Case Report

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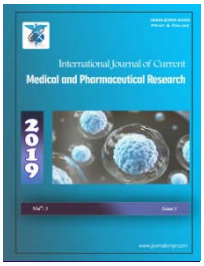

NONSURGICAL MANAGEMENT OF PERIAPICAL CYST WITH MODIFIED TRIPLE ANTIBIOTIC PASTE: A CASE REPORT

Sajid Ahamed[1]., Sajeela Ismail[2]*.,Fawaz Pullishery[3]., Asaf Aboobacker[5] and Safeer Jaweed[5]

[2]Dept of Pediatric and Preventive Dentistry,Iqraa Hospital, Calicut, Kerala, India
[1,4,5] Educare Dental College, Malappuram, Kerala, India and
[3]Batterjee Medical College, Jeddah

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ABSTRACT

Periapical lesion occurs as a sequelae to pulpal necrosis. Initial treatment should focus on conservative nonsurgical procedures. The periapical tissues have high potential to heal, the first treatment of periapical lesions should be directed only towards the removal of the causative factors and complete disinfection of the root canals. Here we present a case report of faster healing of a periapical cyst using modified 3Mix antibiotic paste. Complete periapical healing of the cyst like periapical lesion occurred without any surgical intervention in a short interval of time.

INTRODUCTION

Inflammation of the dental pulp occurs as a consequence of dental caries, operative dental procedures or trauma. Although inflammation can be induced due to various chemical and physical factors, microorganisms are essential for the progression and perpetuation of the same. Pulpal infections are polymicrobial in nature with Gram-negative, anaerobic bacterial floradominating the microbiota in primary infections[1]. Subsequent to pulpal necrosis, an immune response is stimulated in the periapical region. The latter is commonly referred to as a periapical lesion [2]. It is generally accepted that periapical lesions cannot be differentially diagnosed as either radicular cysts or apical granuloma based on radiographic evidence alone .[3 4] Various studies have shown that with a radiographic lesion size of 200 mm^2 or larger, the incidence of cysts is equal to or greater than 92%. [5]In the past, large periapical lesions were generally managed by root canal treatment of the involved tooth or teeth and subsequently followed by surgical excision. Besides, surgery has many drawbacks, which limit its use in the management of periapical lesions. Numerous methods are used in the nonsurgical management of periapical lesions: the conservative root canal treatment, decompression technique, active nonsurgical decompression technique, aspiration-irrigation technique, method using calcium hydroxide, lesion sterilization and repair therapy and the apexum procedure.

In this article, a case of periapical cyst healing at very fast rate after nonsurgical technique using modified antibiotic paste is reported.

Case Report

A 12-year-old boy reported to the clinic with severe pain and swelling in the maxillary anterior region.History revealed trauma occurred due to fall for which he had undergone root canal treatment of left central incisor. History of childhood immunization was well complied and medical history was non-contributory.Intraoral examination revealed a discoloured maxillary right central incisor. On soft tissue examination, a labial swelling was found over the same tooth and the area was tender to palpation and percussion. Radiographic examinations were conducted, an intraoral periapical radiograph (Figure1) demonstrated a large uniformly radiolucent lesion with well-defined margin around the apex of the right maxillary central incisor.

A non-surgical endodontic therapy ofthe maxillary right central incisor was planned. The tooth of interest was isolated using rubber dam. The access cavity was prepared without local anaesthesia.As apical patency was established, a suppurative fluid (pale yellowish), possibly containing cholesterol crystals, drained through the canal. When the drainage ceased, the canal was prepared using a step-back technique until an apical preparation size #40 was achieved. During the preparation, 2.5% sodium hypochlorite irrigating

**Corresponding author:* Sajeela Ismail
Dept of Pediatric and Preventive Dentistry,Iqraa Hospital, Calicut,Kerala,India.

solution was administered between file applications. Calcium hydroxide powder (Merck, Darmstadt, Germany) was mixed with sterile distilled water to form a paste, and was placed into the canals with a lentulo filler for first week. Two weeks later, the tooth was asymptomatic.In subsequent visits modified 3 mix paste was placed in the canal and access cavity was sealed with a temporary filling material. The commercially available drugs (Ciprofloxacin 200mg, Metronidazole 500mg, Minocycline 100mg) were powdered and mixed in a ratio of 1:1:1 (3 Mix) The mixture was then mixed with calcium hydroxide powder with macrogol-propylene glycol as vehicle.The patient was recalled at 1, 3and 5 month intervals. Clinical examination showed no sensitivity to percussion or palpation, and the soft tissues were healthy at these examinations. Radiographic examinations showed the progressive process of healing. (Figures 2,3,4)

Figure 1

Figure 2

Figure3

Figure 4

DISCUSSION

Some authors support the fact that, with the endodontic infection elimination, the immune system is able to promote repair and lesion might recede by the mechanism of apoptosis similar to the resolution of inflammatory apical pocket cysts without any need surgical intervention to remove cyst epithelium.[6] Caliskan MK reported 73.8% success in nonsurgical management of large cyst-like periapical lesion using calcium hydroxide medicament.[7] Natkin et al stated that a radiographic lesion with size of 200 mm^2 or larger, the incidence of cysts was almost 100%.[8] A high percentage of 94.4% of complete and partial healing of periapical lesions following nonsurgical endodontic therapy has also been reported.[9]

Clinical studies have confirmed that simple nonsurgical treatment with proper infection control can promote healing of large lesions. When this treatment is not successful in resolving the periradicular pathosis, additional treatment options should be considered, such as marsupialization or tube decompression.[10] Preparation of LSTR-3mix is bactericidal to aerobic bacteria and anaerobes.[11] It has been reported that the combination of three antibacterial drugs (3Mix) has been proved to kill all the types of oral bacteria including those isolated from dentinal caries, infected pulp lesions and periapical lesions.[12] Ghose et al has suggested beneficial osteoinductive actions of calcium hydroxide medicament when in close contact with the periapical tissue.[13] The diffusion of the calcium hydroxide through the apical foramen causes inflammatory action sufficient to break the cystic epithelial

lining, followed by connective tissue invagination with ultimate healing.So a combination of antibiotic paste and calcium hydroxide might have synergetic drug action which might have resulted in faster periapical healing and bone regeneration in this case . Because the periapical tissues have the potential to heal, the first treatment of periapical lesions should be directed only towards the removal of the causative factors and complete disinfection of the root canals.

Similarly, in the present case, periapical healing appeared to be occurring 3 months [figure 2] and a complete resolving after 5 months [figure 3 and 4]. 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. The advantages of non-surgically managing patients with large periapical radiolucency is that the psychological trauma is less and is more comforting to the patient. The periapical lesions in this case was large and after nonsurgical endodontic therapy the lesions completely resolved. This study emphasizes on adding 3 mix antibiotic paste to calcium hydroxide can improve the antibacterial efficacy against microorganisms present in infected root canals and as well as healing of periapical pathology faster compared to other medicaments used .

CONCLUSION

In this case report, root canal treatment proved successful in promoting the healing of a large periapical lesion which confirms that even large periapical lesions can respond favorably to non-surgical treatment. This modified antibiotic paste has proved to be very beneficial for reducing the size of periapical lesion and certainly has the potential to be a revolutionary therapy for the treatment of periapical lesions. Although more clinical controlled studies are necessary to confirm the efficacy of the modified 3 mix paste, the results exhibited this antibiotic mixture are highly promising as a feasible alternative in the periapical infections.

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