# Lateral Periodontal Cysts Arising in Periapical Sites: A Report of Two Cases

*Nikolaos G. Nikitakis, DDS, PhD,* John K. Brooks, DDS,† Ioannis Melakopoulos, DDS, DrMed,‡ Rania H. Younis, BDS, MDS,† Mark A. Scheper, DDS, PhD,† Mark A. Pitts, DDS,§ Hussain Al-Mubarak, DDS,† and Alexandra Sklavounou, DDS, MSc, PhD**

## Abstract

**Introduction:** The lateral periodontal cyst is an uncommon odontogenic developmental lesion and chiefly arises in the alveolar bone between the roots of a pair of erupted teeth or lateral to a tooth root. Two atypical cases of the lateral periodontal cyst occurring in periapical sites are reported. **Methods:** Both lesions presented as an incidental radiographic finding, appearing as an apical radiolucency with well-circumscribed sclerotic borders. One lesion, initially suspected to be of pulpal origin, persisted after endodontic therapy; the other case was first considered to be an odontogenic keratocyst. A biopsy was performed on each patient for lesional identity. **Results:** Histopathologic assessment of each lesion was consistent with a lateral periodontal cyst and revealed thin, nonkeratinized epithelial linings containing nodular plaques and clear cells. The cyst walls were thickened and had minimal inflammation. **Conclusions:** The featured cases show that the lateral periodontal cyst is not always confined to the interradicular region and can masquerade as a lesion of endodontic origin. Aberrant cases warrant long-term surveillance. *(J Endod 2010;36:1707–1711)*

## Key Words

Interradicular, lateral periodontal cyst, odontogenic cyst, periapical site, pulpal disease

From the *Department of Oral Pathology and Medicine, School of Dentistry, National and Kapodistrian University of Athens, Athens, Greece; †Department of Oncology and Diagnostic Sciences, University of Maryland Dental School, Baltimore, MD, USA; ‡Department of Maxillofacial Surgery, Henry Dunant Hospital, Athens, Greece; and §Private Practice, Oral and Maxillofacial Surgery, Frederick, MD, USA.

Address requests for reprints to Dr John K. Brooks, Department of Oncology and Diagnostic Sciences, Baltimore College of Dental Surgery, Dental School, University of Maryland, Baltimore, 650 West Baltimore Street, Baltimore, MD 21201-1586. E-mail address: oralpath5@comcast.net

0099-2399/$0 - see front matter



doi:10.1016/j.joen.2010.06.015

Various histopathologic studies have corroborated that 94% to 99% of periapical pathoses are associated with pulpal disease and diagnosed as periapical granulomas, cysts, or abscesses (1–5). Biopsy of periapical lesions can be undertaken for diagnostic affirmation, persistent or atypical presentations, or for cases with a relevant medical history (6). The differential diagnosis of periapical radiolucencies is diverse and should also include odontogenic cysts and tumors, such as the odontogenic keratocyst (keratocystic odontogenic tumor), odontogenic myxoma, ossifying fibroma, central odontogenic fibroma, granular cell odontogenic tumor, and cystic ameloblastoma; nonodontogenic lesions include simple bone cyst, cemento-osseous dysplasia, central giant cell granuloma, osteoblastoma, Stafne bone defect, foreign-body granuloma, nasopalatine duct cyst, actinomycosis, histoplasmosis, angioleiomyoma, hemangioma, neurilemoma, Langerhans cell histiocytosis, brown tumor of hyperparathyroidism, and a myriad of malignant primary and metastatic lesions (3, 5, 7–9).

The lateral periodontal cyst (LPC) is a relatively rare developmental odontogenic cyst constituting less than 1% of cystic lesions of the jaws and regarded as the intraosseous counterpart to the gingival cyst of the adult (10). As its appellation implies, the LPC is usually situated in the interradicular region between a pair of erupted teeth or in the alveolar bone lateral to an erupted tooth. Most arise in the premolar and canine areas (88% mandible and 12% maxilla) (11). Aberrant cases of the LPC have also been found in association with an unerupted tooth (12).

On rare occasions, odontogenic cysts with histological features of LPC can be identified in periapical sites, masquerading as a lesion of pulpal origin. The incidence of LPCs, among several large series of periapical accessions (>100 specimens) submitted to several oral pathology centers, has ranged from 0% to 2.0% (1–3, 5, 13, 14). However, these publications failed to provide individual patient descriptions. A paucity of detailed case reports of LPCs residing in periapical sites has appeared in the dental literature (15). Herein, we present the clinical, radiographic, and histopathologic findings of two atypical cases of LPCs that occurred in the apical regions.

## Case Reports

### Case 1

A 70-year-old woman came to the dental office for repair of a recently "chipped" tooth which was not causing any pain. The medical history was significant for Graves' disease, coronary artery disease, and myocardial infarction. Current medications consisted of levothyroxine and aspirin. Clinical examination noted the presence of caries in the maxillary left canine. The teeth in the region were nontender to palpation or percussion, and there was no swelling in the proximate vestibule. Periodontal probing depths in the vicinity were $\leq$3 mm, and the affected teeth were nonmobile. Of note, the maxillary left lateral incisor was nonresponsive to electric pulp testing, whereas the canine was vital. The patient was afebrile and without lymphadenopathy. Periapical and occlusal radiographs disclosed a 1.5 $\times$ 1.2 cm almost circular radiolucency with well-circumscribed sclerotic borders. The lesion extended from the distal aspect of the maxillary left central incisor to the distal aspect of the left canine involving the periapical areas of the lateral incisor and canine. In addition, the left lateral incisor displayed periapical changes, including a prominent, smaller more intensely radiolucent area with somewhat diffuse borders, associated with dissolution of the lamina

