

## Conservative Management of Cyst Like Lesion in a 12 Year Old Girl: A Case Report

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### ABSTRACT

**Background:** This case report describes the conservation approach of management of periapical lesion, secondary to caries. A 12 year old girl, with cystic transformation of periapical lesion (radiographic) along the apex of 36, was successfully managed with conservative approach using paste of Calcium hydroxide & Iodoform as an intra-canal medicament. Periapical healing was observed along the follow up period of 3 & 6 months of root canal obturation.

**Keywords:** Conservative treatment, child, radicular cyst, calcium hydroxide, iodoform.

### INTRODUCTION

It is generally accepted that periapical lesions are resulted from either a trauma or the bacterial infection secondary to dental caries. Most of the peri apical lesions can be classified into Granulomas or Cyst or an Abscess.[1,2] Invariably, periapical lesions cannot be differentially diagnosed as either radicular cysts or apical granulomas based on radiographic evidence alone (Bhaskar 1966, Lalonde 1970); histological examination was must.[3-5] But study by Natkin et al. analyzed the data of various studies relating radiographic lesion size to histology & found radiographic lesion size of 200 mm<sup>2</sup> or larger, the incidence of cysts was almost 100%. In addition, periapical lesions not in direct communication with the involved tooth (apical true cyst), making their own self identity, may not respond the non-surgical treatment modality; but lesion with direct communication (apical pocket cyst) responds well to non-surgical treatment.[1,6,7]

There's always a conflict in thinking about the best treatment modality for periapical lesion; Surgical or Non-surgical. Earlier days manifested use of root canal treatment of the involved tooth or teeth and surgical excision for management of large periapical lesions. This was particularly true if the lesion was suspected to be an apical true cyst. But in recent years, a greater awareness of the complexities of root canal systems has led to the development of newer techniques, instruments and materials; enhancing the clinician's abilities, thus, reduces need for periapical surgery.[8,9] So today, surgical intervention is recommended only if non-surgical techniques have failed. Various studies have also reported a success rate of up to 85% after endodontic treatment of teeth with periapical lesions.[5]

The following case report explains the non-surgical treatment modality in mandibular molar associated with large periapical lesion.

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Fig 1: Preoperative radiograph irt 36.



Fig 4: Post obturation.



Fig 2: Intracanal medicament extrusion.



Fig 5: 6 months follow up.



Fig 3: 45 days follow-up.



Fig 6: 6 months follow-up teeth in occlusion.

## CASE REPORT

A 12 year old girl approached the Dept. of Paediatric & Preventive Dentistry having pain & swelling over the left lower portion of face from the

last 12 days; with history of pain & swelling dated back to about 1.5 years which subsided on taking medications with some relief. Past medical history was non-contributory, with no history of dental treatment except for the medicines prescribed.

Extraorally, a small swelling (nodule) was noticed which was firm on touch & not much intraoral swelling was present in the concerning region covered but buccal mucosa was red & tender to touch. Concerned tooth (36) was grossly carious & showed some tenderness on percussion with no

mobility. Electric pulp testing showed no response on involved tooth which normal for adjacent non-involved teeth. On radiographic evaluation of intraoral periapical X-ray, a well-circumscribed radiolucency was noticed periapically around mesial root of 36 which was about 15 mm in maximum diameter. (Figure 1) Based on these findings, the patient was diagnosed as having a large cyst-like periradicular lesion (radicular cyst) irt 36. At the same appointment, endodontic management was initiated irt 36 with preparation of the access cavity & rubber dam application. Necrotic pulp tissue was extirpated with very small amount of clear, straw-colored fluid exudation from the canals.

