



NON SURGICAL MANAGEMENT OF A LARGE CHRONIC PERIAPICAL LESION USING TRIPLE ANTIBIOTIC PASTE (TAP) AND CALCIUM HYDROXIDE

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ABSTRACT Trauma or traumatic injuries to the teeth can cause necrosis of the pulp by disrupting blood supply leading to anaerobic conditions which favors growth of opportunistic micro organisms, which over time may subsequently result in development of periapical lesions. The patient had a large periapical lesion in the anterior region of the mandible with mobile teeth. After stabilization by splinting, non surgical treatment was done. During the non surgical RCT, after access opening yellow straw coloured fluid was aspirated through the root canal, cleaning and shaping was done followed by placement of Calcium hydroxide for 2 weeks interval for a month, followed by placement of TAP for another 2 appointments at 2 weeks interval for a month. Satisfactory periapical healing was seen at 1 month, 2 month and 5 month recall, with considerable decrease in size of the lesion and decrease in mobility with the teeth.

KEYWORDS : Healing, Nonsurgical, Periapical lesion, Aspiration, Cyst, Triple antibiotic paste, Calcium Hydroxide

INTRODUCTION

Traumatic injuries typically interrupt the pulpal blood flow, resulting in pulp necrosis and anaerobic circumstances that encourage the development of opportunistic pathogens, which may later lead to the development of periapical lesions. (Soares J et al 2006).¹

According to Barbakow et al. (1981)², periapical radiolucent areas are often detected during routine dental radiography examinations or after an acute toothache.

Radicular cysts, dental granulomas, and abscesses make up the majority of periradicular lesions (>90%). (Bhaskar 1996)³. Apical cyst incidence among periapical lesions has been observed to range from 6% to 55%. (Lin et al. 2007)⁴.

According to Toller's (1972)⁵, the greater hydrostatic pressure of the enclosed fluid, which leads to more osteoclastic activity, might be responsible for the cyst's development.

Lesions may resolve by apoptosis if the inflammatory exudates are successfully eliminated from the lesion so as to lower the hydrostatic pressure and eliminate the microbiological aetiology without the need for surgery. (Nair, 1998)⁶

There have been several methods suggested for lowering hydrostatic pressure, including the decompression technique (Loushine et al., 1991⁷, Martin et al., 2007⁸),

Aspiration through the root canal system and the aspiration-irrigation approach (Hoen et al., 1990⁹) may cause the lesion to decrease.

In cases of large periapical lesions, it is challenging to get rid of the pathogens. Sterilization of the root canal system is challenging due to the polymicrobial nature of the infection. (Leonardo MR et al 1998)¹⁰

The root canal system cannot be cleared of microorganisms with only mechanical debridement. As a result, the root canal system requires some kind of chemical irrigation and disinfection to be properly cleaned.

Various medicaments have been widely advocated to help eliminate bacteria, reduce periapical inflammation and pain, and induce healing. Calcium hydroxide has been commonly used as an intracanal medicament, however, it has been reported that it is not effective in disinfecting the root canal system associated with persistent endodontic infections (Leonardo MR et al 2006)¹¹

Ozan and Er have found that a combination of antibiotic drugs (metronidazole, ciprofloxacin, and minocycline), when used as antibacterial dressing, is successful in healing large cyst-like periradicular Lesions (Özan Ü, Er K et al 2005)¹²

All inflammatory periapical lesions should be initially treated with conservative nonsurgical procedures (Lin *et al.* 2007)⁴

CASE REPORT

A 25 year old male patient presented with a chief complaint of pain and mobility in low front teeth since 3 months the patient give a history of road traffic accident 10 years ago the pain was gradually in onset mild in intensity dull type and intermittent in nature and relieved by itself extraoral clinical examination revealed no abnormality pertaining to the case hard tissue findings showed fractured tooth with 32 as seen in fig 1&2 and mobility present with 31,32,33 and 41. The describe teeth were grade two mobile.

Clinical tests showed tenderness on vertical percussion with 31,32,33 and 41 vitality test should no response to Hot cold and electric pulp testing with the following teeth.

A Periapical radiograph seen in fig 5 revealed a large radialision approximately 12 x 5 millimetres in diameter apparently involving the apices of the teeth 31,32,33 and 41. To get a clearer picture cbct was advised as seen in fig 6,7,8. On examining the cbct the final diagnosis was symptomatic chronic apical periodontitis with 31,32,33 and 41.

The treatment plan decided was fibre splinting with lower anterior teeth seen in fig 3&4 for stabilization of mobile teeth followed by root canal treatment with 31,32,33 and 41 with twice a week intracanal medicament dressing for lesion healing. And composite Restoration with the fractured 32. (fig 9&10)

During the non surgical root canal treatment after Access opening yellow straw coloured fluid was aspirated through the canal.

The apical foramen for both teeth was gauged using hand K-files and the apical width was found to be equivalent to size 25 for tooth 31,32,41 and size 30 for tooth 33. The root canals were prepared using K-files, until the final preparation sizes of 40 and 45

Cleaning and shaping was done followed by placement of calcium hydroxide changed at 2 weeks interval for a month. During the preparation, the canals were thoroughly irrigated with 3% sodium hypochlorite (NaOCl) and normal saline.

