

The Lateral Periodontal Cyst: Report of a Rare Developmental Anomaly with Literature Review

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ABSTRACT

The Lateral Periodontal Cyst (LPC) is a relatively rare odontogenic cyst of developmental origin that accounts for less than 2% of all cysts of the jawbone. It is characterised by its location on the lateral root surface of vital permanent mandibular canines and premolars in individuals between the fifth and seventh decades of life. The cyst is typically asymptomatic and exhibits a characteristic incidental radiographic finding of a well-circumscribed round or ovoid unilocular radiolucency with minimal effect on surrounding structures. Clinically, it poses a diagnostic challenge in differentiating it from other entities that present similar clinico-radiographic pictures, such as gingival cysts, odontogenic keratocysts, lateral radicular cysts, and lesions of endodontic and periodontal origin. Although the occurrence of LPC is rare, precise diagnosis is essential to provide appropriate treatment. Hereby, the authors present a case report of a 24-year-old male patient of LPC and review the pertinent literature.

Keywords: Intraosseous, Lateral radicular cyst, Odontogenic cyst, Unilocular

CASE REPORT

A 24-year-old male patient reported a complaint of painless swelling in the left lower back teeth region for the past four months. The swelling had gradually increased in size to its current dimensions. The patient had no previous history of trauma or dental treatment in that area and reported no systemic co-morbidities.

Extraoral examination [Table/Fig-1] revealed a solitary diffuse swelling, roughly oval in shape, measuring approximately 3×2 cm in the left lower one-third of the face. The swelling extended supero-inferiorly from the level of the left oral commissure to the lower border of the mandible and anteroposteriorly from a vertical imaginary line through the left oral commissure, extending 2 cm posteriorly. On palpation, the swelling was non tender and firm in consistency, with no local rise in surface temperature.



[Table/Fig-1]: A diffuse extraoral swelling on the left lower-third of face.

Intraoral examination [Table/Fig-2] showed obliteration of the lower left buccal vestibule from the distal aspect of tooth 34 to the mesial aspect of tooth 36, with no evidence of surface color disparity, sinus opening, pus discharge, or bleeding. On palpation, the swelling was non-tender and fluctuant. Hard tissue examination revealed tooth 35 was rotated, with no evidence of tooth mobility. The related teeth were non carious and vital upon electric pulp testing. Fine needle aspiration of the swelling yielded a transparent amber-colored fluid, and the Papanicolaou (PAP) stained smear revealed a few extravasated Red Blood Cells (RBCs) and cholesterol crystals, suggesting a cystic lesion.



[Table/Fig-2]: Rotated 35 with obliteration of the lower left buccal vestibule in 34,35,36.

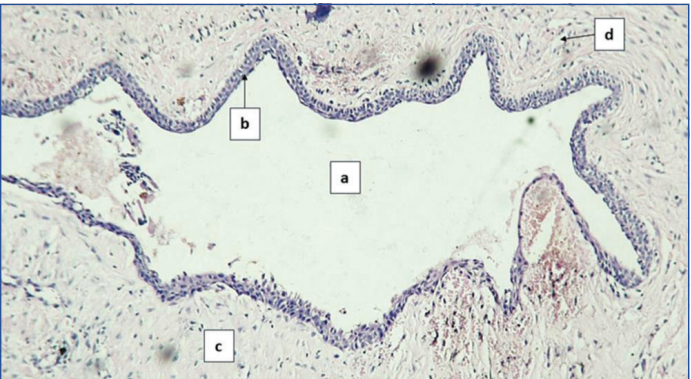
The patient was then subjected to radiographic examination. An Orthopantomogram (OPG) showed a well-defined radiolucency with a sclerotic border, measuring approximately 3.08×2.34 cm in its greatest dimension, located between the roots of teeth 35 and 36, and extending anteriorly up to the root apex of tooth 34. Displacement of tooth 35 with loss of lamina dura distally was also noted [Table/Fig-3]. Based on the aforementioned findings, a provisional diagnosis of LPC related to tooth 35 was made, with lateral radicular cyst considered in the differential diagnosis.



[Table/Fig-3]: Preoperative OPG showing a well-circumscribed radiolucency with sclerotic border in between roots of teeth 35 and 36, along with displacement of 35.