The working length was estimated as being 1 mm short of the radiographic apex & canals were instrumented with size 15-40 K-files using a step-back technique. 2.5% sodium hypochlorite solution was used for copiously irrigation of canals during the instrumentation & open dressing was placed. This continues for following recall visits & after only when exudation had ceased, canals were filled with paste of calcium hydroxide & iodoform (Metapex) using supplies syringe with some intentional peripaical exudation of paste. (Figure 2) Paste was further condensed with lentilo-spiral & sterile cotton pellets before sealing the coronal access. The patient was recalled after every 15 days for clinical & radiographic examination revealing significant healing. (Figure 3) After 60 days follow up, tooth was finally obturated, after Metapex removal & copious irrigation, using a lateral condensation technique. (Figure 4) Access cavity was sealed with GIC, & SSC was placed after 1 week follow-up. The next two panoramic radiographs at 3 and 6 month revealed further bony healing. In last control visit (6 month) radiograph showed that the radiolucent area was absent and that trabecular bone was forming; with no tenderness on percussion & healthy mucosa clinically. (Figure 5 & 6)

## DISCUSSION

The definitive diagnosis of the type of periradicular lesion can only be made by a histological examination.[5] However, a preliminary clinical diagnosis of a periradicular cyst is reasonable if all of the following conditions exist: (a) the periradicular lesion involves one or more

teeth with necrotic pulps; (b) the lesion is greater than 200 mm<sup>2</sup> in size; (c) a straw-colored fluid is produced upon aspiration or on drainage through an access; and (d) the fluid contains cholesterol crystals.[10] Additionally, the incidence of cysts has been shown to be 60 to 67% in lesions with a diameter of 10 to 20 mm.[11,12]

The treatment options available to manage large cysts range from nonsurgical root canal treatment and/or apical surgery to extraction. In some instances, nonsurgical treatment may be ineffective or difficult; those cases may be treated by surgery. Also Wood 1984 affirmed it impossible to differentiate a bay cyst from a true cyst, as between a cyst and granuloma, both clinically and radiographically,[13] so initial judicious treatment planning should favour a conservative approach which had also been supported by many authors (Lalonde & Luebke 1968, Bhaskar 1972).[14,15] Also no significant difference was found in healing periods of lesions initially larger than 5 mm and those smaller than 5 mm in study by Strindberg 1956 and Sjogren et al. 1970; with more stress on long observation period for treated teeth.[16,17] In addition, Calskan in his long time period clinical study reported 73.8% completely healed teeth from large cyst-like lesions with nonsurgical treatment only.[5]

During biomechanical preparation, an intentional over-instrumentation was done to initiate the inflammatory reaction which could convert the cystic lesion into a granuloma; as suggested by Bhaskar. Once the causative factors are eliminated, the granuloma heals spontaneously.[15] Also Bender asserted the resolution of cystic with penetration of the apical area to the centre of the radiolucency by establishing the drainage and relieving pressure. In addition, Seltzer was of view that over-instrumentation induced the drainage of the cystic fluid allowing the degeneration of the epithelial cells by strangulation because fibroblastic and collagen proliferation squeezed the capillary supply to the cystic lining.[18,19]

Calcium hydroxide-iodoform based paste was used as intra-canal medicament after fluid exudation was ceased. Sjögren et al. (1991) instituted its use as intra-canal dressing for a week

period could efficiently sterilize the root canals.[20] 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.[21]

Packing the canal system with calcium hydroxide or the placement of calcium hydroxide into the periapical cyst is considered an alternative to over-instrumentation (Simon 1980, Webber 1983).[22,23] Ghose et al. (1987) has advocated the osseoinductive action of calcium hydroxide with direct contact with the periapical tissue.[24] Also it is suggested that if the calcium hydroxide is confined to the root canal, the inflammation created by the diffusion of the calcium hydroxide into the lesion may cause break-up of the cystic epithelial lining, thereby allowing a connective tissue invagination into the lesion with ultimate healing.[23,25] Also Calikan & Sen 1996, Calikan & Turkun 1997 reported high frequency of periapical healing and lesions being reduced or completely disappeared, especially in young patients, only 1 or 3 months after treatment with use of calcium hydroxide.[6] Similarly, in the present case, periapical lesion started showing favorable response (towards healing) during 3 months of root canal obturation, and continued during the 6-month follow-up period. Radiographic signs such as bone density change, trabecular reformation and lamina dura formation, especially around the apex of treated tooth, confirmed healing along with improved clinical symptoms. Similar findings were observed by Satachi 2007.[8]

## CONCLUSION

This case report had proven that large periapical lesions can be successfully treated by root canal therapy, without any surgical support; with full satisfaction of patient & clinician (clinical & radiographic evidences). More sophisticated techniques such as tomography and magnetic resonance may be used for better intrabony imaging to confirm the limits of the results achieved.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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