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Surgical management of radicular cyst: A case report

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Abstract

Radicular cyst is the most common odontogenic cystic lesion of inflammatory origin. It is also known as periapical cyst, apical periodontal cyst, root end cyst, or dental cyst. It arises from epithelial residues in the periodontal ligament as a result of inflammation. This condition is usually asymptomatic but can result in a slow-growth tumefaction in the affected region. Radiographically, the archetypal description of the lesion is a round or oval, well-circumscribed radiolucent image involving the apex of the infected tooth. In the management of these lesions, the endodontic treatment only is not sufficient and it should be associated with surgical management.

Keywords: Endodontic surgery, pharmacotherapeutic, physiotherapeutic, endodontic treatment

Introduction

Endodontic surgery is a dental procedure to treat apical periodontitis in cases that did not heal after nonsurgical retreatment or, in certain instances, primary root canal therapy. It aids to maintain the form, function, and esthetics of the relevant teeth and their roots when conservative instrumental, pharmacotherapeutic, and physiotherapeutic treatments failed. A cyst is a pathological cavity in the bone or soft tissue, with a well-defined outer wall of connective tissue and inner wall of epithelial tissue. Periapical cysts are most commonly treated surgically for the least recurrence chances.

Radicular cyst is one of the most common odontogenic cystic lesions of inflammatory origin, arising from epithelial residues in the periodontal ligament as a result of inflammation. Radicular Cysts are thought to be formed from epithelial cell rests of Malassez (ERM), which are remnants of Hertwig's epithelial root sheath, present within the periodontal ligament.

The pulpal infection and necrosis products spill out into the periapical tissues, initiating an inflammatory response. The inflammatory cells secrete lymphokines to neutralize, immobilize and degrade bacteria. These cells are thought to elaborate many other factors that either directly or indirectly act as epithelial growth factors, stimulating the proliferation of rests of Malassez.

The cyst is commonly located at the root apices of the offending tooth or at the lateral side if associated with a lateral or accessory canal. A radicular cyst remains asymptomatic and the patient usually becomes aware of the cyst when a swelling becomes clinically obvious. Conventional orthograde root canal treatment is the regular approach for the management of the cyst. However, marsupialization, decompression, and surgical enucleation may be required for a large and extensive cyst.

Case presentation

A 25-year female reported to our college with a chief complaint of swelling in the right upper front teeth region for the past 30 days. The tooth which was affected was endodontically treated.

On palpation, it was non-mobile, no fixity, no pus discharge, soft, smooth, non-indurated, and non-tender. Palpation showed grade I mobility of the lower incisors. Intraoral periapical radiograph revealed a well-defined radiolucency involving the periapical region 11, 12. A well-defined sclerotic border was found on the 11 and 12 regions.

Routine blood examination reports were normal. Based upon clinical and radiographic findings a provisional diagnosis of radicular cyst wrt 11 and 12 was made.

Surgical enucleation was done followed by the apicectomy and retrograde filling with MTA was done wrt 11 and 12. The tissue was sent for histopathological examination and confirmed the no keratinized stratified squamous epithelium with an arcading pattern. The underlying connective tissue was dense fibrocollagenous and consisted of severe inflammatory cell infiltrate chiefly lymphocytes and plasma cells. At a few areas, globular, eosinophilic structures suggestive of Russell bodies were also noted. All these features indicated it was a radicular cyst. The patient was under 6 months follow up and there was no sign of recurrence or any other complication.



Fig 1: Radiographic image



Discussion

As already mentioned radicular cyst also known as periapical cyst, root end cyst or dental cyst, originates from epithelial cell rests of malassez in periodontal ligament because of inflammation due to trauma or pulp necrosis which was in concurrence with the present case that reported history of trauma. Occurs more commonly between the third and fifth decades in males and more frequently found in the anterior maxilla.

Latoo, *et al.* quoted that radicular cysts account for 52-68% of the jaw cysts. The radicular cyst is the most common odontogenic cyst of the oral cavity (52.3-70.7%) followed by the dentigerous cyst (16.6-21.3%) and odontogenic keratocyst (5.4-17.4%). Radicular cysts are generally asymptomatic and are detected by radiography but long-standing cases may show an acute exacerbation of the cystic lesion and develop signs and symptoms like swelling, tooth mobility, and displacement of an unerupted tooth. The choice of treatment for a radicular cyst depends upon the extension of the lesion, its relation with the other structure, the clinical characteristics of the lesion, and the systemic condition of the patient.

The treatment of these cysts is still under discussion and many professionals' options for a conservative treatment by means of endodontic therapy. In the larger lesions, the endodontic treatment alone is not efficient and it should be associated with decompression or marsupialization or even enucleation of the cyst, but the high percentage of 94.4% of complete and partial healing of small periapical lesions following nonsurgical endodontic therapy has also been reported.

Radicular cysts heal spontaneously after root canal treatment or extraction. Some authors propose that the radicular cyst must be totally enucleated surgically to remove all the epithelial remnants. In our case report, surgical enucleation of the radicular cyst is done followed by apicectomy and retrograde filling with MTA material.

Conclusion

Radicular cyst is one of the most common lesions seen in the dental practice. Small radicular cyst frequently heals simply with endodontic therapy, larger lesions may need additional therapy. Surgical treatment is indicated only when nonsurgical treatment is not practically possible or unlikely to provide the desired outcome.

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