

Nonsurgical management of periapical lesions, a case report

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Abstract: *Periapical lesions are one of the most common occurrences in the dento alveolar region. They may destroy alveolar bone or tooth root depending on its size, extension and duration. Such lesions may go unnoticed or may be observed based on patients symptoms or during routine radiographic investigation. Among many nonsurgical approaches, placement of an intracanal medicament has been widely used. Use of Ca(OH)₂ or an amalgamation of drugs has been recommended to treat such lesions. The present case report is about use of triple antibiotic paste in a periapical pathology involving upper right central and lateral incisor and its remission as evident radiographically.*

Introduction: Periapical lesions can be classified as dental granulomas, radicular cysts or abscesses. Radicular cysts are odontogenic cysts that are derived from epithelial cell rests of Malassez in the periodontal ligament due to inflammation resulting from a necrotic tooth. ^[1,2,3] They are most commonly associated with permanent teeth and are rare in the primary teeth. Once diagnosed, they should be treated by conservative approach. They include Decompression technique, Aspiration and irrigation technique,

Method using calcium hydroxide, Lesion sterilization and repair therapy, Apexum procedure. ^[4-11] Here, application of an antibiotic combination is done so that the involved teeth can return to a state of health and function without surgical intervention.

Ca(OH)₂ is known for its anti-inflammatory activity, activation of the alkaline phosphatase, and antibacterial action ^[12] It is thought to create favorable conditions for periapical repair and stimulate hard tissue formation but it has a serious drawback as it is easily washed away from periapical site. Other method is use of triple antibiotic paste, i.e, metronidazole, ciprofloxacin and minocycline ^[13,14] The drugs are powdered and mixed in 1:1:1 ratio and incorporated with a sealer^[15]. The combination of drugs has been shown to penetrate efficiently through dentine from the prepared root canals especially from the ultrasonically irrigated root canals. So, all inflammatory periapical lesions should be initially

treated with conservative nonsurgical procedures. Besides, surgery has many drawbacks, which limit its use in the management of periapical lesions. Various studies have reported a success rate of up to 85% after endodontic treatment of teeth with periapical lesions [16,17,18] However, it has been reported that even though complete resorption of the paste does not occur in some cases, the periapical radiolucency around the paste resolves.

Case report

A 13-year-old male patient was referred to the Department of Conservative dentistry and Endodontics (OMFS), with a chief complaint of pus discharge from upper front teeth since past few days with mobility. He gave a history of trauma to upper anterior teeth 10 years back.

On oral examination, it was found that there was moderate pain on palpation on the labial side of the maxillary right central incisor (#11), right lateral incisor (#12) associated with a palatal swelling. were found to be non-vital (necrotic) with grade

1 mobility. Radiographic investigation showed well-defined radiolucency of considerable size in 11, 12 region with a thin radiopaque border involving the apices of the tooth. The clinical and radiographic signs were suggestive of a periapical cyst as the provisional diagnosis. So, non surgical treatment was planned and the patient was explained about it. Routine steps of endodontic treatment was started with access opening, working length determination, cleaning and shaping. There was profuse drainage of straw coloured fluid .It was then followed by thorough irrigation and placement of triple antibiotic paste mixture. The case was followed for a period of 6 months with satisfactory results. Obturation was then performed and post endodontic restoration was placed. Post-obturation intraoral periapical radiograph revealed complete resolution of the cystic lesion. Periapical region showed early signs of healing and radiographs were taken at 1 year and 2 year interval to evaluate the prognosis. They showed excellent healing with time.



fig1: Preoperative IOPA



fig 2:WL IOPA



fig3: ICM paste



fig4: post obturation IOPA after 6 mths

Discussion:

The management of periapical lesions has a high degree of success. A high percentage of 94.4% of complete and partial healing of small periapical lesions following nonsurgical endodontic therapy has also been reported.^[19] Although every treatment approach has its own benefits as well as drawbacks, but nonsurgical technique has been always tried and tested first as it is noninvasive and is accepted both functionally and psychologically. However, inflammatory apical true cysts and the presence of cholesterol crystals have been suggested as possible causes that prevent healing of periapical lesions^[20] In such cases, surgery is recommended. Non surgical endodontic therapy involves thorough instrumentation, copious irrigation and placement of an intracanal medication. All this reduces the microbial burden and provides optimum disinfection. This in turn, stimulates the host's immune response to induce repair

and promote healing.^[21] So, it was found that the elimination of bacteria from the root canal is the key to regression of periapical pathology^[22]. Introduction of newer instruments, dental materials and techniques have added a new ray of hope in the conservative management of such lesions. In this case, thorough chemo mechanical preparation was performed meticulously. No wonder it has reduced the bacterial load. but the importance of intracanal medicament is also equally beneficial in eliminating the harbouring microbes. Historically, Calcium hydroxide was considered a gold standard and hence was recommended and frequently used^[23]. But, a few studies showed that Calcium hydroxide can cause extruding pain when inserted under high pressure and extrudes through root apex. Due to its high solubility and frequent replenishment, it takes healing time longer and hasn't shown good success rate in persistent endodontic pathologies^[24-27].

Hence, various combinations of materials have been tried in literature and one such variety is triple antibiotic paste. It is comprised of ciprofloxacin, metronidazole and minocycline^[28]. Such a combination has been effective for broad coverage of aerobic and anaerobic bacterial spectrum when used for infective endodontic pathology. To avoid adverse systemic effects, local application can be more beneficial. Here, the paste was inserted and the patient was asymptomatic after one month. Literature has shown partial healing of small periapical lesions following nonsurgical endodontic therapy with triple antibiotic paste in short duration^[13] However, repair of periradicular tissues consists of a complex regeneration involving bone, periodontal ligament, and cementum and may take from months to a year or so^[29] The area of mineral loss gradually fills with bone and the radiographic density increases. In this context, Shah suggested that patients should be recalled at intervals of three months, six months, one year, and two years, to assess the healing of periapical lesions.

Conclusion: In this case report, it can be seen that small periapical lesions can well be treated with antibiotic combination in less time. So, triple antibiotic paste can be

recommended in such cases with encouraging results.

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