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LATERAL PERIODONTAL CYST: A REVIEW OF A RARE PRESENTATIONS

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ABSTRACT: Lateral periodontal cyst (LPC) is a cyst presenting with characteristic features. However, this clinical entity also presents with some rare clinical presentations. This uncommon but widely recognized odontogenic cyst is of developmental origin. It is found mostly in adults and has no sex predilection. LPC is usually discovered during routine radiographic examination, is located mainly between the roots of vital mandibular canines and premolars, and seldom causes pain or other clinical symptom and diagnosis. Some rare reports have reported cases of this kind with other clinical presentations. Hematoxylen-eosin sections showed vasculature granulomatous changes and destructed bony spaces. This paper presents a review of such cases.

KEYWORDS: lateral periodontal cyst (LPC), odontogenic cyst, and rare lateral periodontal cyst.

INTRODUCTION: The maxillary & mandibular jaws presents with a wide array of cysts, of both odontogenic & nonodontogenic origin. They present with some classical, non-classical clinical & radiographic features. However, traditional histopathology continues to be the mainstay for the diagnosis of these lesions, as immunohistochemistry and molecular techniques have had, as yet, little impact in this area. Lateral periodontal cysts have been documented for quite some decades. LPC normally presents with an asymptomatic gingival swelling in the region between the right maxillary canine and premolar. The diagnosis of lateral periodontal cyst is primarily based on histopathologic features, as certain characteristic histologic features separate it from other odontogenic cysts. This review presents rare presentations of lateral periodontal cysts.

DEFINITION: Lateral periodontal cysts are defined as nonkeratinized and noninflammatory developmental cysts located adjacent or lateral to the root of a vital tooth.

HISTORY: The term "lateral periodontal cyst" was used to describe any cyst that developed along the lateral root surface, including lateral radicular cysts and odontogenic cysts.

Standish and Shafer in 1958 first reported a well-documented case of a lateral periodontal cyst. A rare variant of lateral periodontal cyst, the botryoid cysts represent a polycystic variant of LPC, first described in 1973 by Weathers and Waldron.¹

ORIGIN: Although the origin is unclear & controversial, the LPC, is a non-inflammatory cyst of harmless developmental aberration derived from odontogenic epithelia thought to originate from epithelial rests in the periodontal ligament observed on the lateral surface of the root of a vital tooth.²

Controversies Regarding Histogenesis: The source of origin of lateral periodontal cysts remains controversial, with extensive debate in the literature over whether the lesion derives from the dental lamina, reduced enamel epithelium, or rests of Malassez.³ Due to the morphologic similarity between the lateral periodontal cyst's epithelial lining, reduced enamel epithelium, and the presence of focal epithelial thickenings similar to that seen in the lining of dentigerous cysts, it has been hypothesized that the source of derivation is the reduced enamel epithelium of an erupting tooth.^{4,5}

The resemblance between dental lamina rests and the glycogen rich epithelial islands of the

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lateral periodontal cyst raises the possibility of a dental lamina source. It was noted that the majority of lateral periodontal cysts occur on the facial aspect of the alveolus, a distribution consistent with that of the rests of dental lamina but not the rests of Malassez.⁶ The anatomic presence of rests of Malassez in the periodontal ligament supports the hypothesis that such rests are involved in the pathogenesis of lateral periodontal cyst.^{7,8}

Several additional theories had been proposed regarding the origin of lateral periodontal cysts, including the possibility that the lesions may arise as a result of pulpal infection manifesting itself in a lateral position or chronic periodontal disease activating the rests of Malassez.⁹

Incidence:

Sl. No.	Incidence	References
1	0.8%	Mendez P et al
2	1%	Senande F et al

Table 1

Clinical Features: It is a relatively uncommon lesion found mostly in adults (5th to 7th decades) and it is rare in young people under 30 years of age. A common site of occurrence is the mandibular premolar region. It does not have a predilection for any race or sex. However, case of LPC is predominantly seen among males in their fifth or sixth decades of life.^{10,11,12}

Location:

Sl. No.	Location	References
1	Intraosseously-normally	Carter et al ¹³
2	Commonly in the mandible	Cohen D. A, Mendes R A & van der Wal I
3	On the lateral aspect of mandibular premolar, canine root surfaces	Angelopoulou. E and Angelopoulos A. P ¹⁴ , M Altini & M. Shear
4	In the maxillary premolar regions	Rao. K & shetty et al ¹¹
5	In the mandibular lateral-canine region	Kerezoudi N. P, Rao. K,
6	Bilateral occurrence	Legunn K M ⁴

