

## Lateral periodontal cyst- A report of two cases with varying clinico-radiological features

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**Abstract**

Lateral periodontal cyst (LPC) is an uncommon type of odontogenic cyst of developmental origin that typically occurs laterally on the root surface of a tooth, representing 0.8% - 2% of cysts in the jaws. They are frequently located in the mandibular premolar area followed by the anterior region of the maxilla. It is usually asymptomatic and is discovered on a routine radiograph. The involved teeth are usually vital. Although the occurrence of lateral periodontal cyst is rare, the precision of its diagnosis is necessary so that the correct treatment can be established. The purpose of this article is to report two cases of lateral periodontal cyst, one presenting with typical clinical features while other having contrasting features and to review the relevant literature which describes the clinical, radiological and histopathological features of lateral periodontal cysts.

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### INTRODUCTION

Odontogenic cysts are classified by the World Health Organization as inflammatory and developmental according to their epithelial lining. Since then lateral periodontal cysts (LPC) have been regarded as an independent condition. [1]

The LPC is a developmental odontogenic cyst defined as a radiolucent lesion which develops along the lateral aspect of an erupted vital tooth, in which an inflammatory etiology and a diagnosis of collateral keratocyst have been excluded based on clinical and histological grounds. [2]

Epidemiologically the incidence of lateral periodontal cyst is low, representing approximately 0.8% to 2 % of all odontogenic cysts. [3]

The various theories concerning the etiology and pathogenesis of the lesion have been reviewed by Standish and Shafer.[4] A hypothesis has been proposed that it arises initially as a dentigerous cyst

that develops by expansion of the pericoronal follicle along the lateral surface of the crown.[5] An origin from epithelial rests of Malassez has also been suggested.[3] At present the theory put forth by Wysocki and his colleagues is the most accepted one which suggests the histogenesis of LPC from postfunctional dental lamina rest cells.[5]

Lateral periodontal cysts have been most frequently reported in the mandibular premolar area, followed by the anterior region of the maxilla [6]. Often LPC does not present distinctive clinical symptoms. The associated teeth are usually vital, unless secondarily infected. It is asymptomatic and is often discovered on routine radiological examination. [7]

Here we report the two contrasting clinico-pathological and radiological features of LPC which are located in the anterior region of maxilla with a brief review of literature.

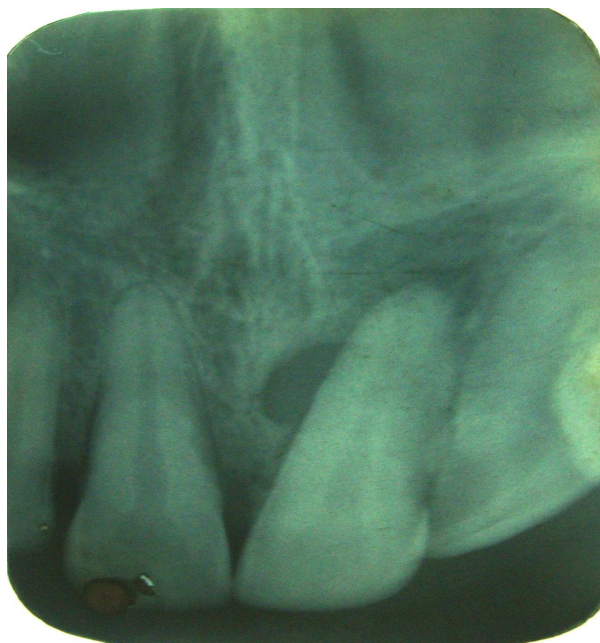
## CASE REPORTS:

### Case 1 (TYPICAL CASE):

A 30-year-old female patient reported to our institute with complaint of decay with left lateral and central incisor since one year. The patient did not report any associated symptoms.

Clinical examination revealed carious involvement of the mesial aspect of 22 and distal aspect of 21. The clinical periodontal examination revealed a probing depth of less than 2.0 mm and absence of tooth mobility. A test for pulp vitality was performed and the tooth responded positively for maxillary central incisors whereas maxillary lateral incisors were nonvital.

An intra oral periapical radiograph was made which revealed a circumscribed lesion of approximately 0.5 cm with a well defined borders located medial to the root of 21. Based on these clinical and radiological presentations a provisional diagnosis of lateral periodontal cyst with respect to 21 was made (Figure 1A).

