LATERAL PERIODONTAL CYST: A RARE VARIANT

Bhavika S. Vhatkar., Mandavi S.Waghmare., Naveen Kumar Shetty and Kapil Gavand


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ABSTRACT

The lateral periodontal cyst (LPC) is a non-keratinized, non-inflammatory developmental cyst occurring adjacent or lateral to tooth root. It is a relatively uncommon lesion found in the mandibular canine premolar region in adults during 5th to 7th decades. In this case, a 17 yr. old male patient reported for the replacement of missing teeth in upper anterior region. Clinical examination revealed expandise lesion in maxillary anterior region, which radiographically appeared as a residual cyst and was further diagnosed histopathologically with lateral periodontal cyst. A rare lesion in the maxilla, in a young patient discussed with a review of the literature.

INTRODUCTION

The maxillary & mandibular jaws present with a wide array of cysts, of both odontogenic & nonodontogenic origin. They present with some classical, non-classical clinical & radiographic features.

LPCs are defined as non-keratinized and non-inflammatory developmental cysts located adjacent or lateral to the root of a vital tooth. This cyst's most frequent location is at the level of mandibular premolars, but it has been reported occurring in the other areas.

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

Histologically, the lateral periodontal cyst is a distinct type of developmental cyst characterized by a thin, non keratinized epithelium usually 1 to 5 cell layers thick, which resembles the reduced enamel epithelium. The epithelial lining exhibits focal thickenings or plaques, in which clear glycogen containing epithelial cells have often been found. The connective tissue subjacent to the epithelium exhibits a zone of hyalinization. It presents unique characteristics and there is an important differential diagnosis with lesions of endodontic and periodontal origin. It can also be differentiated from other cyst within the same group. The pathogenesis of LPC, the gingival cyst of the adult, the botryoidal odontogenic cyst and the glandular odontogenic cyst may be correlated. Some authors, based on the clinical and morphological similarities, reinforce that the gingival cyst of the adult and LPC present a common histogenesis, and these lesions may have the same extra-osseous and intra-osseous characteristics, respectively. This paper reports a rare case of LPC which is located in the anterior region of maxilla, and also presents a brief literature review of the clinical, radiological and histopathological features of LPC.

A CASE DESCRIPTION AND RESULTS

A 17-year-old male patient visited D. Y Patil Dental College, Nerul Navi Mumbai in the Department of Oral Medicine and Radiology, with a request of replacement of missing teeth in maxillary right anterior region. History revealed patient had trauma to the upper anterior region three years back due to road traffic accident. Immediately after the episode the patient was prescribed analgesic and anti-inflammatory to control the pain and swelling. The patient was apparently normal after a fortnight. However, two months back patient developed pain and swelling in the same region, radiograph revealed a periapical lesion hence the patient was advised extraction of 11 & 12. Patient then wanted to get the extracted tooth replaced hence visited the institute.

*Corresponding author: Bhavika S. Vhatkar
Clinical examination shows edentulous area appears to be healed properly and there is no presence of swelling in the vestibular area. Clinical examination revealed edentulous 11, 12 regions with mild expansion noted on the attached gingiva. 21 22 appeared palatally inclined. Radiographic evaluation revealed a well-circumscribed, unilocular, circular corticated radiolucency with approximately 1.5 cm in diameter extending from the midline to the apex of 13 region causing elevation of the floor of the Nasal fossa.

Based on this finding a radiographic diagnosis of residual cyst was suggested with a differential diagnosis of odontogenic keratocyst. The patient was then scheduled for excision of the lesion and enucleation was performed. Histopathological evaluation of the specimen revealed cystic epithelium and connective tissue stroma. Epithelium is thin, non-keratinized, 2-3 cell layer in thickness and shows clear cells. Few areas show focal, thickened plaques of proliferating lining cells projecting into lumen. Connective tissue wall is fibrous with mild inflammatory cell infiltrate and numerous plasma cells suggestive of Lateral Periodontal Cyst. Based on these findings, a clinical diagnosis of lateral periodontal cyst was made. Local anaesthesia was used and full thickness mucoperiosteal flap was elevated. The cyst capsule was detached from the adjacent bone. A total enucleation of the lesion was realized using a surgical curette (figure 4).

