics in 1:1:1 concentration (0.5ml total volume) with polyene glycol as vehicle was introduced and replaced after every month for period of three months. Minocycline has shown to result in potential discoloration of tooth. Cefaclor has been suggested as an alternative to minocycline in literature.<sup>8</sup> Discoloration if any is limited to radicular portion of the root and in present case coronal seal was achieved with composite.

Healing of periapical tissue was evident from two year follow up radiograph. Decrease in size of radiolucency and absence of sign and symptoms suggests healing. Similar results have been obtained in a study conducted by Calskan, he reported 73.8% success rate in 42 non-surgically treated teeth with large cyst like lesion. Removal of causative factor shows potential of healing of periapical lesion with process of inflammation and repair eliminating need of surgical procedure.<sup>5</sup>

#### **IV. Conclusion**

Non surgical endodontic therapy should be considered as first line of treatment irrespective of size of periapical lesion. Frequent change of intracanal dressing with TAP has shown reduction in size of radiolucency owing to its antimicrobial property thus promotes periapical healing.

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