Since there was no much progress with healing it was decided to go for a more aggressive disinfection protocol by using triple antibiotic paste which was placed for two weeks interval for one month. When the symptoms subsided and the size of the Lesion reduced obturation was done.

The patient was kept on observation for 1 week, 15 days, 1 months, 2months and 5 months.

Satisfactory periapical healing was seen at 1 month, 2month and 5 month recall, with considerable decrease in size of the lesion and decrease in mobility with the teeth which was appreciated radiographically by means of RVG IOPA view(fig.11). A CBCT follow-up will be done at end of 1 year.

DISCUSSION

A chronic alveolar abscess is a long standing, low grade infection of the periradicular alveolar bone generally symptomless and characterised by the presence of an abscess draining through a sinus tract.

Some large lesions may be granulomas or may have a direct communication with the root canal system (apical pocket cyst or bay cyst) and respond favorably to nonsurgical treatment.(Fernandes M et al 2010)¹³

CAUSES: Source of infection is in the root canal.It is a natural sequelae of death of the pulp with extension of the infective process periapically or it may result from a pre existing acute abscess.

SYMPTOMS: Generally asymptomatic or only mildly painful. At times detected only during routine radiographic examination or because of the presence of sinus tract which can either be intraoral or extraoral.

DIAGNOSIS:The first sign of osseous breakdown is radiographic evidence seen during routine examination or discoloration of the crown of the tooth.

A radiograph taken after the insertion of a gutta percha cone into the sinus tract often shows the involved tooth by tracing the sinus tract to its origin.

When an open cavity is present in the tooth, drainage may occur by way of root canal. The rarefied area may be so diffuse as to fade indistinctly into normal bone.

When asked, the patient may remember a sudden sharp pain that subsided and has not recurred, or he or she may relate a history of traumatic injury.

Clinical examination may show a cavity, a composite or a metallic restoration, or a full coverage crown under which the pulp may have died without causing symptoms.

In other cases the patient may complain of slight pain in relation to the tooth, particularly during mastication.Tooth does not react to electric pulp tests.

DIFFERENTIAL DIAGNOSIS : Radicular Cyst due to a sclerotic bony outline.Cannot be differentiated from other periradicular diseases unless the tissue is examined histologically.

TREATMENT: Elimination of infection in root canal.



Fig 1

Once this end is accomplished and the root canal is obturated, repair of the periradicular tissues generally take place.

Triple antibiotic paste (TAP) containing metronidazole, ciprofloxacin,

and minocycline has been reported to be a successful regimen in controlling the root canal pathogens(Triple antibiotic paste in root canal therapy, Ranganamy V et al 2012)¹⁴

The combined effect of the three drugs mixed in the paste that makes the mix a potent antimicrobial agent effective against microbes(Triple Antibiotic Paste: A Suitable Medicament for Intracanal Disinfection, Krutika M.et al 2022).¹⁵

CONCLUSION:

This case report demonstrates that surgical treatment is not always necessary for treatment of a large periapical lesion and such lesions can also heal following conservative endodontic therapy.

This case report also lays emphasis of the healing efficacy and microbial control achieved with TAP.

Thus proper diagnosis is essential for correct treatment



Fig 2



Fig 3



Fig 4



Fig 5

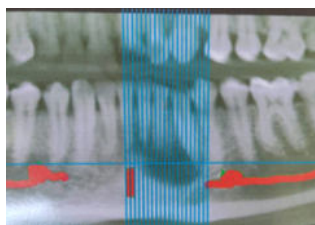


Fig 6

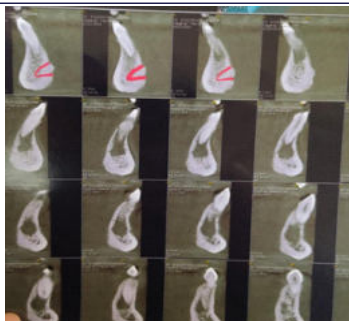


Fig 7

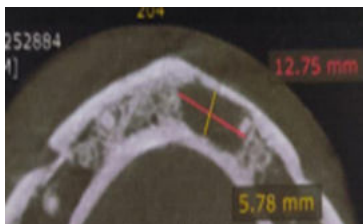


Fig 8

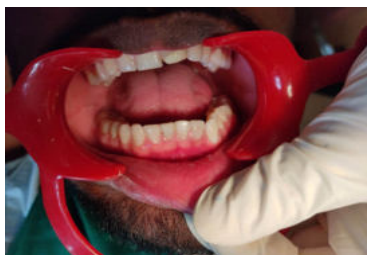


Fig 9



Fig 10

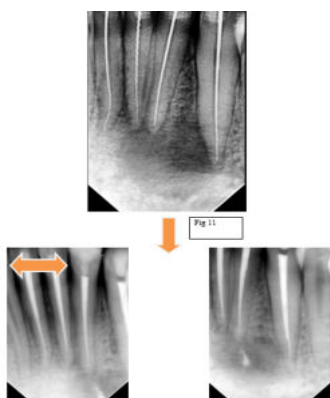


Fig 11

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