

Giant Radicular Cyst of Anterior Mandible Crossing the Midline: Case Report

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ABSTRACT

Background: Radicular cysts are inflammatory cysts of odontogenic origin. These lesions are associated with non vital teeth and are seen either below or lateral to the root apices. Owing to its clinical characteristics similar to other more commonly occurring lesions in the oral cavity, differential diagnosis should include dentigerous cyst, ameloblastoma, odontogenic keratocyst, periapical cementoma . The present case report documents a massive radicular cyst crossing the midline of the mandible. Generally radicular cyst in the mandible does not cross the midline and there are very less supporting literature for it. Based on clinical, radiographical and histopathological findings, the present case was diagnosed as an infected radicular cyst. The lesion was surgically enucleated without any postoperative complications and satisfactory healing, was achieved.

Keywords: Periapical cyst, surgical enucleation, unilocular radiolucency.

INTRODUCTION

Infections due to odontogenic cause are one of the reason for the radiolucency seen in the jaws. These can be either developmental or inflammatory in origin¹. Most common reason for odontogenic etiology is an infection of the tooth due to microbial aggregation, dental caries, trauma, or any insult to the tooth which causes necrosis of the pulp and leads to periapical changes and radiolucent appearance in the jaws. A periapical or radicular cyst arises from epithelial cell rests of Malassez which proliferate by an inflammatory process originating from pulpal necrosis of a non-vital tooth³. Radicular cysts are the most common jaw cyst seen due to periapical infection, and it accounts for almost 60% of all the jaw cysts.¹ Studies suggest that approximately 44% of all the apical lesions are inflammatory periapical cysts.³ Generally radicular cyst in the mandible does not cross the midline and there are very less supporting literature for it. They are most frequently found at the apices of the involved teeth with infected or necrotic pulps; however, they may also be found on the lateral

aspects of the roots in relation to accessory root canals. These can be seen in the entire tooth bearing areas, most commonly being seen in the maxilla compared to the mandible.^{4,5} Here, we present a long standing case of large unilocular radiolucency crossing the midline as seen in orthomopentogram xray and histopathology confirmed as radicular cyst.

CASE REPORT

A 32-year-old male patient reported to our dental institute with a chief symptom of intermittent mild pain and difficulty in chewing. On clinical examination there was no as such facial asymmetry (figure 1), intra oral examination revealed vestibular obliteration with slight bluish discoloration and tenderness, buccal cortical plate expansion was felt during palpation along with egg shell crackling effect. Lower anterior teeth were slight mobile as compared to premolars. Vitality test was performed in which it was found that lower central and lateral incisors showed no response to thermal test while premolars showed delayed

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response to thermal stimulation. Patient was advised for cone beam CT (CBCT), but he was unwilling for CT or CBCT, as he was poor and had financial constraints. Hence he was advised for orthopantomograph, and routine laboratory investigations. Radiographic examination revealed a large unilocular radiolucency with well-defined radiopaque border extending from second premolar on the right side to second premolar on the left side.(figure 2).Routine laboratory investigations were within normal limits. Fine needle aspiration revealed turbid brown-coloured fluid, consisting dense infiltrate of acute inflammatory cells, predominantly polymorphonuclear leukocytes. Few isolated epithelial cells were seen, which were normal in size, shape and appearance. Cytological picture was suggestive of an acute inflammatory lesion. Based on clinical, radiological and analysis of aspirate, a provisional diagnosis of an infected radicular cyst was made.

TREATMENT

Endodontic treatment was initiated for all the teeth upto molars prior to surgery. Patient was explained about the treatment approach as well as the possible complications, after getting the duly signed consent, surgery was planned under local anesthesia. Lower Vestibular incision extending upto molars was given on both the sides, dissection was carried out to protect the branches of mental nerve. Thinned out buccal cortical plate was removed and entire cystic mass was enucleated figure 3,4). Apicectomy was carried out in root canal treated teeth, after thorough cleaning and debridment surgical site was primarily closed using silk sutures. Specimen was send for histopathological examination, where it was confirmed as radicular cyst (figure5). After six months of follow up patient wound healing was satisfactory, mobility of teeth were reduced and patient was satisfied with the treatment outcome.



Fig 1: Profile of the patient.



Fig 2: Preop OPG.



Fig 3: Intra operative.



Fig 4: Surgical site closure.

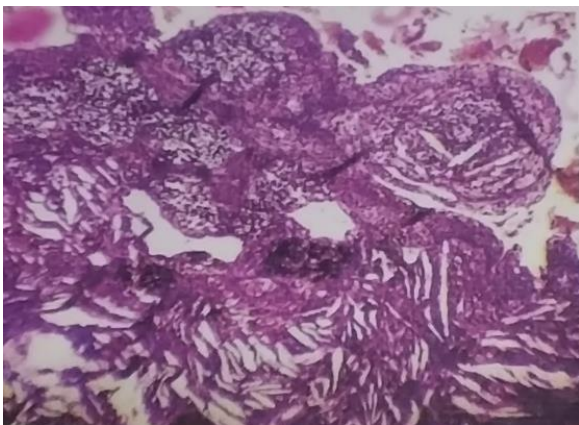


Fig 5. Histopathology view of the lesion.

