

## **Case Report**

### **Non-surgical management of a large periapical lesion: case series**

Surekha Puri Bhat<sup>1</sup>, Mayank U. Patel<sup>\*2</sup>, Jitendra Lohar<sup>3</sup>, Sandhya Kapoor Punia<sup>4</sup>, Rahul Bhargava<sup>5</sup>,  
Yogender Kumar<sup>6</sup>

<sup>1</sup>Professor and head, <sup>2</sup>Postgraduate student, <sup>3,6</sup>Senior lecturer, <sup>4,5</sup>Reader, Department of conservative dentistry and endodontics, Darshan dental college and hospital, Udaipur- 313001.

#### **\*Corresponding author**

Dr. Mayank U. Patel

**E mail:** [mayankakbari@gmail.com](mailto:mayankakbari@gmail.com)

---

**Abstract:** Non-surgical approach should be considered for the management of large periapical lesions because surgical treatment of large periapical lesions can cause various complications thus all inflammatory periapical lesions first should be treated with nonsurgical procedures. Present case series shows osseous regeneration by using non-surgical approach.

**Keywords:** Aspiration, cyst, non-surgical, periapical lesion.

---

#### **INTRODUCTION**

Periapical lesions develop due to sequelae of pulp disease. Bacterial infection of the pulp tissue may lead to periapical lesions[1]. They are generally diagnosed either during radiographic examination or following acute dental pain[2]. Most periapical lesions can be classified as radicular cysts, abscesses or periapical granulomas[3,4]. The occurrence of cysts within periapical lesions varies between 6% to 55% [5]. The occurrence of abscesses between 28.7% to 70.07% and of periapical granulomas ranges between 9.3% to 87.1% [6]. There is clinical evidence that as the periapical lesions increase in size, the proportion of the radicular cysts increases. However, some large lesions have been shown to be granulomas[7].

The main aim of endodontic therapy should be to return the involved teeth to a healthy state and function without surgical intervention[8]. All inflammatory periapical lesions first should be treated with nonsurgical procedures[9]. Many non-surgical methods used to treat periapical lesions[10]. Increased hydrostatic pressure of the confined fluid, which causes additional osteoclastic activity resulting the growth of the cyst. Here we used the aspiration- irrigation technique for case report-1 and normal irrigation technique for case report-2.

This case series describes the non-surgical management of a large periapical lesion.

#### **CASE REPORT: 1**

A 28-year-old male patient with a non-contributory medical history presented with a painless swelling in the maxillary left anterior region. The

patient gave a history of trauma to his anterior teeth before 6 to 7 year. Intraoral examination showing that teeth 21 and 22 were discolored. Teeth 21 and 22 failed to respond to thermal and electric pulp testing whenever adjacent teeth responded to normal on pulp testing.

A periapical radiograph of the lesion showing a large radiolucent area approximately 15×20 mm in diameter apparently involving the apical region of 21 [Figure 1,2]. Intra oral radiograph reveal that 22 had periapical radiolucency approximately 2 mm in diameter. Both the teeth had an obliterated root canal space. Hence, it was decided to treat both the teeth. Following access cavity preparation, there was drainage of yellowish fluid from tooth 21. The root canal space of tooth 21 was negotiated. The apical foramen was gauged using hand K- files, and the apical width was found to be equivalent to a size 50 K- file. The apical foramen was widened to a size 70 K- file to aspiration of periapical fluid from bony cavity. Periapical fluid was removed with the help of 24-gauge needle and attached to a 5 ml syringe. Approximately, 2.5 ml of yellowish colored fluid was aspirated. The size of the swelling was decreased completely after the evacuation of fluid.

Access opening of 22 was carried out on same appointment and biomechanical procedure was done of 2<sup>nd</sup> visit of the patient. The canal orifice in tooth 22 was located with using long shank bur and root canal space of tooth 22 was negotiated. The apical width was found to be equivalent to a size 15 K- file. The apical foramen was widened to a size 40 K- file.