DISCUSSION

LPC is considered as developmental odontogenic cyst with unusual occurrence that may be associated with vital teeth. LPC is a harmless developmental anomaly most likely derived from odontogenic epithelium. Some authors suppose that LPC derive from remnants of the dental lamina. Another hypothesis on the pathogenesis of LPC suggests a de-squamation of some lateral parts of the reduced enamel epithelium in an apical direction prior to the eruption of the dental crown into the oral cavity.
The incidence of lateral periodontal cysts has been reported to be 0.8% - 2%\(^\text{11}\). Literature review shows that the LPC is more prevalent in adults in the 5th - 7th decades, with mean age of 52 years, without preference for race or sex.

Reviewing the literature, a retrospective study of 1227 cases in Iranian population from 1987 to 2007 shows prevalence of lateral periodontal cyst to be 0.6% i.e.(7/1227) cases showed presentation of LPC which were located in mandible\(^\text{8}\), another retrospective study on Turkish population showed distribution of lateral periodontal cyst at 0.2% among 434 subjects\(^\text{10}\). Maria Florenzia et al studied 11 cases of LPC and found 8/11 cases to be involving in maxillary ant region, with the largest cyst measuring approx 2.5cm diameter\(^\text{12}\), whereas in our study the largest diameter was found around 3.5cm. AmitR. et al analysed cases for 8years in north Indian population and found 89 cases of LPC among 1000 subjects suggesting a frequency of 8.9% higher than that of given literature\(^\text{13}\). Most of the cyst was found in mandible The presentation of this case in upper anterior region in a young patient is what makes it a rarity, there also is a paucity of literature reporting lateral periodontal cyst and its occurrence in the maxilla.

This variant located in the upper maxilla was referred to as globulomaxillary cyst by the 1978 classification of the WHO, though previously it was included as a subdivision of LPC in the classification of 1992\(^\text{13}\). 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), though there is great controversy regarding the possible implication of the enamel epithelium, dental lamina remains, and the rests of Malassez. The diagnosis of these lesions is casual, since they are mostly asymptomatic\(^\text{18}\). Panoramic radiographs usually show a well delineated, oval or tear-shaped radiolucency located between the roots of vital teeth\(^\text{14}\).

The pathogenesis of LPC may be related to the three etiopathological hypotheses: reduced enamel epithelium, remnants of dental lamina and cellular remnants of Malassez\(^\text{7}\). The first hypothesis is that the cyst is lined by nonkeratinized epithelium reminiscent of the reduced enamel epithelium which is supported by PCNA immunohistochemical expression. The second theory is related to dental lamina remnants, based on the fact that LPC histopathologically presents glycogen-rich clear cells, which is also seen in the dental lamina. The third hypothesis offered that the epithelial remnants of Malassez presented in the roots surface, principal location of the LPC, play a role.

Radiographically, the cyst presents as a well circumscribed round or teardrop-shaped radiolucent area (generally not exceeding 1 cm in diameter) with a radiopaque rim, located laterally to the root of a vital tooth\(^\text{17}\). The periodontal ligament space as a rule is not enlarged and there must not be a communication between the cyst's cavity and the oral environment Occasionally, LPC may be multicystic, and called as odontogenic botryoid cyst due to macro- and microscopic features resemble to "bunch of grapes" (from the Greek word "botrios")\(^\text{17}\). In our case lesion is approximately 3.5cm diameter and was located in the edentulous region extending up to the floor of nasal fossa and causing displacement of the same. Differential diagnosis for interradicular radiolucency consists of Primordial cyst, Odontogenic tumors like KCOT, benign non odontogenic tumors like neumora, myoma, neurofibroma\(^\text{18}\).

Finally, the importance of diagnosis is especially related to the differential diagnosis with keratocystic odontogenic tumour due to its aggressive and infiltrative growth leading to high recurrence rates which requires a more invasive treatment\(^\text{19}\). The diagnosis of LPC should be restricted to cysts that are located in the periodontal side.

Enucleation is the treatment of choice for our case diagnosed as LPC, which was done without injury to adjacent teeth. There was no recurrence rate with patient followed up after a year

**CONCLUSION**

The lateral periodontal cyst can be considered in the differential diagnosis when a radiolucent lesion appears adjacent to the roots of vital teeth\(^\text{16}\). A histological study is essential in order to confirm the diagnosis. The treatment of choice is surgical removal and subsequent histological evaluation to confirm the diagnosis\(^\text{13}\). Relapses are infrequent.

**References**

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