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Radicular cyst: A case report

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Abstract
Radicular cysts are common odontogenic cyst. It involves the apex of carious tooth. It is a true cyst, since the lesion consists of pathologic cavity lined by epithelium and is often fluid filled. Radicular cyst which remains after or develops subsequent to extraction is termed residual cyst. Cyst can be managed surgically and or non-surgically. Choice of treatment depends on site and size of cyst. The present case, a characteristic radicular cyst, was successfully managed with root canal therapy (RCT) along with surgical enucleation.

Keywords: Odontogenic cyst, radicular cyst, RCT, enucleation.

1. Introduction
Cyst is defined as a pathologic epithelium lined cavity usually containing fluid or semi-solid material. Odontogenic cysts are derived from the epithelium associated with the development of dental apparatus. Several types of cyst may occur depending on the stage of odontogenesis during which they originate. Odontogenic cysts are derived from 1) Tooth germ 2) Epithelial rests of malassez 3) Reduced enamel epithelium of a tooth crown 4) Remnants of dental lamina or 5) possibly the basal layer of oral epithelium. [1].
Radicular cyst is the most common odontogenic cyst. In contrast to other type of cysts, it involves the apex of erupted tooth and sequel of periapical granuloma originating as a result of bacterial infection and necrosis of the dental pulp, nearly always following carious involvement of tooth. The epithelium is derived from epithelial rests of malassez in the periodontal ligament, which proliferate as a result of inflammatory stimulus in a pre-existing granuloma. Epithelium may be derived in some case from 1) Respiratory epithelium from maxillary sinus when the periapical communicates with the maxillary sinus 2) Oral epithelium from a fistulous tract 3) Oral epithelium proliferating apically from a periodontal pocket.(1)
Here is one such case of radicular cyst that presented as palatal swelling which was well managed through surgical and non-surgical approach.

2. Case report
60 year male old patient reported to our department with swelling in anterior palate from past 6 months, which slowly increased to present size. On clinical examination a swelling measuring about 2 x 3 cms extending from 21-24 in anterior palate, soft in consistency, attrition and erosion present in 11,21,22 (Fig 1). No discharge noted. Teeth were tender on percussion. Maxillary occlusal view radiograph was taken that showed well defined radiolucency measuring approximately 2 x 4 cms involving apex of 11, 21 and 22 (Fig 2).
In the present case a definitive diagnosis of cyst was made i.r.t 11, 21, 22 on radiographic examination but the final call for type of cyst was left to histopathologic report. Treatment plan comprised of RCT and cyst enucleation for which consent was taken from the patient. RCT was carried up till biomechanical preparation and remaining stages of RCT carried out following surgical cyst enucleation as there was continuous drainage from the canal of infected teeth and the chances of recurrence are more if the cysts remnants remained.
Cyst enucleation procedure: Lignocaine with 2% adrenaline injected to anaesthetize the operating site. Crevicular incision was placed on palatal aspect extending from 14-24 to reflect full thickness flap that exposed a wide palatal bone defect (fig 3). Cyst lining excavated along with its content, which left a large gaping palatal bone defect measuring about 2 by 3 cms (fig 4). Thorough curettage done. Flap closure done with 3-0 silk suture. Specimen sent for histopathological examination which confirmed radicular cyst (Fig 5).

Fig 1: preoperative photograph showing swelling in anterior palate.

Fig 2: Occlusal view radiograph showing radiolucecy involving apex of 11, 21 and 22.

Fig 3: Reflected full thickness flap showing wide palatal defect.

Fig 4: Palatal bone defect after enucleation.

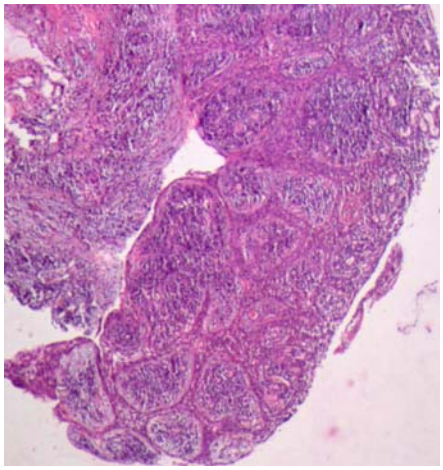

Fig 5: Histopathology picture.

Serous drainage from the canals continued for 15 days post surgically. Once the canals were dry, obturation (filling) was done and crowns were inserted in a week's duration for the anterior teeth11, 21, 22.

3. Discussion

Radicular cyst also known as periapical cyst, periodontal cyst, root end cyst or dental cyst, originates from epithelial cell rests of malassez in periodontal ligament as a result of inflammation due to pulp necrosis or trauma. Radicular cysts, with an incidence of 0.5-3.3% of the total number in both primary and permanent dentition [2]. Occur more commonly between third and fifth decades, more common in males than in females, and more frequently found in the anterior maxilla than other parts of oral cavity [3]. That can be characteristically appreciated in the present case.

Pathogenesis of radicular cysts has been described as comprising of three distinct phases: the phase of initiation, the phase of formation and the phase of enlargement [4]. Radicular cysts are usually asymptomatic and are left unnoticed, until detected by routine radiographic examination where as some long standing cases may undergo an acute exacerbation of the cystic lesion and develops signs and symptoms such as swelling, tooth mobility and displacement of unerupted tooth [5]. Associated teeth are always non-vital and may show discoloration [6]. It clinically exhibits as buccal or palatal swelling in maxilla, where as in mandible it is usually buccal and rarely lingual. At first, the enlargement is bony hard but as the cyst increases in size, bony covering becomes very thin and the swelling exhibits springiness and becomes fluctuant when the cyst has completely eroded the bone as seen in present case [7].

Radiographically most radicular cyst appear as round or pear shaped radiolucent lesion in the periapical region [8]. Greater likelihood of radiolucencies being radicular cysts rather than chronic periapical periodontitis lesions with increased size of radiolucencies, particularly those over 2cm [9].

The choice of treatment may be determined by some factors such as extension of the lesion, relation with noble structures, evolution, origin, clinical characteristics of the lesion, co-operation and systemic condition of the patient. Treatment options for radicular cysts can be conventional nonsurgical RCT when lesion is localized or surgical treatment like enucleation, marsupialization or decompression when the lesion is large [10]. This case report presents successful surgical enucleation of large radicular cyst alongside with root canal treatment.

Histological features: Almost all radicular cysts are lined wholly or partly by nonkeratinized stratified squamous epithelium. This lining may be discontinuous ranging in thickness from 1-50 cell layers. In the early stages epithelium lining may be proliferative and show arcading with intense inflammatory infiltrate. As the cyst enlarges, the lining becomes quiescent and fairly regular with a certain degree of differentiation to resemble simple stratified squamous epithelium.

Keratin formation (2% of cases) when present, affects only part of the cyst wall. Inflammatory cell infiltrate in the proliferating epithelium consists predominantly of PMN's and the adjacent fibrous capsule is infiltrated by chronic inflammatory cells [11].

4. Conclusion

Treatment of the cyst is still under discussion. Various treatment option have been suggested depending on the size and location of cyst. While in large lesions endodontic treatment is followed by surgical enucleation however some authors propose nonsurgical management of small lesions. This case report presents successful surgical management of large cyst alongside with endodontic treatment.

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