Case Series

Successful Healing Of Periapical Lesions With Non-Surgical Endodontic Approach

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Abstract

Pulpal tissue necrosis transforms the pulpal chamber into an unprotected environment. This environment becomes susceptible to colonization by numerous microorganisms that inhabit the oral cavity. Periapical lesions are formed as result of immunologic host response to bacteria or its products. These periapical lesions cannot be differentially diagnosed as either radicular cysts or apical granulomas based on radiographic evidence alone. The exact mechanism by which periapical cysts heal is also not clearly understood. In these case reports, root canal treatment proved successful in promoting the healing of periapical lesions. This confirms that periapical lesions can respond favorably to non-surgical treatment.

Key words: Endodontic therapy, Periapical lesions, Healing.

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Introduction

Periapical lesions of endodontic origin are produced by an inflammatory response at the root apices of teeth with non-vital pulps. Periapical lesions cannot be differentially diagnosed into cystic and noncystic lesions based on the radiographic features\(^1\). Many clinicians hold the view that cysts do not heal and thus must be removed by surgery. As a result a disproportionately large number of
periapical surgeries were performed at the root apex to enucleate the lesions that are clinically diagnosed as cysts. This article presents series of cases which healed with non surgical endodontic therapy.

**Case: 1**

A 25 year female patient was referred with pain and swelling in maxillary anterior region to the Department of Conservative Dentistry and Endodontics, Sri Siddhartha Dental College, Tumkur. Patient gave the history of pain and swelling in the area of 11 and 12 and had visited the private dental practitioner for treatment. Some emergency treatment was done her pain got relieved but she did not continue the treatment. Clinical examination revealed discolored 11 and 12 with access opening which were clogged with food debris. Intra oral periapical radiograph demonstrated a large radiolucent lesion of 10mm in diameter with tenacious radiopaque margin around the root tips of 11 and 12 (Fig: 1).

Figure 1: Pre-operative radiograph

It was provisionally diagnosed as chronic periapical lesion and non-surgical endodontic therapy was planned for 11 and 12. Access cavities were modified and cleaning and shaping of the root canals was done. 3% NaOCl was used as root canal irrigant. Since there was purulent discharge from the canal, Ca (OH)₂ mixed with saline was placed as intra canal medicament. Access cavities restored with temporary cement. Patient recalled after a week for review.

During the recall visit patient was asymptomatic and there was
no discharge from the canal. Both teeth were obturated with gutta percha points and zinc oxide eugenol sealer using lateral condensation technique. Patient was asymptomatic during 1 week post operative visit. 2 years post treatment radiograph revealed progressive healing of periapical lesion (Fig: 2).

Figure 2: Post-Operative radiograph after 2 years

Case: 2

A 50 year old male patient was referred root canal therapy for maxillary anterior teeth. Clinical examination showed discolored 21 with sinus tract. Radiograph demonstrated well defined radiolucency around the root apex of 21 (Fig: 3).

Figure 3: Pre-operative radiograph

As the patient was asymptomatic single visit endodontic therapy was performed. Patient was asymptomatic during 1 week recall visit. 13 months post operative radiograph revealed healing of periapical lesion (Fig: 4).

Figure 4: Post-operative radiograph after 13 months
Case: 3

A 23 year male patient was referred with pain in 46 since two days. Patient gave the history that root canal therapy of 46 was performed ten years back. There was a metal crown on 46 and the tooth was tender on percussion. Radiograph revealed improperly filled root canals and radiolucent periapical lesions around both roots of 46 (Fig: 5).

Patient was not willing for replacement of the crown. Multiple visit root canal therapy was performed through the crown. Ca(OH)_2 mixed with saline was placed as intra canal medicament. 11 month post operative revealed healing of periapical lesion (Fig: 6).

Discussion

The current concept and rationale of endodontic treatment of periapical lesion is centered on stopping the bacterial stimulation of the host response at the apical foramen that would allow healing of the lesions. Ca (OH)_2 was used as intra canal medicament in two of the above cases. The exact mechanism of action of Ca (OH)_2 is speculative. It was suggested that the action of Ca (OH)_2 beyond the apex may be four fold:

1. Anti-inflammatory activity.
2. Neutralization of acid products.
3. Activation of alkaline phosphatase.
4. Anti bacterial action.
It has also been reported that treatment with Ca (OH)\textsubscript{2} resulted in a high frequency of periapical healing, especially in young patients\textsuperscript{3}. Healing of lesions may take many months. In all our cases though we recalled the patients at intervals of 1, 3, 6 and 12 months none of them returned as per appointments. This can be attributed to the lack of interest on patient part in rural areas.

A study compared the healing of periapical lesions following surgical and non-surgical retreatment. At 12 months, a significant difference was found in favor of surgical treatment that faded by 48 months to almost no difference between the groups\textsuperscript{4}. Surgical management of periapical lesions can be associated with damage to vital structures, scar formation and unpleasant experience to the patient. However for the cases which are not responding to non-surgical endodontic therapy surgical intervention may be the last option.

It is now believed that the activated macrophages in the periapical lesion are the reason for delayed healing of the lesions in the absence of bacterial antigens. The futuristic view of treating the periapical lesions include placement of biodegradable local sustained drug delivery points into the lesion before obturating the tooth to deactivate the macrophages and enhancing the faster healing of the lesions\textsuperscript{5}.

**Conclusion**

In this case series non-surgical endodontic therapy proved successful in promoting the healing of periapical lesions. Irrespective of the size of the lesion every attempt should be made to treat the periapical lesions with non-surgical endodontic therapy.

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