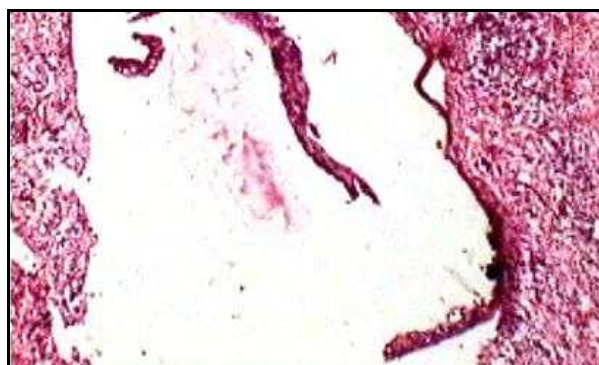


**Figure 1 A.** A well defined radiolucency with sclerotic borders noticed in relation to mesial of left central incisor.

A full thickness flap was elevated and the lesion was completely enucleated under local anaesthesia and retrograde root canal filling was done.

Histologically, the lesion was unicystic and the lining epithelium consisted of non-keratinized squamous epithelium, interspersed with a few glycogen rich clear cells. The presence of mild chronic inflammation observed in the connective tissue which was far from the epithelial side (Figure 1B). The histological

findings supported the diagnosis of lateral periodontal cyst of developmental origin.



**Figure 1 B.** Unicystic lesion with non-keratinized squamous lining epithelium, interspersed with a few glycogen rich clear cells. The presence of mild chronic inflammation observed in the connective tissue

### Case 2 (ATYPICAL CASE):

A 17-year-old female patient reported to Department of Oral Medicine and Radiology, with the complaint of discoloured maxillary left lateral incisor since 8 months. The patient gave history of trauma 3 years back. Patient had visited a local dentist who performed root canal therapy on the tooth which could not be completed due to patient compliance. Patient gave history of gradual discolouration of the tooth since then.

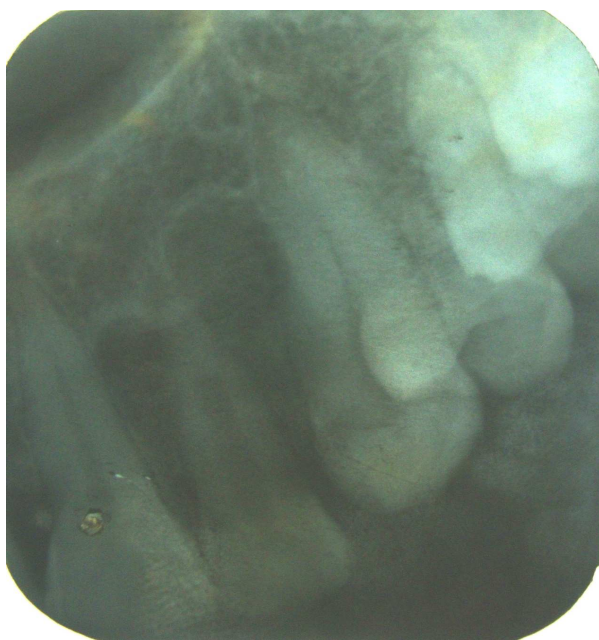
On intraoral examination, 22 appeared discoloured with access cavity in the palatal region and temporary restoration. The tooth was non tender on percussion and no mobility was illustrated. The tooth responded negatively to electric pulp testing.

Intraoral periapical radiograph of the site revealed relatively broad root canal with radiopaque area (apical one third) suggestive of attempted obturation of the root canal treatment. A well defined unilocular radiolucent area measuring approximately 1 cm in diameter with sclerotic borders were observed on either sides of the root. The radiolucency extended from beyond the root apex (superiorly) up to the cervical area of 22 (inferiorly) (Fig 2 A).

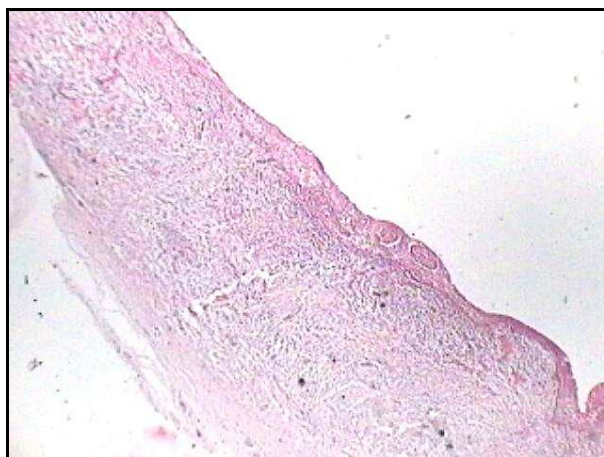
On the basis of these clinical and radiological findings a provisional diagnosis of radicular cyst was made. Surgical enucleation of the lesion was carried out with retrograde filling of the root canal.