The canal of both the teeth was then irrigated with 2.5% sodium hypochlorite (NaOCl) and saline. Placed intracanal medicament [Ca(OH)<sub>2</sub> with 2% + Clorehex Gel] and temporized. After a week patient was recalled for evaluation of the lesion. Intra oral periapical radiograph showing of healing of the lesion i.r.t. 21 and 22. Teeth was irrigated with normal saline and the canal was dried with paper points followed obturation of both the teeth was done.

Patient was recalled on every two month for routine check-up complete healing of the lesion showing after 6 month [Figure 3].

**CASE REPORT: 2**

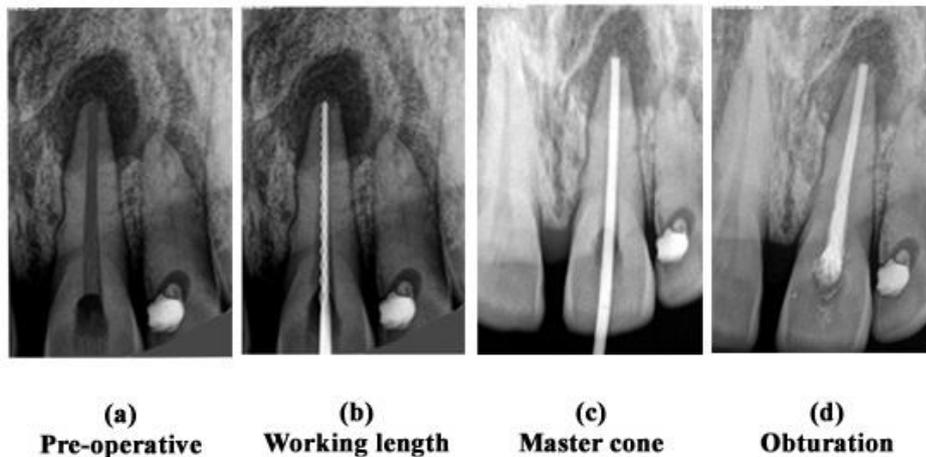
A 22-year-old female patient referred to department of conservative and endodontics with the chief complaint of pain in upper front teeth region. Clinical examination revealed swelling in the maxillary left anterior region. The patient gave a history of trauma to her anterior teeth 2 month back. Both the teeth do not showed pulpal response on pulp testing. Periodontal probing revealed a normal gingiva and mobility was present i.r.t. 22.

Radiograph of the lesion showing large radiolucent area involving the apices of both the teeth

[Figure 4(a)]. Careful examination of the radiograph showing that tooth 21 had periapical radiolucency measuring approximately 1.5mm - 2mm in diameter and tooth 22 had periapical radiolucency measuring approximately 2mm - 3mm in diameter. Access cavity preparation was done the same visit and splinting was performed as to reduce the mobility of 22. Patient was recalled after 3 days and biomechanical preparation was done till the size 40 K- file.

The canal of both the teeth was irrigated with 2.5% sodium hypochlorite (NaOCl) and saline. Placed intracanal medicament [Ca(OH)<sub>2</sub> with 2% + Clorehex Gel] and temporized was done using zinc oxide eugenol cement. After a week patient was recalled for evaluation of the lesion. Intra oral periapical radiograph showing of healing of the lesion i.r.t. 21 and 22. Teeth was irrigated with normal saline and the canal was dried with paper points followed obturation of both the teeth was done.

