

## Case Report

# NONSURGICAL HEALING OF LARGE PERIAPICAL LESIONS - CASE REPORTS

Roshni Rai, Kiran P. Singbal, Vishnu Pratap Singh Rathore, Setu Bavaria

Department of Conservative Dentistry and Endodontics, K.M.Shah Dental College and Hospital, Vadodara, Gujarat, India.

### Abstract:

The case reports describes non surgical healing in periradicular lesions. A conservative approach with 5.25% sodium hypochlorite was used for irrigation, and calcium hydroxide was used for the intra-canal dressing and 2% chlorohexidine as a final irrigant. Periapical healing was observed 1 month after obturation and continued in the 12-month recall. This report confirms that the large size of a periapical lesion does not need surgical approach for healing, and that even cyst-like periapical lesions heal following a conservative endodontic therapy.

Key words: Chlorohexidine, Periapical Lesions, Non surgical healing.

Corresponding author: Dr. Roshni Rai, Post Graduate Student, Department Of Conservative Dentistry and Endodontics, K.M.Shah Dental College And Hospital, Vadodara, Gujarat, India. E mail: roshaqn@gmail.com

This article may be cited as: Rai R, Singbal KP, Rathore VPS, Bavaria S. Nonsurgical Healing of Large Periapical Lesions - Case Reports. J Adv Med Dent Scie Res 2015;3(1):209-212.

## INTRODUCTION

Most periapical lesions can be classified as dental granulomas, radicular cysts or abscesses.<sup>1</sup> It is generally accepted that periapical lesions cannot be differentially diagnosed as either radicular cysts or apical granuloma based on radiographic evidence alone<sup>2,3</sup>. If the lesion is separate from the apex and with an intact epithelial lining, it may have developed into a self-perpetuating entity that may not heal when treated non-surgically.<sup>4</sup> On other occasions, a large periapical lesion may have a direct communication with the root canal system which are termed as apical pocket cyst or bay cyst and respond favourably to non-surgical treatment.<sup>4,5</sup>

In the past, large periapical lesions were generally managed by root canal treatment of the involved tooth or teeth and by surgical excision. This was particularly true if the periapical lesion was suspected to be an apical true cyst. In recent years, a greater awareness of the complexities of root canal systems has led to the development of newer techniques, instruments and materials. These developments have greatly enhanced the clinician's abilities.<sup>6</sup> Therefore, fewer patients need periapical surgery.

An awareness of root canal morphology and a careful interpretation of preoperative radiographs are necessary for adequate access and infection control in endodontic therapy. This is likely to have a critical bearing on the outcome. These case reports depict successful healing of periapical lesions after conventional root canal therapy.

## CASE REPORT

### Case 1

A 19-year-old male patient reported in the Department of Conservative and Endodontics KM. Shah Dental College, with a chief complaint of swelling in the palatal region. On examination the patient experienced no pain on percussion and on palpation swelling was present with 12 palatally. The concerned teeth 11 & 12 did not respond to both electric and heat test. Detailed radiographic examination revealed previous root canal treated teeth with 12 associated with periapical lesion. There are two treatment options either surgical removal of periapical lesion and or nonsurgical root canal therapy considering the amount of surgical trauma and the age of the patient nonsurgical treatment was opted.

Access opening was prepared under rubber dam isolation and working length was determined (Figure 2B). For 12- previous root canal filling were removed with hedstrom files. Biomechanical preparation was done using standard step back technique. Root canal debridement was done using alternate irrigation with 5.25%NaOCl and saline using 30 gauge needle and placing 2mm short of apex. Calcium hydroxide (ULTRACAL XS) was used as intracanal medicament and it was slightly pushed beyond apex.the intracanal medicament was kept for 1 week and temporary restoration with IRM.(Figure 1B) . At subsequent appointment after removal of dressing root canal was found completely dry and canal was debrided with 5.25% NaOCl followed by 17% EDTA and final rinse with 2% chlorohexidine. Final obturation was done with 11 & 21 using lateral condensation and post operative restoration was done using composite restoration. Patient was recalled after 1 week and was kept on follow up for 1 year. Clinical examination performed after 1 year revealed adequate clinical functions, absence of pain and tenderness to percussion. Moreover radiography displayed healing and reestablishment of PDL and lamina dura. (Figure 1C)



**Figure 1 A:** Pre operative Occlusal Radiograph



**Figure 1 B:** CaOH Dressing for 3 months



**Figure 1 C:** Post Operative radiograph

### CASE 2

A 19-year-old male patient reported in the Department, with a chief complaint of discolored teeth in the upper front teeth region On examination there the patient experienced pain on percussion and discoloration was also wit 11 (21 MISSING). The 11,12 &21 teeth did not respond to both electric and heat test. Detailed radiographic examination revealed a Periapical lesion with 11,12 &21.