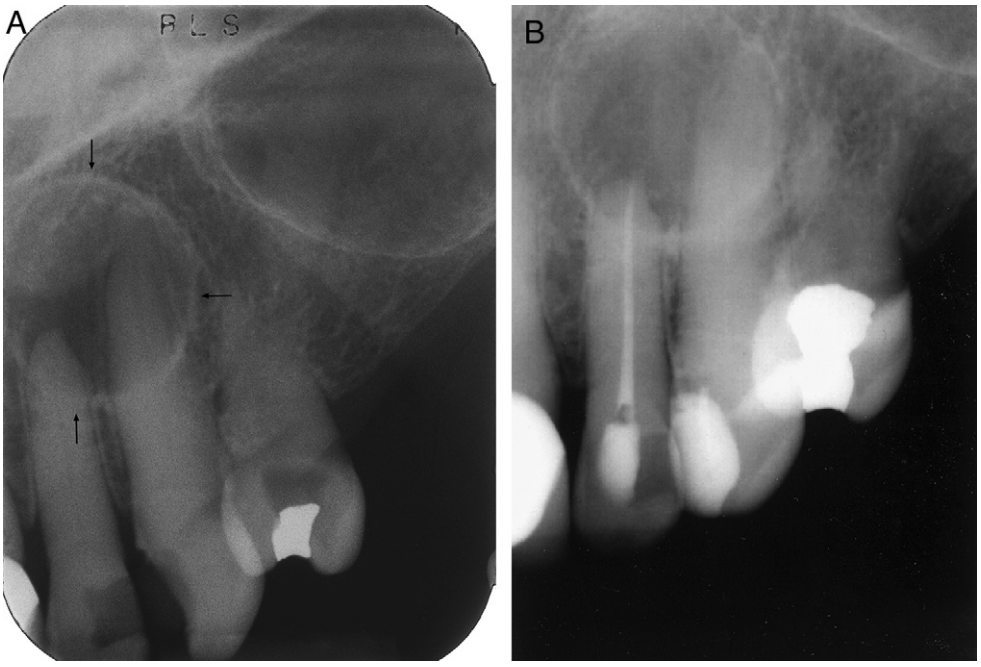


**Figure 1.** (*A*) An extensive periapical radiolucent lesion with sclerotic borders (arrows) superimposed over the pathosis of the left lateral incisor (case 1). (*B*) A persistent cystic lesion 8 months after endodontic therapy (case 1).

dura and external root resorption (Fig. 1*A*). The left canine was restored without pulp exposure, and the patient was referred to an endodontist and underwent root canal therapy on the necrotic left lateral incisor. An 8-month follow-up radiograph showed persistence of the larger surrounding cystic lesion (Fig. 1*B*).

The recalcitrant cystic lesion warranted histopathologic evaluation. The lesion was approached via a bony window through the labial cortex. A thick-walled cystic lesion with a yellowish content was curetted away from the palatal aspect. An apicoectomy was then performed on the lateral incisor, involving removal of approximately 3 mm of the apex and heat sealing. On gross examination, the surgical specimen consisted of multiple tan-brown fragments measuring 1.3 × 1.0 × 0.4 cm in aggregate. Microscopic examination showed a cystic cavity with a thin epithelial lining of cuboidal cells exhibiting focal plaque-like thickenings containing occasional clear cells. The cystic wall was thickened and without evidence of inflammation (Fig. 2*A*). A higher-power view showed the presence of a whorling pattern in one of the nodular plaques (Fig. 2*B*).

At a 9 ½ -year recall, the affected site had undergone osseous regeneration, and there was no clinical or radiographic demonstration of lesional recurrence. In addition, within the former site of the cyst was a residual radiolucency, which has appeared stable and attributed to be a surgical defect from loss of the cortical plate; the sclerotic border of the preexisting cystic lesion was only partially and dimly visible (Fig. 3). To date, the maxillary left canine has remained vital.

## Case 2

A 52-year-old man with no significant medical history was referred from his periodontist with an asymptomatic intraosseous lesion apical

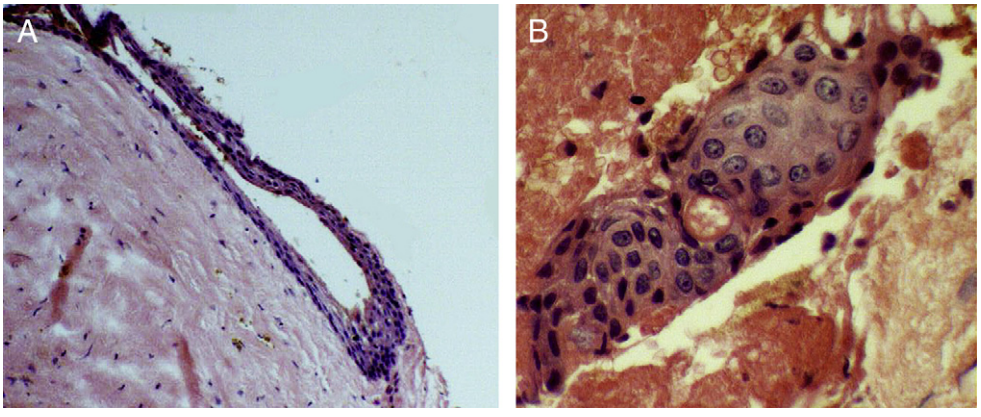


**Figure 2.** (*A*) A thin epithelial-lined cystic lesion with focal plaque-like thickenings and conspicuous absence of an inflammatory infiltrate (hematoxylin and eosin stain, magnification 100×) (case 1). (*B*) Higher magnification of swirling pattern within a focal thickening (hematoxylin and eosin stain, magnification 400×) (case 1). (This figure is available in color online at www.aae.org/joe/.)