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Case Report

MANAGEMENT OF LARGE INFECTED RADICULAR CYST BY CONSERVATIVE SURGICAL APPROACH-A CASE REPORT

Amulya Vanapatla., Tulasi Priya N and Harikumar Vemisetty

Kamineni Institute of Dental Sciences, Narketpally

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ABSTRACT

The radicular (periapical) cyst is the second most common pulp-periapical lesion. It is most common of all odontogenic cysts. The radicular cyst is classified as an inflammatory cyst because it is a known fact that inflammatory products initiate the growth of the epithelial component. Radicular cysts arise from the epithelial residues in the periodontal ligaments as a result of inflammation usually following pulp death. The present case report is of a 16-year-old male patient with the complaint of pain in the lowerr front tooth region of jaw since 3-4 months. The present case report discusses the endodontic followed by surgical management of present case.

INTRODUCTION

The most frequent odontogenic cyst of teeth bearing areas is the radicular cyst, also called periapical cyst.[1] It originates from epithelial cell rests of Malassez in periodontal ligament as a result of inflammation due to pulp necrosis or trauma.[2] It clinically exhibits as a buccal or palatal enlargement in maxilla, whereas in mandible it is usually the buccal and rarely lingual. At first, the enlargement is bony hard; but as the cyst increases in size, the bony covering becomes very thin and the swelling then exhibits springiness and becomes flucluant when the cyst has completely eroded the bone.[3]

Definitive diagnosis must be based upon the clinical, radiographic, and histological evaluation. The treatment of the cysts can be either nonsurgical management with endodontic treatment or surgical management being either marsupialization or enucleation. [4] Conventional non surgical root canal therapy is the treatment of choice in management of teeth with large periapical lesions. When this treatment fails in resolving the periradicular pathosis alternative strategies like nonsurgical retreatment or periapical surgery must be considered. In case of very extensive lesions, as there is a chance for inadvertent undesirable consequences when surgical curettage is done. [5, 6]. Hence the purpose of the article is to describe the management of large cystic lesion with endodontic treatment followed by surgical enucleation of the cystic lesion which allows the healing of the bone.

CASE REPORT

A 17-year-old male patient reported to the Department of Conservative Dentistry, Kamineni Institute of dental sciences, Narketpally, with chief complaint of pain and pus discharge in the lower front region of jaw since one year. Patient gave history of trauma in lower anterior teeth, which had occurred when he was 10 years old.

Intraoral clinical examination revealed a round to oval swelling which was located over labial mucosa of mandibular anterior region in association with 41, 42, and 43. Swelling was soft, localized, fluctuant, inflameed and nontender. Spontaneous pus discharge was seen from gingival sulcus.of 43. Ellis class IV fracture of 41 with severe discolouration was also seen.

Electric and thermal pulp vitality testing showed negative responses in 41, 42 and 43 while 31, 32 showed a delayed response. All teeth were non-tender to percussion test. OPG showed unilocular radiolucency from 43 to 32 measuring 3x 4 cms with sclerotic borders and there was no cortical expansion [Figure 1].

A provisional diagnosis of infected radicular cyst involving 41,42,43,31, and, 32 was made. Root canal treatment of 41, 42, 43,31, and 32 followed by surgical enucleation of the cyst was planned.

Corresponding author:* **Amulya Vanapatla
Kamineni Institute of Dental Sciences, Narketpally

Figure 1 Preoperative OPG Showing periapical radiolucency involving 41,42,43,31,32

Treatment plan was formulated and after explaining it to the patient, his informed consent was taken. Root canal opening with 41,42,43,31 and 32 was done under rubber dam application. Pus discharge was seen with 41 after access opening. After determination of working length and biomechanical preparation, calcium hydroxide intracanal medicament was used for one week. Then, in next appointment, obturation was completed, using lateral condensation technique. [fig2]

Figure 2 Post obturation OPG

Patient was prepared for surgery in next visit for enucleation of the cyst. After administration of local anaesthesia, crevicular incision was made in labial region 44 to 33. A full thickness mucoperiosteal flap was reflected and a large bony defect was seen clinically. Complete curettage, along with granulation tissue removal and enucleation of cystic lesion was done[fig 3] and it was sent for histopathological evaluation.

Figure 3 complete enucleation and curettage of cyst

Flap closure was done with 3-0 silk [Fig-4] The histopathology report confirmed the provisional diagnosis of an infected radicular cyst. Post-operative instructions were given to the patient and patient was kept on antibiotics and analgesics. Currently, the patient is asymptomatic and he is under follow-up since 1 month. Full ceramic crowns were given from 43 to 32.

Figure 4 Post operative photograph

DISCUSSION

Cyst is defined as a pathological cavity that is usually lined by epithelium and which has a centrifugal, expansive mode of growth [7]. Radicular cysts are the most common cystic lesions which affect the jaw. They are most common of all the jaw cysts and comprise about 52% to 68% of all the cysts which affect the human jaw. [8, 9] They arise from epithelial remnants which are stimulated to proliferate, by an inflammatory process which originates from pulpal necrosis of a non-vital tooth. The natural history begins with a non-vital tooth which remains in situ, long enough to develop chronic periapical pathosis.[10] The treatment for radicular cysts includes conventional nonsurgical root canal therapy when lesion is localized or surgical treatment like enucleation, marsupialization or decompression when lesion is large [11] Radicular cysts generally originate after trauma or dental caries. Dental caries cause inflammation of the pulp cavity, leading to pulp the infection then spreads to the tooth apex of the root, causing periapical periodontitis, which leads to either an acute abscess or a chronic granuloma. Persistent chronic infection can lead to formation of a periapical cyst [12]. In the current case, patient had given a history of trauma previously; it could be the probable aetiology.

Cortical expansion and root resorption of the affected tooth and displacement of the adjacent teeth are common features of radicular cysts [12]. In the current case, there was cortical perforation and adjacent teeth in relation to the cyst were non-vital, which is not common. It has been stated that as the cyst enlarges, adjacent teeth can become non-vital [13].

The use of root canal dressings between sessions in root canal treatment of teeth with chronic periapical lesions is important, for reducing bacteria which are unreachable by instruments or irrigation solutions, such as dentinal tubules and ramifications [14]. Takahashi *et al*., after analyzing the pH and the concentration of calcium ions in the periapical area, concluded that at least 2 weeks were necessary for calcium hydroxide bactericidal activity [15]. In the current case, calcium hydroxide intracanal medicament was used. Lateral condensation was done for obturation of all teeth.

The surgical approach to cystic lesions of the jaws is either marsupialization or enucleation. The treatment of choice is dependent on the size and localization of the lesion, the bone integrity of the cystic wall and its proximity to vital structures. In the present case enucleation of the cystic lesion along with curettage was done which will enhance the complete healing of the lesion. Post-surgical period was uneventful. Full ceramic crowns were given for all root canal treated teeth.

The histopathological features of the submitted lesion were consistent with the clinical diagnosis of infected radicular cyst. The cystic cavity was lined by non-keratinized, stratified squamous epithelium with mixed inflammatory infiltration being present Healing of the periapical area has not yet been completed, due to large area of destruction. Currently, patient is asymptomatic and he has been kept under observation.

CONCLUSION

The current concept in management of periapical cysts is using nonsurgical means. However, depending on size and extent of lesion, surgical management might be necessary, for achieving success. Current case was managed successfully by performing endodontic therapy with thorough irrigation, cleaning and shaping and obturation of the canal space, followed by surgery.

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