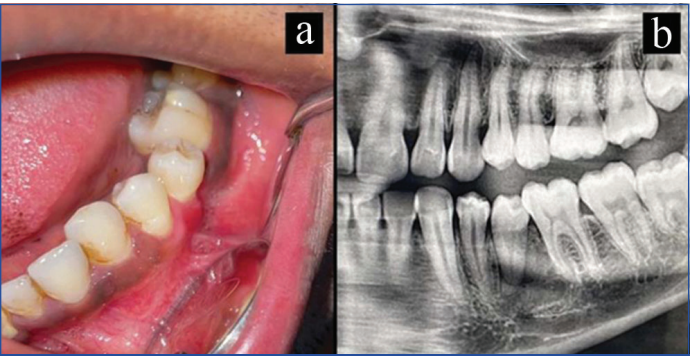
Surgical enucleation of the lesion was performed under local anaesthesia. Histopathological examination [Table/Fig-4] of the

Haematoxylin and Eosin (H&E) stained specimen revealed a cystic cavity lined by a non keratinised thin stratified squamous epithelium, about one to five cell layers thick. The epithelial lining illustrated focal thickenings with clear glycogen-containing epithelial cells. The densely collagenous connective tissue capsule exhibited numerous fibroblasts, fibrocytes, zones of hyalinisation, numerous blood vessels, and cholesterol clefts in certain areas. Based on these features, a histopathological diagnosis of LPC was confirmed.



[Table/Fig-4]: Cystic cavity: a) lined by a non keratinised thin stratified squamous epithelium about one to five cell layers thick; b) Densely collagenous connective tissue capsule exhibited innumerable fibroblasts and fibrocytes, numerous blood vessels; c) and cholesterol clefts; d) in some areas (H&E, 100X).

Follow-up examinations six months after the cyst enucleation revealed no clinical or radiographic evidence of recurrence of the lesion [Table/Fig-5a,b], and the associated teeth (teeth 35 and 36) remained vital during the follow-up.



[Table/Fig-5]: a,b) Six-month postoperative intraoral photograph and radiograph of the patient showing: a) Intraoral soft-tissue healing; b) Evidence of new bone deposition on OPG.

DISCUSSION

The LPC is a relatively rare benign intraosseous epithelial developmental odontogenic cyst that typically occurs on the lateral surface of the root of a vital tooth [1]. However, it has been widely recognised and included in the fourth edition of the World Health Organisation (WHO) classification of odontogenic tumours and cysts in 2017, with further reference to its polycystic variant, the Botryoid odontogenic cyst [2]. LPC was first reported in 1958 by Standish SM and Shafer WG. Although various theories have been reviewed, there is still no consensus on the etiopathogenesis of this lesion [3]. Reports from the literature suggest a possible origin from either the reduced enamel epithelium, remnants of the dental lamina, or the cell rests of Malassez. Currently, the most accepted theory is that proposed by Shafer WG et al., which suggests that LPC originates from post-functional dental lamina rest cells [4].

The LPC is relatively rare, accounting for less than 2% of all cysts of the jawbone [5]. It primarily affects individuals between the fifth and seventh decades of life, with a rare incidence in young people under 30 years. The cyst shows no apparent sexual or racial predilection, and the most common sites of occurrence include the mandibular premolar-canine-incisor region and the maxillary incisor-cuspid region [1]. A review of the literature from 2016 to 2025 revealed

15 documented cases of lateral periodontal cysts, and the clinical features of these cases are summarised in [Table/Fig-6] [6-18]. The present case reports an LPC in the mandibular premolar-molar region of a 24-year-old Asian male.

Name of the author	Age (in years)	Gender	Site (associated tooth number)
Salaria SK et al., (2016) [6]	45	Male	Maxilla (21,22)
Chandel MR et al., (2019) [7]	50	Male	Mandible (43,44)
Balán P et al., (2012) [8]			
Case 1	30	Female	Maxilla (21)
Case 2	17	Female	Maxilla (22)
Ramalingam S et al., (2019) [9]	43	Male	Mandible (33,34)
Ramesh R et al., (2020) [10]	49	Female	Mandible (34)
Deliverska E (2020) [11]			
Case 1	38	Female	Mandible (35)
Case 2	36	Male	Maxilla (13)
Uppada UK et al., (2020) [12]	20	Female	Mandible (43,44)
Karveles I et al., (2020) [13]	59	Female	Maxilla (13,14), Mandible (43,44)
Buchholzer S et al., (2021) [14]	54	Female	Mandible (33)
Chehal HK et al., (2020) [15]	48	Female	Maxilla (11)
Barbirato DS et al., (2022) [16]	53	Male	Maxilla (14,15)
Sultan N and Faisal M (2023) [17]	36	Female	Mandible (41)
Mukherjee M et al., (2025) [18]	28	Male	Maxilla (23,24)
Present case	24	Male	Mandible (35,36)

[Table/Fig-6]: Demographics and site of previous reported cases of LPC and the present case [6-18].