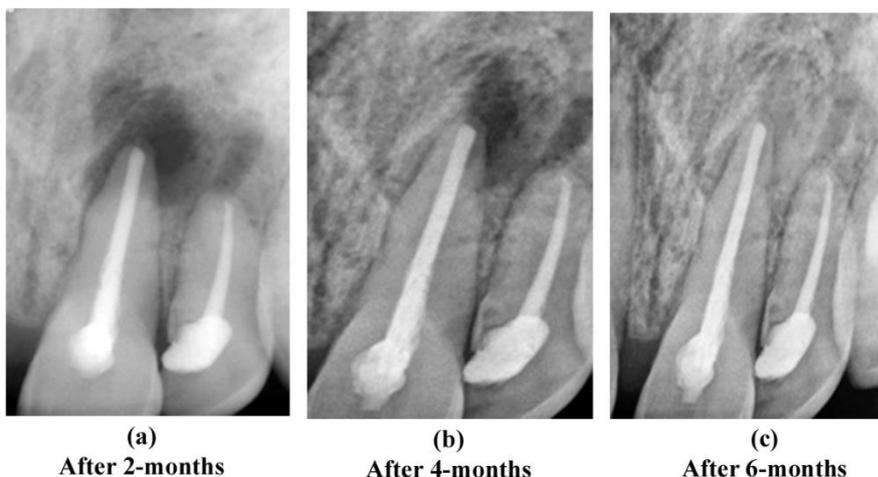
Patient was recalled on every two month for routine check-up complete healing of the lesion showing after 4 month [Figure 5(e)].



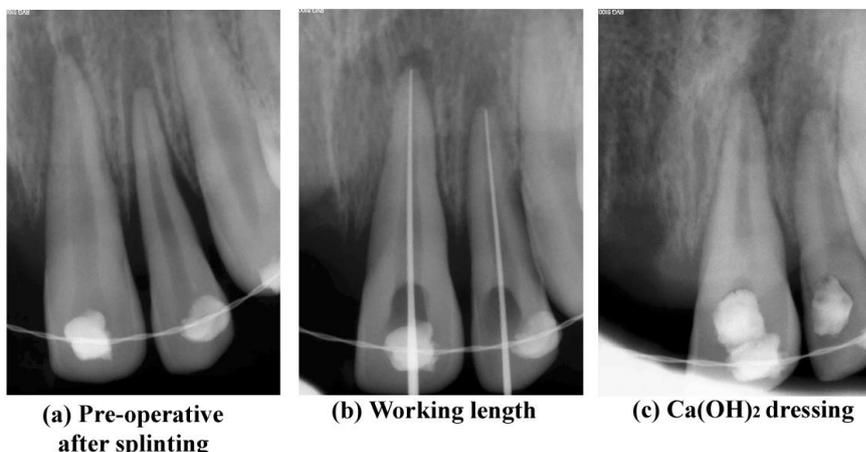
**Fig-1: Root canal treatment i.r.t 21(Case Report-1)**



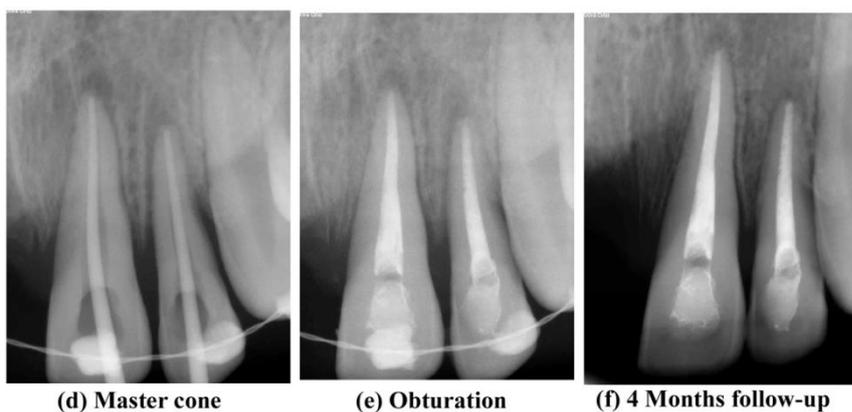
**Fig-2: Root canal treatment i.r.t 22(Case Report-1)**



**Fig-3: Follow up (Case Report-1)**



**Fig-4: Steps of Root canal procedure (Case Report-2)**



**Fig-5: Steps of Root canal procedure and follow up (Case Report-2)**

**DISCUSSION**

The simple aspiration-irrigation technique, fluid is evacuated through the root canal. This minimizes the discomfort for patient. It is a simple technique that aids in decreasing the hydrostatic pressure in the bony cavity without any sophisticated instruments or equipment.

