# Benign Jaw Lesions

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**KEYWORDS**

• Benign odontogenic cyst • Benign odontogenic tumor • Cystic lesions • Mandible • Maxilla

**KEY POINTS**

- Benign lesions of the jaws can be either odontogenic or nonodontogenic and have a variety of cystic and solid appearances.
- The radiographic features of plain films in conjunction with advanced imaging can help the clinician in the differential diagnosis, presurgical planning, and management of the lesion.
- Both intraoral and panoramic radiographs and advanced imaging features are useful in assessing the benign lesions of the jaws.
- The location, margins, internal contents, and effects of the lesions on adjacent structures are important features in diagnosing the lesions.

## INTRODUCTION

Benign lesions can develop from both odontogenic and nonodontogenic tissues in the maxilla and mandible. Odontogenic lesions can arise from tooth-forming epithelium, mesenchymal tissue, or both.[1] In the mandible, odontogenic lesions originate superior to the mandibular canal. Neural and vascular lesions often originate within the mandibular canal, whereas lesions with epicenter inferior to the inferior alveolar canal are usually nonodontogenic in origin.

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Benign odontogenic lesions are characterized by well-defined margins with regular borders causing expansion, displacement of adjacent structures, and directional root resorption. Intraoral and panoramic radiographs can show the superior-inferior and antero-posterior extent of the lesion. However, additional imaging, including cone beam computed tomography (CBCT), multidetector-row CT (MDCT), and MRI, is needed to effectively diagnose the extent of the lesion in all 3 planes. CBCT and MDCT imaging are highly useful for showing the extent of the lesion, expansion, and any ossifications/calcifications. MDCT has a better soft tissue resolution compared with CBCT. MRI is effective in differentiating cysts and tumors, evaluating the infiltration in the jawbone and surrounding soft tissue and detecting bone marrow changes of the jaw.[2] Combining radiography with advanced imaging techniques, including CT and MRI, can improve the accuracy of diagnosing the benign lesions in the jaws.

## ODONTOGENIC CYSTS

A cyst contains fluid and is lined by an epithelium and is surrounded by a connective tissue. The fluid in the cyst is secreted by the lining cells or is derived from surrounding tissues. The fluid in the cyst exerts equal pressure in all directions so the cysts appear round or oval on radiographs. Cysts are broadly classified as odontogenic cysts and nonodontogenic cysts.

Odontogenic cysts are 2.25 times more frequently seen than odontogenic tumors.[3] Radiographically, they appear as lytic round or hydraulic-shaped lesions, with well-defined corticated margins (**Table 1**). Long-standing cysts may have dystrophic calcifications within them.

### *Radicular (Periapical) Cysts*

Radicular (periapical) cysts are the most common odontogenic cysts found at the apices of a nonvital tooth resulting from inflammation of the periapical tissues secondary to caries or trauma.[3,4] These lesions appear radiolucent with well-defined and corticated margins. Large periapical cyst may cause root resorption, displacement of adjacent structures, and expansion (**Fig. 1**). CBCT images may be superior compared with periapical radiographs in detecting a periapical lesion.[5] There are 25% to 60% more periapical lesions detected by CBCT compared with intraoral periapical radiographs.[6,7] A radicular cyst remaining after the extraction of the tooth is a residual cyst.

### *Dentigerous Cysts*

Dentigerous cysts appear as a pericoronal radiolucency associated with an unerupted or impacted tooth (**Fig. 2**). These cysts are caused by expansion of dental follicles resulting from accumulation of fluid between the tooth crown and epithelial components[8] often affecting the maxillary canine and mandibular third molar.[9] Dentigerous cysts are known to cause considerable displacement of the teeth with which it is associated. Maxillary teeth may be pushed into the antrum,[8] and mandibular third molars may be displaced into the ramus or inferior border of the mandible.[10,11]

### *Lateral Periodontal Cysts*

Lateral periodontal cysts arise from the epithelial rests lateral to the tooth root. It appears as a well-defined, lytic lesion with a corticated boundary. The botryoid variety may appear multilocular.[12]