

Pediatric Odontogenic Cysts of the Jaws



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KEYWORDS

• Odontogenic cysts • Maxillofacial surgery • Pediatrics • Diagnosis • Treatment

KEY POINTS

- Cysts have characteristically 3 main features: the presence of an epithelial lining, a centrally located lumen, and a surrounding connective tissue wall.
- Jaw cysts are broadly categorized as either odontogenic or nonodontogenic based on the type of tissue from which the epithelial lining derives from.
- Odontogenic cysts are further subclassified as either inflammatory or developmental depending on the cause.
- Pediatric odontogenic cysts are predominantly periapical (radicular) cysts, buccal bifurcation cysts, eruption cysts, and dentigerous cysts.
- The common pediatric odontogenic cysts are amenable to simple treatment and have an overall excellent prognosis with a low recurrence rate.

INTRODUCTION

All pathologic cysts are characteristically unified by 3 salient features: the presence of an epithelial lining, a centrally located lumen, and a surrounding connective tissue wall. A multitude of cystic lesions are well known to occur within the jaws, and it is of critical importance for oral and maxillofacial surgeons to have an understanding of the clinicopathologic presentation, management, and natural history of each of these entities. Cysts involving the jaws are broadly categorized as either odontogenic or nonodontogenic based on the type of tissue from which the epithelial lining derives (**Box 1**). Odontogenic cysts are further subclassified as either inflammatory or developmental depending on their underlying cause (see **Box 1**). Historically, the classification of odontogenic cysts has been a treatise on controversy and debate.^{1–4} Some entities previously described

as odontogenic cysts have more recently been reclassified into other pathologic categories (ie, odontogenic keratocyst [OKC] and calcifying odontogenic cyst [COC]).⁵ Other historical entities have been completely dispelled through more refined histologic characterization (ie, the primordial cyst).⁵ Of the currently accepted subtypes of odontogenic cysts, only a limited number are well known to occur in pediatric populations (**Box 2**). This article provides an in-depth accounting of the epidemiology, clinical/radiographic features, histopathology, treatment, and prognosis for each of these odontogenic cysts. Other odontogenic cysts that rarely present in pediatric populations are addressed but are not covered in significant detail. Similarly, odontogenic cysts that have controversially been redesignated as odontogenic neoplasms are covered only in limited detail, as they are addressed in other articles in this issue.

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Box 1**Classification of cysts involving the jaws***Odontogenic*

- Inflammatory
 - Periapical (radicular) cyst^a
 - Buccal bifurcation cyst
- Developmental
 - Dentigerous cyst
 - Eruption cyst
 - Glandular odontogenic cyst
 - Lateral periodontal cyst
 - Gingival cyst of the adult
 - Calcifying odontogenic cyst^b
 - Odontogenic keratocyst^b

Nonodontogenic

- Nasopalatine duct cyst
- Median palatine cyst
- Nasolabial cyst
- Gingival cyst of the newborn
- Palatal cysts of the newborn
 - Epstein pearls
 - Bohn nodules

^aIncludes residual periapical (radicular) cysts and lateral radicular cysts.

^bBoth are classified as odontogenic tumors according to the most recent World Health Organization Classification of Head and Neck Tumors.⁵

PERIAPICAL (RADICULAR) CYST

Periapical or radicular cysts are inflammatory cysts that form at the apices of endodontically compromised teeth. True radicular cysts are believed to originate from an inflammatory-

mediated proliferation of normally quiescent epithelial nests (epithelial rests of Malassez) that are present in the apical periodontal ligament spaces.⁶⁻⁸ When considering patients of all age groups, radicular cysts are the most common subtype of cyst affecting the jaws and they comprise approximately 52% to 68% of cysts presenting within this anatomic region.⁷ The incidence of radicular cysts is reported to be the highest in the third decade of life⁷; however, epidemiologic studies on radicular cysts specifically within pediatric populations are lacking. Although radicular cysts are more commonly associated with endodontically compromised permanent teeth, they have also been described in a limited number of cases involving deciduous teeth.^{8,9} Based on the limited number of cases reported in the literature, radicular cysts associated with primary teeth are believed to represent less than 1% of all radicular cysts.⁸ However, the actual prevalence is likely higher than the literature suggests given the propensity for clinicians to neglect radiolucencies involving primary teeth and the eventual resolution of the lesion once the primary tooth is either exfoliated or extracted.^{8,9}

Clinically, radicular cysts involving permanent teeth can occur in any tooth-bearing area of the jaws; however, they are reported to occur more frequently in the maxilla with a predilection for the anterior maxillary dentition.⁷ In the mandible, radicular cysts are reported to occur most frequently in the premolar region.⁷ Radicular cysts involving deciduous teeth are known to most commonly occur in association with the primary mandibular molars.^{8,9} Patients typically endorse symptoms consistent with the natural history of a pulpitis, as radicular cysts are considered to be the direct sequelae to apical granulomas that form in the wake of endodontic infection.⁷ However, not all periapical granulomas progress to radicular cysts. Because radicular cysts represent chronic inflammatory lesions, they are typically asymptomatic by the time they become well developed. Teeth associated with radicular cysts are classically nonresponsive to vitality testing, and depending on the size of the cyst tooth mobility can occasionally be noted. Radiographically, radicular cysts are indistinguishable from periapical granulomas, and unfortunately, there are no discrete imaging characteristics to distinguish between these 2 separate pathologic entities. Lateral radicular cysts and residual periapical cysts are both terms used to describe different radiographic presentations of radicular cysts. The former is located at the lateral aspect of the root of a nonvital tooth, and the latter is found in the area of a previous extraction site.

Box 2**Pediatric odontogenic cysts***Inflammatory*

- Periapical (radicular) cysts^a
- Buccal bifurcation cyst

Developmental

- Dentigerous cyst
- Eruption cyst

^aIncludes residual periapical (radicular) cysts and lateral radicular cysts.

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