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Case Report

Healing of Periapical Lesions with Conventional Root Canal Treatment: A Case Report

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Abstract

Infected pulp tissue is the major cause of periapical lesions, a majority of which are granulomas, radicular cysts or abscess. These lesions can only be diagnosed histologically. Root canal treatment or non surgical endodontic treatment is the treatment of choice in these cases without surgical intervention. Healing after the non surgical treatment takes place in about one year. In non surgical treatment emphasis is laid on thorough debridement, disinfection of the root canal system and obturation of canals. There are higher rate of healing in the anterior segment as compared to the posterior segment. The periapical index (PAI) is widely used measure to know the status of the periapical tissues. Thus, conventional endodontic therapy in combination with calcium hydroxide as an intra-canal medicament contributed effectively in healing of periapical lesions in these cases.

Keywords: Periapical Lesions; Non Surgical Endodontic Treatment; Periapical Index

Introduction

The major reason of periradicular lesions are due to infected pulpal tissue. Pulpal inflammation occurs due to deep caries, trauma, or by a combination of both. Opening from the root canal system (RCS) to the periodontal ligament space is considered as a portal of exit through which infected pulpal tissue breakdown by- products may pass. Most periapical are dental granulomas, radicular cysts or abscesses [1]. Lesions cannot be differentially radiographically as either radicular cysts or apical granulomas [1]. Only histological examinations are considered as the definitive diagnosis of the type of periapical lesion.

Conventional endodontic treatment can heal the periapical lesions without any surgical intervention. Age and gender does not significantly effect the healing after nonsurgical endodontic treatment [2]. A single rooted tooth has better potential of complete healing as compared to a multi- rooted tooth [3].

Moreover, teeth in the anterior segment heal faster as compared to teeth in the posterior segment [4]. It has been seen that a majority of lesions take about a year to heal.

A periapical index (PAI) was devised for measuring the periapical status. It consists of five scores, the scores are- "healthy" (PAI 1 or 2) or "diseased" (PAI 3 to 5).

Case Report

Five patients diagnosed with apical periodontitis were included in this case report Treatment plan- endodontic treatment followed by permanent restoration These patients were followed up for 9 months after the endodontic treatment at 3 months interval At each appointment the teeth were clinically evaluated for any signs and symptoms and for radiographic signs of healing.

Procedure

After diagnosis the root canal treatment was started as follows.

Access to pulp chamber was made using high speed hand piece with round bur under copious irrigation after rubber dam isolation. Straight line access was prepared to the canals. Canals were negotiated with 10 no K- file after locating canals with DG-16 (endodontic explorer). Debridement and irrigation was done with sodium hypochlorite- 3%. Working length was confirmed radiographically. The teeth were prepared with hand filing and/ or rotary system. Preparation was done under constant irrigation with sodium hypochlorite. Final rinse was done with normal saline.

The canals were dried with paper points. Calcium hydroxide was placed in the canal as an intracanal medicament. Access cavity was then restored with temporary filling material.

In the 2nd appointment after rubber dam isolation the temporary restoration was removed to gain access into the root canal. The intracanal medicament was removed with the master apical file and irrigated with NaOCl followed by final rinse of normal saline. The canal was then dried with paper points and $Ca(OH)_2$ placed in the canal. Access cavity was filled with temporary filling material. This was repeated 2 times at weekly intervals (3 times calcium hydroxide dressing was given). At the 4th appointment the teeth were obturated and permanently restored at the next appointment scheduled after 1 week.

All the patients became asymptomatic by the 2nd appointment except for the patient presented as case 2 who became asymptomatic by the 3rd appointment

Case 1

A 29 year old female patient presented with sensitivity in the lower front region of jaw since 2 years, sensitivity to cold as well as to heat. History of trauma 10 years back. No history of pain. Mandibular central incisors were found to have brownish discoloration with no tenderness. Radiograph was taken. Diagnosis of asymptomatic apical periodontitis wrt 31 and 41 was made.

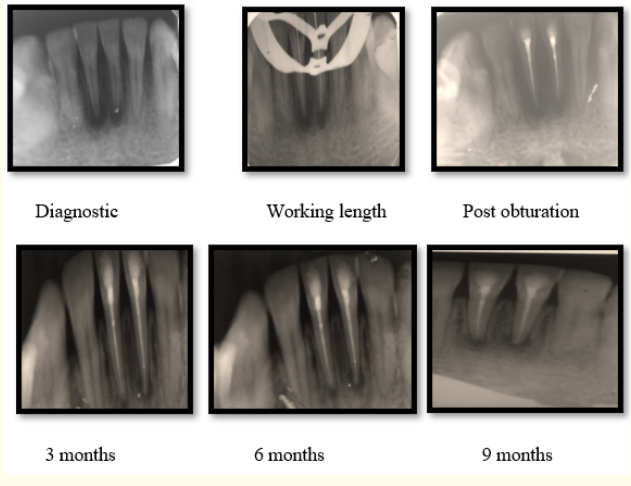

Figure 1

Case 2

A 58 years old male patient presented with mild intermittent pain and pus discharge from anterior upper region of gum since 2 months. Pain was spontaneous in onset, continued for hours. Draining sinus tract was present on the labial mucosa and radiographically traced to 12. 12 and 11 were root canal treated 5 years back. Periapical lesion was seen. Diagnosis of chronic alveolar abscess was made.