Table 2

Age Predilection:

Sl. No.	Age	Gender	References
1	5th to 7th decades	Either	Andrade et al Fantasia et al Fermoso et al
2	Rare in young people under 30 years of age	Either Male	Kerezoudi et al Cohen et al
3	13-15 years	Either	Kerezoudi et al Cohen et al

Table 3

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Symptoms: Patients with LPC may complain of a mild swelling in the gums (Gingival area or on alveolar mucosal area). A few cases of infected LPCs have also been reported due to a probable spread of infection through an accessory root canal in a non-vital tooth. Diffuse swelling in the cheek region, the left mandibular ramus area have also been reported. Clinical symptomatology of Botryoid odontogenic cysts can vary from lesions that are asymptomatic to lesions that are exceedingly painful. Paresthesia and tumefaction have also been reported.¹⁵ Although the histopathologic features of Botryoid odontogenic cysts are similar to lateral periodontal cysts.¹⁶

Radiographic Features: Radiographs would reveal a well-circumscribed radiolucency with a radiopaque margin between the roots of the canine and premolar. The defect appears on radiographs as a round or teardrop-shaped, well circumscribed radiolucency.¹⁷ the adjacent teeth have been described having vital pulp. Botryoid variations of lateral periodontal cyst would present with multilocular appearance.¹⁰ most frequently the LPC presents as a unicystic radiolucency as noticed in the presenting case, but may be polycystic or multilocular.^{18,19,20,21}

Histopathology: Lateral periodontal cyst lining is characterized by a thin cuboidal to stratified squamous non-keratinizing epithelium, ranging from one to five cell layers and presence of one or more epithelial thickenings or plaques. Furthermore, glycogen-rich clear cells encountered either in the epithelial plaques or in the superficial layer of the lining epithelium. Shear and Pindborg have suggested that these thickenings represented an example of the odontogenic epithelium establishing original morphology under pathologic conditions, akin to the thickening of stomatodeal ectoderm in the formation of dental lamina during early odontogenesis.²²

Differential Diagnosis:

Differential diagnosis for such cases include:^{9,23}

- Odontogenic keratocysts occupying a lateral periodontal position.
- Keratocysts must be differentiated from the LPCs because of their aggressiveness and high potential for recurrence following surgical removal.
- Gingival cyst.
- Lateral radicular cyst.
- Pseudocysts.
- Radiolucent odontogenic tumors.

Controversies Regarding Botryoid Cyst & LPC: Some controversy exists about the relationship of Botryoid odontogenic cysts to lateral periodontal cysts, as some authors prefer to define a Botryoid odontogenic cyst as a "multicystic odontogenic lesion" with histological characteristics of lateral periodontal cyst," or "cystic lesion similar to lateral periodontal cyst."²⁴ The Botryoid odontogenic cyst (BOC) is a polycystic variant of the lateral periodontal cyst.¹¹ In 1973, Weathers and Waldron reported the first case of a multilocular lesion of the jaws, which they called a Botryoid odontogenic cyst.¹¹ Clinically, the age group affected with Botryod odontogenic cyst ranges from 23 to 85 years, with a mean age of 53.8 years.^{9,25}

Most often Botryoid odontogenic cysts are multilocular²⁸, but unilocularity has also been reported.^{25,26,27} Botryoid odontogenic cysts are larger than lateral periodontal cysts, ranging between 5mm and 45mm and often extending into the periapical region of involved teeth.^{13,25} High et al

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proposed the term "polymorphic odontogenic cyst" to include lesions like Botryoid odontogenic cysts, glandular odontogenic cysts, and intraosseous mucoepidermoid carcinoma,¹⁹ suggesting with this classification that careful histologic evaluation is necessary to confirm a diagnosis of Botryoid odontogenic cyst and separate it from any of these other possible lesions.

Treatment Aspects: The treatment perspective would include enucleation. Although graft & GTR membrane placement have been conducted.¹⁴

Squamous Transformation: There are a few case reports of transformation into a squamous cell carcinoma in a periodontal cyst.²⁸

SUMMARY & CONCLUSION: LPC is a relatively uncommon cyst seen as a swelling in the maxillary gingival area usually asymptomatic, sometimes presenting with rare clinical presentations. An expertise in the diagnosis & perception of rare presentations of this clinical condition is required for adequate diagnosis & treatment protocol is required for the management of such cases.

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