

NON SURGICAL MANAGEMENT OF LARGE CYST LIKE LESION USING TRIPLE ANTIBIOTIC PASTE

ABSTRACT

Bacteria, their toxins, immunologic agents, tissue debris and products of tissue necrosis from the pulp reach the periapical area through various foramina of the root canals and give rise to inflammatory and immunologic reactions. Calcium hydroxide was the usual intra canal medicament of choice. However with no improvement with calcium hydroxide the medicament was changed to triple antibiotic paste. This case report describes successful non surgical management of a large cyst like lesion using triple antibiotic paste

Non-surgical, cyst like

1. INTRODUCTION

One of the most common reasons for discoloration and necrosis of pulp in young anterior teeth is trauma. Periapical lesions are usually a sequel to pulp diseases. Large periapical lesions in anterior teeth are usually associated with trauma¹. Bacteria, their toxins, immunologic agents, tissue debris and products of tissue necrosis from the pulp reach the periapical area through various foramina of the root canals and give rise to inflammatory and immunologic reactions.

Endodontic therapy is mainly aimed at elimination of these microorganisms and prevention of infection. Calcium hydroxide was the most commonly used intra canal medicament. However recent evidences have shown the limitations of calcium hydroxide. Due to the complexities of the root canal infection, it is difficult for any single antibiotic to effectively disinfect the canal. Thus comes the role of a combination of antibiotics and the most promising appears to be metronidazole, ciprofloxacin and minocycline.² The present case demonstrates the use of triple antibiotic paste as an effective intra canal medicament for treatment of large cyst like lesions.

2. CASE REPORT

A twenty old female patient was referred to the department of conservative dentistry and endodontics, with discoloration in her upper right central incisor and also with a retention wire in her upper arch post her orthodontic treatment. History revealed that she had a fall almost 8 yrs back. Radiographic examination revealed a huge cyst like periapical lesion associated with right central and right lateral incisor (Fig 1). Vitality testing with dry ice (RC Ice, Prime Dental) indicated both the teeth were nonvital. After obtaining an informed oral and written

consent, endodontic treatment was initiated in both the central and lateral incisors following isolation with rubber dam. Both the teeth, mainly the central incisor showed lot of discharge. The working length was measured with apex locator (ROOT ZX MORITTA) and later confirmed with radiographs. Biomechanical preparation was carried out and the central incisor was widened to an apical size of 50 and lateral incisor to an apical size of 40. Irrigation was carried out with 3 % sodium hypochlorite and saline . An intra canal dressing of calcium hydroxide was placed in the canals and the access opening was sealed with temporary dressing (cavit g). The calcium hydroxide was changed every fifteen days for a period of one month. After one month when the dressing was removed the discharge was still persistent in the central incisor. Hence it was decided to place triple antibiotic paste (metronidazole , ciprofloxacin and minocycline) in both the teeth. After one month the discharge ceased, however a fresh dressing of triple antibiotic paste was placed. At the end of the third month from the beginning of the case both the teeth showed no discharge and finally obturation with gutta percha cones and SealApex (SybronEndo) as sealer using lateral condensation technique (Fig 2) was carried out. A week later crowns were prepared on both the teeth. Follow up radiograph after one year showed considerable resolution of the periapical radiolucency (Fig 3).

3. Discussion

Periapical lesions cannot be differentially diagnosed as cysts or granulomas only on radiographic evidence.^{1,3} According to Natkin et al in a radiographic lesion of 200mm² or larger, the incidence of cysts was about 100%⁴. The treatment options in large periapical lesions is non surgical management , apical surgery and extraction⁵. The present treatment concept is to offer non surgical option first and if this fails then only , should the other be considered. Various non surgical methods have been used in the treatment of large periapical lesions including conventional root canal therapy without adjunctive means, passive decompression , active non surgical decompression technique using the Endo-Eze vacuum system, aspiration of cystic fluid using a buccal/palatal approach, or through root canal , methods using intra canal medicaments, lesion sterilization and repair therapy and apexum procedure⁶. Non surgical management of large lesions is usually more comfortable for the patients. There are a lot of advantages of a non surgical approach, like the risk of affecting vitality of neighboring teeth is eliminated. Damage to adjacent anatomic structures is avoided and bone support of neighbouring teeth is not compromised.⁷

The antimicrobial effects of calcium hydroxide has been well documented, especially in cases of periapical lesions. However in this case calcium hydroxide was ineffective. Also Andreasen et al in his study showed that long term use of calcium hydroxide can weaken dentin.⁸ Microorganisms present in dentinal tubules could possibly serve as a reservoir from which tissue infection and re infection can occur. Dentin itself also could possibly have an inhibitory effect on the bactericidal efficacy of calcium hydroxide as demonstrated by Portenier et al⁹. Hence it was decided to use triple antibiotic paste and considerable improvement of symptoms were seen. Metronidazole has a wide antibacterial spectrum against protozoa and anaerobic bacteria. However it has no activity against aerobes. Hence a combination of ciprofloxacin and minocycline was suggested. Tetracycline which includes doxycycline and minocycline are effective against most

spirochetes and many anaerobic and facultative bacteria. Ciprofloxacin has a very potent activity against gram negative pathogens but very limited activity against gram positive bacteria⁴. Systemic administration of antibiotics depends on patient compliance followed by absorption and reaching the infected site via the circulatory system. However this will not be possible in teeth with necrotic pulps and those without pulp tissue. As a result the only reliable and effective option is direct delivery through local application¹⁰.

Sato et al in his study mentioned that the above drug combination was effective against bacteria in the deeper layers of dentine¹¹. William Windley et al in his study on immature teeth showed the effectiveness of triple antibiotic paste in the disinfection of immature teeth with apical periodontitis⁴. Studies have shown that a combination of metronidazole, ciprofloxacin and minocycline is effective in killing endodontic pathogens from infected root canals invitro.⁵

Iwaya et al described a treatment procedure for management of open apex in which he disinfected the canal with sodium hypochlorite irrigation and two antimicrobial agents (metronidazole and ciprofloxacin)¹². Although open apex cases can be treated by conventional apexification procedures, these do not increase thickness wall or promote development of root length. Raison Bose in his study compared triple antibiotic paste, calcium hydroxide and formocresol as a intracanal medicament in non vital young permanent teeth. The triple antibiotic paste group showed the maximum percentage increase in the thickness of dentin wall¹³.

However there are a few concerns regarding use of triple antibiotic paste like bacterial resistance, allergy and tooth discoloration. Kim et al in his in vitro study identified the discoloration cause to be minocycline¹⁴. Variations of antibiotic past have been suggested to avoid discoloration. Arestin was suggested as a substitute for minocycline by Trope et al. Thibodeu and Trope suggested use of cefaclor in place of minocycline. An approach to prevent discoloration by sealing dentinal tubules with dentin bonding agent and composite was suggested by Reynolds¹⁵. However this only reduced discoloration and did not prevent it.

4. CONCLUSION

This report demonstrated that conventional endodontic treatment with calcium hydroxide alone was not enough for treating large cyst like lesions. Hence triple antibiotic paste was considered and it was found to be successful in disinfection and healing of large cyst like lesions. However care should be taken if the patients are sensitive to chemical or antibiotics.

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153 **FIG 1 PRE-OPERATIVE**



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FIG 2 OBTURATION



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FIG 3 ONE YEAR FOLLOW UP