Histopathological examination of the specimen revealed a cystic cavity lined by thin non keratinized squamous epithelium two or three layers thick (similar to reduced enamel epithelium). The epithelial lining exhibited focal thickenings or plaques. The connective tissue subjacent to the epithelium exhibited minimal chronic inflammatory infiltration consisting mainly of

lymphocytes (Figure 2 B). The histopathologic picture suggested features of lateral periodontal cyst of developmental origin.



**Figure 2 A.** A well defined unilocular radiolucent area with sclerotic borders observed on either sides of the root of left lateral incisor. Broad root canal with radiopaque area at apical one third of left lateral incisor also seen.



**Figure 2 B.** Epithelial lining exhibited focal thickenings or plaques. The connective tissue subjacent to the epithelium exhibited minimal chronic inflammatory infiltration consisting mainly of lymphocytes.

## DISCUSSION:

LPC is an uncommon lesion representing approximately 0.8% to 2% of all odontogenic cysts [3]. The first five well documented cases were reported in 1985 by Standish and Shafer [4]. They described it for the first time as a non inflammatory type of periodontal cyst and speculated on its pathogenesis stating that it

could be a result of idiopathic stimulation of cell rests. Since then isolated cases of LPC have been reported [8].

At the present time, the LPC is considered a distinct pathologic entity with well established clinical, radiographic and histologic features. It is an intraosseous (central) cyst, associated with the root of a vital tooth.[6] The lateral periodontal cyst occurs particularly between the 5th through 7th decades, with an average of 54 years [3, 9]. Another important epidemiological aspect described by Rasmusson et al. is that LPCs are much more common in males than in females in the proportion 22/10 [10].

Neville et al [11] reported that 75 to 80% of cases occur in the region of the lateral incisor, canine and lower pre-molar. The present cases also have been reported in anterior maxillary area.

A number of theories have attempted to explain the etiology of LPCs. These lesions are now believed to originate from odontogenic epithelial remnants (rests of Serres) [12], though there is great controversy regarding the possible implication of the enamel epithelium, dental lamina remains, and the rests of Malassez [3,13]. The diagnosis of these lesions is incidental, since they are mostly asymptomatic. Radiologically, the lateral periodontal cyst appears as a round, oval or teardrop-like well-circumscribed interradicular radiolucent area, usually with a sclerotic margin, lying somewhere between the apex and the cervical margin of the teeth.[12,14] Although uncommon, resorption of adjacent teeth has been reported [15]. Loss of lamina dura and periodontal ligament space may be present [15]. A swelling may occur on the buccal aspect, in which case the differential diagnosis might include a gingival cyst[3].

The differential diagnosis of LPC [12,14] must be established with the rest of odontogenic cysts – including follicular, primordial and adult gingival lesions in the case of developmental cysts, and radicular and residual cysts in the case of inflammatory cystic lesions.

The histopathological features of the lateral periodontal cysts have been extensively studied by many researchers. The epithelium consisted of 3 to 6 cell layers thick, non keratinized squamous epithelial cells and occasionally interspersed glycogen rich clear cells. [3,6]. Some of the other histological features of the lateral periodontal cyst include the absence of inflammation in the connective tissue, the artifactual separation of the lining epithelium from the underlying connective tissue, and the hyalinization of connective tissue immediately beneath the epithelium [3,10]. Although one of our cases presented with clinical and radiological features which was highly atypical careful

histopathological analysis resulted in an accurate diagnosis. Our report highlights the significance of histopathological examination of surgically excised pathological tissue even when the pathology shows a clinical and radiological feature that is routine in nature.

The treatment of choice according to all authors is surgical enucleation of the cyst [3,13]. Recurrence is uncommon, even though it has been reported as a bothryoid variant, probably due to its polycystic nature. There is also the report of an extremely rare case of squamous cell carcinoma which apparently originated from a lateral periodontal cyst [2].

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