Clinically, these lesions are usually asymptomatic unless they become secondarily infected or if the affected tooth is associated with dental caries or periodontitis. As reported in the present case, a patient may present with gingival swelling due to cortical expansion caused by the lesion. However, in most cases, LPC is discovered fortuitously during routine radiological examinations, which reveal a round or ovoid well-circumscribed inter-radicular radiolucency with a prominent cortical boundary, typically measuring less than 1 cm in diameter.

As for the effects on surrounding structures, small cysts may cause effacement of the lamina dura of the involved tooth root, while larger cysts can displace adjacent teeth and induce cortical expansion, with incidences of cortical perforation and root resorption being rarely reported. The present case reported a similar radiological appearance with loss of the lamina dura of the involved tooth, along with its displacement. However, the size of the lesion exceeded that of the cases usually reported [1,5,19-21]. The differential diagnosis includes other interradicular radiolucencies that must be distinguished from the LPC [Table/ Fig-7] [1,22].

However, the clinical and radiological features of the LPC are nonspecific, and since the histopathological features are unique, histologic examination remains the mainstay for its definitive diagnosis. To emphasise the considerable relevance of histological analysis, the WHO has reclassified LPC from a clinico-radiological entity to a histopathological one [23].

The LPC is treated through conservative surgical enucleation, with efforts made to avoid sacrificing the associated tooth whenever possible. However, simple surgical enucleation may adversely affect the periodontal health of the associated teeth due to residual bone defects, which can be rectified using guided bone regeneration techniques. The risk of recurrence of LPC is estimated to be between 3% and 4%, and patients need to be followed up over a period of six months to one year in order to monitor for recurrence [24].

S. No.	Differential diagnoses	Differentiating features
1	Gingival cysts of adults	Extrasosseous localisation with no apparent radiographic change or only a faint round shadow indicative of superficial bone erosion
2	Lateral radicular cyst	Association with infected non vital tooth
3	Lateral dentigerous cyst	Cystic lesion appears to be attached to the cementoenamel junction of an impacted tooth, preferably mandibular third molar or maxillary canine
4	Glandular odontogenic cyst	Aggressive intraosseous lesion with a high risk of cortical perforation and recurrence
5	Collateral odontogenic keratocyst	More aggressive lesion with a tendency to extend in the medullary cavity and a definite tendency to recur following surgical removal
6	Unicystic ameloblastoma	Locally aggressive cystic lesion associated with an impacted or unerupted tooth in approximately 50 to 80% of cases, causes both buccal and lingual cortical expansion with higher incidence of cortical perforation and root resorption
7	Extra-follicular inter-radicular Adenomatoid Odontogenic Tumour (AOT)	Associated with intralesional calcifications in two-third cases
8	Traumatic bone cyst	Positive history of trauma may be present, usually located below the roots of teeth or may envelope the apical thirds of teeth showing scalloped periphery, causes little effect on the buccal and lingual cortical plates

[Table/Fig-7]: Differential diagnoses of LPC [1,22].

CONCLUSION(S)

In conclusion, LPC is a rare intraosseous cyst that should be included in the differential diagnosis when a radiograph reveals a cystic lesion on the lateral surface of a tooth, especially in the mandibular anterior-premolar and anterior maxillary regions. However, histopathological examination of the entire specimen is mandatory to establish a definitive diagnosis due to the inconsistency in the clinical, radiological, and epidemiological characteristics of this cyst, as validated by WHO.

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AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Oct 28, 2024
- Manual Googling: Apr 26, 2025
- iThenticate Software: Apr 28, 2025 (20%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

Date of Submission: Oct 27, 2024
Date of Peer Review: Dec 25, 2024
Date of Acceptance: Apr 30, 2025
Date of Publishing: Sep 01, 2025