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A Study on Sequale of Development and Clinical Features of Radicular Cyst

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ABSTRACT

Radicular cysts are the most common cystic lesions affecting the jaws. They are most commonly found at the apices of the involved teeth, however they may also be found on the lateral aspects of the roots in relation to lateral accessory root canals. Quite often a radicular cyst remains behind in the jaws after removal of the offending tooth and this is referred to as a residual cyst. Radicular cysts are the most common of all jaw cysts and comprise about 52% to 68% of all the cysts affecting the human jaws.

1. Introduction

A radicular cyst is generally defined as a cyst arising from epithelial residues (cell rests of Malassez) in the periodontal ligament as a consequence of inflammation, usually following the death of the dental pulp. Radicular cysts are the most common odontogenic cystic lesions of inflammatory origin affecting the jaws [1]-[4]. They are most commonly found at the apices of the involved teeth; however, they may also be found on the lateral aspects of the roots in relation to lateral accessory root canals. Many radicular cysts are symptomless and are discovered when periapical radiographs are taken of teeth with non-vital pulps [5]. Over the years, the cyst may regress, remain static or grow in size.

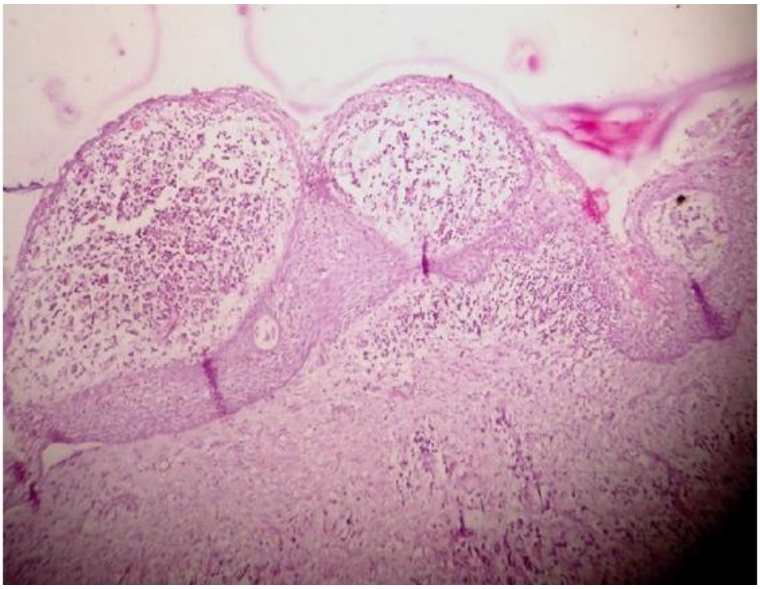

Fig.1. Histopathology of radicular cyst at root apex

2. Clinical Features

These cysts can occur in the periapical area of any teeth, at any age but are seldom seen associated with the primary dentition. Anatomically, the apical cysts occur in all tooth-bearing sites of the jaws but are more frequent in

maxillary than mandibular teeth. In the maxilla, the anterior region appears to be more prone to cyst development whereas in the mandible the radicular cysts occur more frequently in the premolar region. Most of the radicular cysts are symptom less and are discovered when periapical radiographs are taken of teeth with non-vital pulps.

At first the enlargement is bony hard but as the cyst increases in size, the covering bone becomes very thin despite subperiosteal bone deposition and the swelling then exhibits 'springiness'. It is often said that radicular cysts are painless unless infected. Some patients with these lesions, however, complain of pain although no evidence of infection is found clinically and no evidence of acute inflammation is seen histologically after the cyst has been removed.

3. Histopathology

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. Hyaline bodies which represent a secretory product of the odontogenic epithelium in radicular cyst [6]. The deposits of cholesterol crystals arise from the disintegration of red blood cells, lymphocytes, plasma cells and macrophages.

Occasionally metaplastic changes, in the form of mucous cells or ciliated cells, are frequently found in the epithelial linings of radicular cysts due to migration of these cells from maxillary sinus or nasal cavity [7].

4. Pathogenesis

Dental caries or trauma cause chronic inflammation which eventually forms a periapical inflammation; continued inflammation stimulates cells of the rests of Malassez, the epithelial cells undergo necrosis to form the cyst which may be sterile or become secondarily infected [8]-[10]. While most are lined by epithelium derived from rests of Malassez, epithelial lining may be respiratory type derived from the maxillary sinus, in the setting of a periapical lesion communicating with the sinus wall.

May be oral epithelium from a fistula or oral epithelium proliferating down a periodontal pocket.

5. Radiograph

Radiographically, most radicular cysts appear as round or pear-shaped unilocular radiolucent lesions in the periapical region. The cysts may displace adjacent teeth or cause mild root resorption.