The minimal final working width during biomechanical procedure for central incisors can range between 0.3 and 0.9 mm[11]. In the periapical lesion case, the apical diameter was widened to 0.7 mm so that a 24-gauge needle (0.5 mm) could pass easily through the apical foramen. During aspiration of fluid application of digital pressure may reduce swelling size.

In this case report the estimated repair rate of periapical lesion was 4 mm<sup>2</sup> after 1 month. The rate of repair was calculated by dividing the size differential between the initial and follow-up visits by the number of elapsed months. The calculated rate was in accordance to the average rate of repair of 3.2 mm<sup>2</sup> month<sup>-1</sup> as reported by Murphy et al [12]. If the repair rate is slow, then calcium hydroxide therapy given to hasten osseous regeneration[13]. As in the traditional aspiration- irrigation technique, case selection is important. The aspiration technique should not be attempted in the presence of granulation tissue or other type of soft tissue. Severely curved canals might limit the use of this technique as the canal anatomy prevents the aspirating needle from reaching the apical foramen.

#### REFERENCES

1. Moller AJ, Fabricius L, Dahln G, Ohman AE, Heyden G; Influence on periapical tissues of indigenous oral bacteria and necrotic pulp tissue in monkeys. *Scand J Dent Res*, 1981; 89:475-84.
2. Barbakow FH, Cleaton-Jones PE, Friedman D; Endodontic treatment of teeth with periapical radiolucent areas in a general dental practice. *Oral Surg*, 1981; 51:552-59.
3. Bhaskar SN; Oral surgery--oral pathology conference No. 17, Walter Reed Army Medical Center. Periapical lesions--types, incidence, and clinical features. *Oral Surg Oral Med Oral Pathol*, 1966; 21:657-71.
4. Lalonde ER, Leubke RG; The frequency and distribution of periapical cysts and granulomas. *Oral Surg Oral Med Oral Pathol*, 1986; 25:861-68.
5. Nair PNR, Pajarola G, Schroeder HE; Types and incidence of human periapical lesions obtained with extracted teeth. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 1996; 81:93-102.
6. Schulz M, von Arx T, Altermatt HJ, Bosshardt D; Histology of periapical lesions obtained during apical surgery. *J Endod*, 2009; 35:634-42.
7. Natkin E, Oswald RJ, Carnes LI; The relationship of lesion size to diagnosis, incidence, and treatment of periapical cysts and granulomas. *Oral Surg Oral Med Oral Pathol*, 1984; 57:82-94.
8. Salamat K, Rezai RF; Nonsurgical treatment of extraoral lesions caused by necrotic nonvital tooth. *Oral Surg Oral Med Oral Pathol*, 1986; 61:618-23.
9. Lin LM, Huang GTJ, Rosenberg PA; Proliferation of epithelial cell rests, formation of apical cysts, and regression of apical cysts after periapical wound healing. *Journal of Endodontics*, 2007; 33: 908-16.
10. Shah N; Nonsurgical management of periapical lesions: a prospective study. *Oral Surgery Oral Medicine Oral Pathology*, 1988; 66: 365-71.
11. Jou Y, Karabucak B, Levin J, Liu D; Endodontic working width: current concepts and techniques. *Dental Clinics of North America*, 2004; 48: 323-35.
12. Murphy WK, Kaugars GE, Collett WK, Dodds RN; Healing of periapical radiolucencies after nonsurgical endodontic therapy. *Oral Surgery Oral Medicine Oral Pathology*, 1991; 71: 620-4.
13. Hoen MM, LaBounty GL, Strittmatter EJ; Conservative treatment of persistent periradicular lesions using aspiration and irrigation. *Journal of Endodontics*, 1990; 16: 182-86.