DISCUSSION

Inflammatory jaw cysts comprise a group of odontogenic lesions which originate as epithelial residues in the periodontal ligament due to apical periodontitis following the death and necrosis of the dental pulp³. Radicular cysts are diagnosed either during routine radiographic examination or following their acute exacerbation. Radicular cystic lesions undergo asymptomatic evolution with crepitations and egg shell crackling, leading to cortical plate expansion⁵. The alveolar process exhibits a paper-like texture on palpation as seen in our case. Radicular cysts grow slowly and lead to mobility, root resorption and displacement of teeth. Once infected they may lead to pain and swelling and patients become aware of the problem.⁶In our case slight mobility along with root resorption of lower premolar bilateral and canine on the right side was seen in the chronic infected cystic lesion.

Two theories are postulated regarding the formation of cyst cavity. The nutritional deficiency

theory is based on the fact that the cells present in the center are devoid of nutrition and undergo liquefaction necrosis and degeneration which slowly converts to the necrotic area. According to the abscess, theory is proliferating surrounding epithelium lines the abscess cavity formed due to lysis and necrosis^{7,8}. In the last phase, cyst grows in size due to osmosis

Radiographically, the radicular cyst appears as a unilocular radiolucency at the apex of a non-vital tooth. The margin of a radicular cyst is radiopaque with sclerotic borders, which continues with the lamina dura⁵. Despite being infected the present case had a clear radiopaque border and with root resorption was evident, which was helpful in the provisional diagnosis of radicular cysts. Other odontogenic cysts like dentigerous cysts, odontogenic keratocysts and odontogenic tumours such as ameloblastoma, Pindborg tumour and cementoma may have the same radiological features as radicular cysts. Hence histopathological evaluation is necessary to define these type of lesions.

Simon¹⁵ described two types of the radicular cysts. One form is a true radicular cyst which contains a closed cavity entirely lined by the epithelium and the other form of a radicular cyst is a periapical pocket cyst also known as bay cyst. The epithelium is attached at the margins of the apical foramen in such a way that the cystic lumen is open to the affected root canal.

Histopathologically, radicular cysts are lined completely or in part by stratified squamous epithelium. These linings may be discontinuous in part and range in thickness from 1 to 50 cell layers. The lumen of a cyst contains fluid with low concentration of protein and collection of cholesterol clefts (Rushton bodies) with multinucleated giant cells. Different intensities of acute and chronic inflammatory infiltrate are present subepithelially.

The recommended treatment option available for radicular cyst is the conventional endodontic approach combined with decompression or marsupialization and surgical enucleation of a cyst with extraction of the offending tooth.

The treatment of these cysts is still under discussion and many professionals opt for a conservative treatment by means of endodontic technique. When the lesion is small with approximately 1 cm in diameter, most clinicians opt for conventional endodontic treatment. Endodontic treatment of radicular cysts eradicates microbes or substantially reduces the microbial load from the root canal and prevents reinfection by orthograde filling. Once periapical inflammation is reduced, there will be a decrease in inflammatory mediators and cytokines released by innate and adaptive immune cells and the epithelial cells of a cyst's lining epithelium will die of apoptosis. Lesions that fail to resolve with such therapy may be successfully managed by extraction of the associated non-vital teeth and curettage of the epithelium in the apical zone. The other options suggested are surgical decompression to reduce the size of the lesion before marsupialisation or complete enucleation is planned, to reduce the chances of damage to other teeth or anatomic structures. Nair⁹ considered that the type of cyst was important, and the true cyst is self-sustaining and may persist even after endodontic treatment. In contrast, the lumen of a pocket cyst is continuous with the root canal and thus dependent on the pulpal infection for its growth and persistence. Pocket cysts, therefore, resolve and heal after conventional endodontic treatment, and true cysts require surgical excision.

Enucleation of large cysts in the jaws is an invasive method that may lead to complications such as damage of the adjacent teeth or anatomic structures. Recurrence of the lesion has also been seen in cases where cystic lining was not removed completely. Multiple radicular cysts can be seen in dentinogenesis imperfect and dense in dente⁷. At present, there is no concrete evidence that cyst epithelium is at particular risk of carcinomatous transformation and no justification regarding cysts as precancerous lesions.

The current case was of a giant infected true radicular cyst, surgical enucleation was performed, as this technique is more used in treating massive lesions. Vitality of the adjacent teeth and integrity of vital anatomical structures were not violated. Recently, much attention has been paid to the regeneration of destroyed periapical tissues after surgical elimination of the periapical pathology. In

order to aid reparation process, after surgical enucleation, guided bone generation methods are in use¹⁴. However, there are considerable controversies regarding the use of guided bone regeneration techniques in periapical defects.

CONCLUSION

Radicular cyst a common lesion seen in the jaw bones, early stage lesion may go unnoticed, so careful clinical examination is required supported by radiographs. Radiographically, it may pose diagnostic dilemmas due to its location, each entity should be ruled out carefully on the basis of history, clinical, and histopathological examination. Various treatment options are there which is to be decided depending on the nature and extent of the lesion.

CONFLICT OF INTEREST

No potential academic conflict of interest relevant to the above article was reported.

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