6. Differential Diagnosis

(a) Dentigerous cyst – is an odontogenic cyst that surrounds crown of impacted tooth, caused by fluid accumulation between reduced enamel epithelium and the enamel surface resulting in a cyst in which the crown is located within the lumen.

(b) Ameloblastoma – is an unicentric, non-functional intermittent in growth, anatomically benign and clinically persistent tumor. It is a true neoplasm of enamel organ which does not undergo differentiation to the point of enamel formation.

(c) Odontogenic keratocyst – is an aggressive odontogenic cyst derived from rests of dental lamina with distinct histological features like corrugated parakeratin layer, uniform thickness of lining epithelium of 5-8 cell thickness and palisaded basal cell layer.

(d) Periapical cementoma – is a benign condition occurring near periodontal ligament around the apex of a tooth.

(e) Pindborg tumour – is a benign, uncommon odontogenic neoplasm that exclusively epithelial in origin.

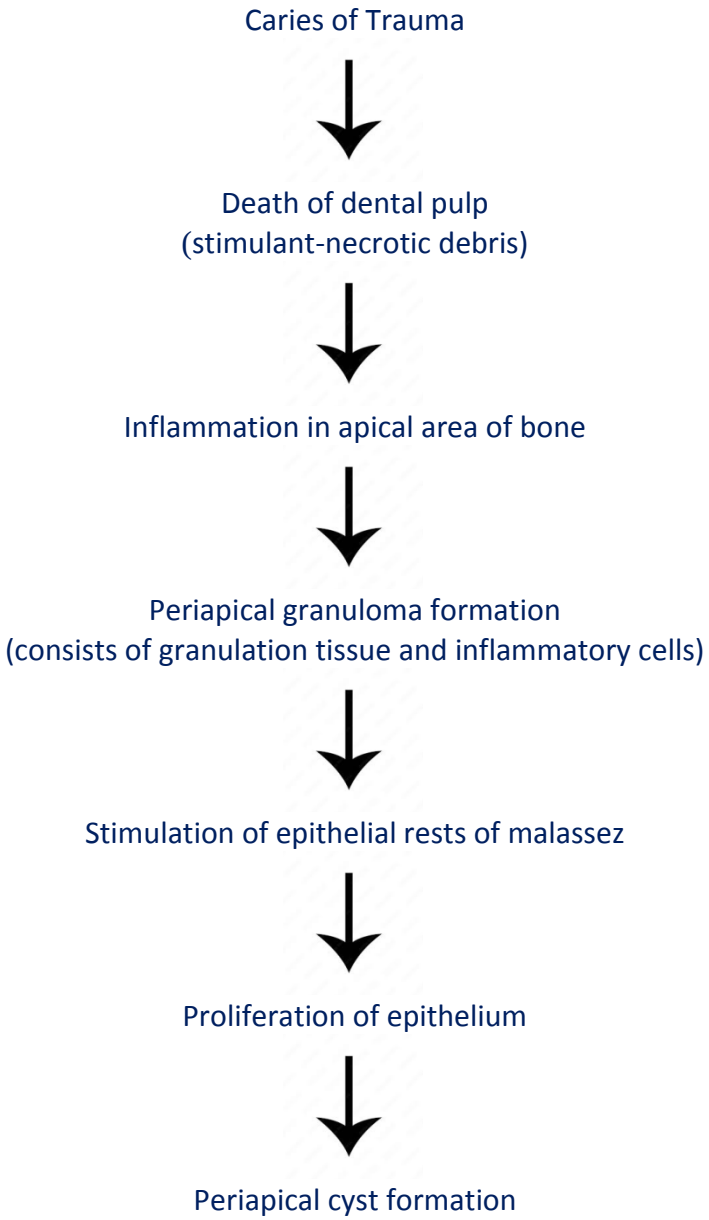

Fig.2. Flowchart depicting sequale of development of radicular cyst

7. Conclusion

A radicular cyst is a common condition, and it usually goes unmodified and rarely exceeds the palpable dimension. Untreated cases may lead to tissue destruction and facial deformity. Hence this case, occurs in retained root stump with clinical and histopathological findings similar to previous literature and was successfully treated by extraction of the offending tooth followed by surgical enucleation.

8. Future Recommendation

Benign behavior of radical at cyst could be explained by the expression of laminin-1and Ki-67. Laminin-1 and Ki-67 could be valuable markers for the prediction of the biologic behavior of radicular lesions.

Declarations

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Competing Interests Statement

The authors declare no competing financial, professional and personal interests.

Consent for publication

Authors declare that they consented for the publication of this research work.

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