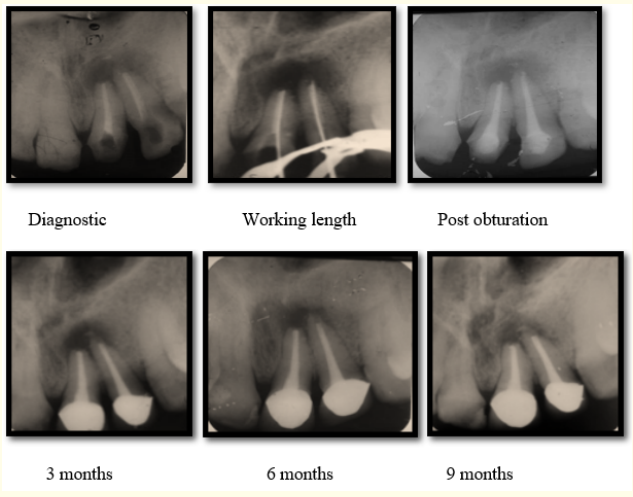

Figure 2

Case 3

A 17 year old female patient presented with pain in right lower back region of jaw since 1 year. The first molar was restored 2 years back. Pain was dull in nature, spontaneous in onset. It was non vital and tender on percussion. Radiographically periapical radiolucency was seen. Diagnosed as symptomatic apical periodontitis wrt 46.

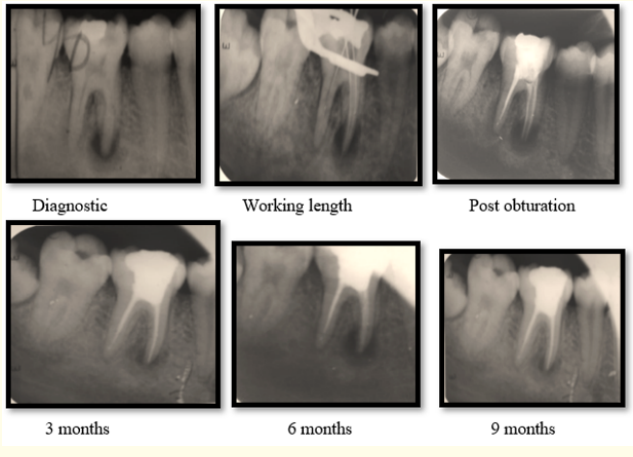

Figure 3

Case 4

A 37 year old female patient presented with pain in right lower back region of jaw since 1 year. The first molar was restored but there was generalised attrition. Pain was dull in nature, spontaneous in onset. It was found to be non vital and TOP +ve. Radiographically periapical radiolucency was seen Diagnosed as symptomatic apical periodontitis wrt 46.

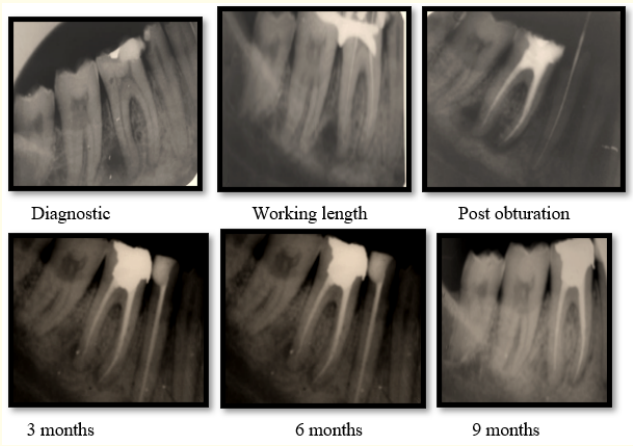

Figure 4

Case 5

A 20 year old female patient presented with pain in left lower jaw and swelling in left lower region of face since 2 days. The first molar was grossly carious. Pain was severe in nature, spontaneous and throbbing and was continuous. It was found to be non vital, tender on percussion wrt 36. Radiographically periapical radiolucency was seen. Diagnosed with phoenix abscess wrt 36.

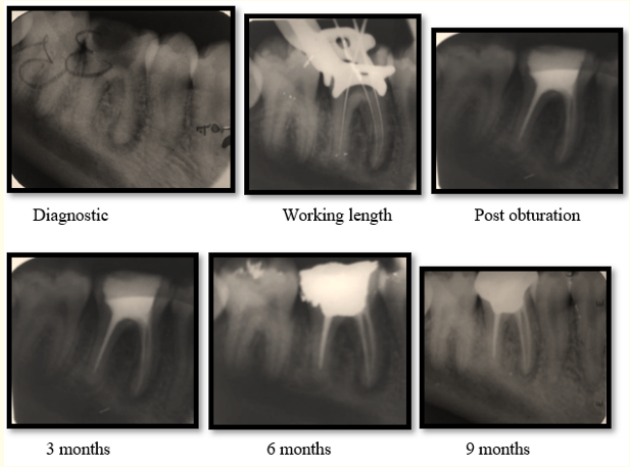

Figure 5

Discussion

In large periapical lesions, treatment with traditional root canal treatment and sometimes size upto 20 mm heal [5]. In the cases of periapical lesions, thorough biomechanical cleaning of the root canals is the most critical factor for healing. In these cases conventional root canal treatment should be the first choice [6]. For successful healing of periapical lesions the complete debridement or elimination of bacteria is the most critical factor. Failure to do so leads to the regression in such cases. Irrigants and intracanal medicaments help in decreasing the microbial flora of root canals. The application of $Ca(OH)_2$ as a medicament for certain periods of time has a positive effect on success [7].

Strindberg [8] and Sjogren., *et al*. [9] found no significant differences in healing between lesions initially larger or smaller than 5 mm. Clinically the success of treatment is judged on the basis of absence of signs and symptoms and radiographically by the decrease in size of the radiolucency [10].

Conclusion

Radiographically observed bone formation at periodic visits indicate healing. Thus, nonsurgical endodontic treatments of teeth with periapical lesions show successful healing.

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