**Figure 2 A:** Pre operative Radiograph



**Figure 2 B:** Post Operative radiograph

Similar protocol of isolation, irrigation, calcium hydroxide dressing and obturation was followed as the previous case. Patient was kept on follow up period of 1 year. Complete healing of periapical lesions was seen with no associated discomfort or pain. [Figure 2]

## DISCUSSION

Conventional root canal treatment is aimed primarily at eliminating these bacteria as completely as possible. Treatment options to manage large periapical lesions range from non-surgical root canal treatment and /or apical surgery to extraction. Current philosophy in the treatment of teeth with large periapical lesions includes non-surgical root canal treatment. In the current study calcium hydroxide was used as an intracanal medicament.<sup>7</sup>

Bender added that penetration of the apical area to the centre of the radiolucency might help in resolution by establishing the drainage and relieving pressure.<sup>8</sup> However, the added trauma of the minimal over-instrumentation may enhance epithelial proliferation and cystic expansion, not a resolution.<sup>8,9</sup>

Seltzer suggested that over-instrumentation allowed the drainage of the cystic fluid, which then allowed the degeneration of the epithelial cells by strangulation because fibroblastic and collagen proliferation squeezed the capillary supply to the cystic lining.<sup>9</sup> The overinstrumentation technique was based on the assumption that the periapical lesion could be a cyst. Although the reasons these techniques might work are only theoretical, clinical success was claimed.<sup>10</sup>

A calcium hydroxide-based paste was used as an antibacterial dressing in this case. The exact mechanism of action of calcium hydroxide is still speculative. It is suggested that the action of calcium hydroxide beyond the apex may be fourfold: (i) anti-inflammatory activity; (ii) neutralisation of acid products; (iii) activation of the alkaline phosphatase; and (iv) antibacterial action (25). It has also been reported that treatment with calcium hydroxide resulted in a high frequency of periapical healing, especially in young patients.<sup>11</sup>

Caliskan & Sen have reported that treatment with calcium hydroxide resulted in a high frequency of periapical healing showing completed Resorption of the periapical defect.<sup>12</sup> The exact mechanism of action of calcium hydroxide is still speculative. Ghose. et.al. has advocated that direct contact between the calcium hydroxide and the periapical

tissue was necessarily beneficial for osseoinductive reasons.<sup>13</sup>

It is suggested that if calcium hydroxide is confined to the root canal, it is possible that the inflammation created by the diffusion of calcium hydroxide through the apical foramen may be sufficient to cause break up of the cystic epithelial lining, thereby allowing a connective tissue invagination into the lesion with ultimate healing.

In the present study 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.

**CONCLUSION:** In this case report, root canal treatment proved successful in promoting the healing of a large periapical lesion. This confirms that even large periapical lesions can respond favourably to non-surgical treatment.

## REFERENCES

1. Bhaskar SN. Periapical lesion-types, incidence and clinical features. *Oral Surg Oral Med Oral Pathol* 1966; 21: 657–71.
2. Lalonde ER. A new rationale for the management of periapical granulomas and cysts. *J Endod* 1970; 80: 1056–9.
3. Caliskan MK. Prognosis of large cyst-like periapical lesions following nonsurgical root canal treatment. *Int Endod J* 2004; 37: 408–16.
4. Nair PNR. New perspectives on radicular cysts: do they heal? *Int Endod J* 1998; 31: 155–60.
5. Simon JHS. Incidence of periapical cysts in relation to the root canal. *J Endod* 1980; 6: 845–8.
6. Regan JD, Guttman JL. Preparation of the root canal system. In: Pittford TR, ed. *Harty's endodontics in clinical practice*. 5th ed. Edinburgh: Wright, Elsevier Science; 2004. pp. 77–94.
7. Yanagisawa S. Pathologic study of periapical lesions. Periapical granulomas: clinical, histopathologic and immunohistopathologic studies. *J Oral Pathol* 1980; 9: 288–300.
8. Bender IB. A commentary on General Bhaskar's hypothesis. *Oral Surg Oral Med Oral Pathol* 1972; 34: 469–76.
9. Seltzer S. *Endodontology-biologic considerations in endodontic procedures*. 2nd ed. Philadelphia, PA: Lea and Febiger; 1988.

Rai R et al. Nonsurgical healing of large periapical lesion.

10. Esposito JV. Apical violation in periapical area cases – blasphemy or therapy? *Dent Clin North Am* 1990; 94: 171–8.
11. Caliskan MK, Türkün M. Periapical repair and apical closure of a pulpless tooth using calcium hydroxide. *Oral Surg Oral Med Oral Pathol* 1997; 84: 683–6.
12. Caliskan MK & Sen BH. Endodontic treatment of teeth with apical periodontitis using calcium hydroxide a long term study. *Dental Traumatology* 1996; 12:215-21
13. Ghose LJ, Baghdady VS, Hikmat BYM. Apexification of immature apices of pulpless permanent anterior teeth with calcium hydroxide. *J. Endod* 1987; 32:35-45

**Source of Support:** Nil

**Conflict of Interest:** None declared