Odontogenic Tumors

Adenomatoid Odontogenic Tumor

Etiology

- Derivation from epithelial component of the enamel organ
- Represents less than 10% of odontogenic tumors
- Biologic behavior allows for distinction from ameloblastoma

Clinical Presentation

- Narrow age range, 5 to 30 years, with most cases noted during second decade
- Female predilection
- Anterior jaw location common
- Association with unerupted tooth
- Asymptomatic; occasionally produces expansion of alveolar bone
- Rarely occurs in gingival soft tissue (peripheral)
- May produce root divergence of adjacent teeth

Radiographic Findings

- Well defined, unilocular, often adjacent to crown of unerupted tooth
- Opaque foci may be scattered within the lucency in a “snowflake” or “salt and pepper” pattern.

Microscopic Findings

- Characteristic intraluminal/intracystic growth with well-defined capsule
- Dual cell population: spindle cells and cuboidal to columnar cells forming tubules or pseudoducts
- Foci of dystrophic calcification or eosinophilic droplets may be noted.

Diagnosis

- Radiographic features
- Microscopic findings
Differential Diagnosis
- Dentigerous cyst
- Odontogenic keratocyst
- Calcifying odontogenic cyst
- Lateral root cyst
- Calcifying epithelial odontogenic tumor

Treatment
- Enucleation

Prognosis
- No recurrence
Ameloblastic Fibroma and Ameloblastic Fibro-odontoma

Etiology
- Ameloblastic fibroma: a benign mixed odontogenic tumor with concomitant epithelial and mesenchymal neoplastic proliferation
- Ameloblastic fibro-odontoma: as for ameloblastic fibroma with the addition of an odontoma
- Spontaneous; no known cause for either

Clinical Presentation
- Noted mostly in first and second decades
- Approximately 70% in mandible, usually posterior region
- No gender predilection
- May cause jaw expansion
- Asymptomatic

Radiographic Findings
- Well defined with hyperostotic margin
- Unilocular to multilocular
- Often associated with an unerupted tooth
- Ameloblastic fibro-odontoma has opaque component(s) related to enamel and dentin in the odontoma component

Diagnosis
- Lobulated, cellular mesenchymal component with proliferating odontogenic epithelium in cords and islands
- Enamel matrix, dentin formation associated with odontoma (when present)

Differential Diagnosis
- Ameloblastoma
- Dentigerous cyst
- Odontogenic keratocyst
- Odontogenic myxoma
- Central giant cell granuloma
**Treatment**
- Conservative surgical excision/curettage

**Prognosis**
- Excellent
Ameloblastoma

Etiology

- A benign, aggressive jaw tumor of odontogenic epithelial (ectodermal) origin; the most common odontogenic tumor after the odontoma
- Incidence of 0.3 cases per million people

Clinical Presentation

- Peak incidence during third to fifth decades
- 80% occur in the mandible, chiefly in molar and ramus region
- Often presents in association with unerupted third molar teeth
- May produce marked deformity, facial asymmetry
- Extraosseous or peripheral variant arises in gingival tissues of older adults (fifth to seventh decades)
- Typically slow growing, but persistent

Radiographic Findings

- Osteolytic or radiolucent with sclerotic, smooth, even borders
- May be unilocular to multilocular
- Root resorption or tooth displacement may be seen.
- Can expand affected jaw in any plane
- Cortical perforation may occur.

Diagnosis

- Sheets, strands, islands of odontogenic epithelium
- Peripheral layer of cuboidal to columnar ameloblast-like cells enclosing a cell population analogous to stellate reticulum of the enamel organ
- Cystic degeneration common within stellate reticulum component
- Several histologic patterns described have no clinical relevance.
- A biologic variant, cystic (unicystic) ameloblastoma, occurs in younger patients; has a less aggressive clinical course and is managed more conservatively
- Malignant variants rarely seen

Differential Diagnosis

- Dentigerous cyst
- Odontogenic keratocyst
• Odontogenic myxoma
• Central giant cell granuloma

Treatment
• Varies with subtype, size, location
• Solid/multicystic lesions generally require local excision or resection.
• The cystic variant requires local excision, as recurrences may follow curettage only

Prognosis
• Generally good; recurrence rates higher with conservative treatment
• Recurrence rates of up to 15% following marginal resection
• Very good prognosis for cystic ameloblastoma
• Long-term follow-up necessary
Calcifying Epithelial Odontogenic Tumor

Etiology
- A benign odontogenic tumor of uncertain histogenesis
- Stratum intermedium component of enamel organ is favored cell of origin

Clinical Presentation
- Chiefly in posterior mandible
- Painless, slow growing
- Mean age of occurrence is approximately 40 years
- Occasional soft tissue origin (peripheral) noted as a sessile gingival mass
- Jaw expansion a common clinical presentation

Radiographic Findings
- Usually noted in association with an impacted tooth
- Multilocular; most often with mixed radiolucent and radiopaque features
- Impacted tooth often obscured by tumor-associated calcification
- Margins may be well defined or sclerotic and vague.

Diagnosis
- Radiographic features
- Biopsy findings of polyhedral epithelial cells, nuclear pleomorphism, amyloid material, and concentric calcifications with epithelial islands

Differential Diagnosis
- When radiolucency predominates: dentigerous cyst, odontogenic keratocyst, ameloblastoma, odontogenic myxoma
- With mixed radiolucent and radiopaque features: calcifying odontogenic cyst, adenomatoid odontogenic tumor, ameloblastic fibro-odontoma, fibro-osseous lesion, osteoblastoma

Treatment
- Local, conservative excision including a thin rim of normal bone (so-called ostectomy) versus conservative en bloc removal
- Peripheral lesions with a narrow periphery of normal-appearing mucosa
**Prognosis**

- Very good
- Recurrence rate is low, from 10 to 15%
- Long-term follow-up recommended
Odontogenic Myxoma

Etiology
- A benign odontogenic tumor
- Unknown origin

Clinical Presentation
- A lesion of adulthood (average occurrence at 30 years)
- Equal male:female and mandible:maxilla occurrences
- Wide age range: second through sixth decades
- Usually asymptomatic
- May produce jaw expansion

Radiographic Findings
- Well-defined, unilocular to multilocular radiolucency
- Loculi range from small “honeycomb” to large “soap bubble” shapes
- Cortical thinning may be present with larger lesions.
- Perforation of the cortex is uncommon.

Microscopic Findings
- Minimal cellularity, myxoid background
- Variable amounts of collagen
- Scattered residual bony trabeculae
- Odontogenic epithelial rests are rarely noted.

Diagnosis
- Radiographic features
- Microscopic findings

Differential Diagnosis
- Other odontogenic tumor: ameloblastoma
- Odontogenic cysts: odontogenic keratocyst, dentigerous cyst, glandular odontogenic cyst
- Central giant cell granuloma

Treatment
- Excision with bony curettage
- Large lesions may require en bloc resection.
Prognosis

- Good
- Can be aggressive rarely
- Recurrences not uncommon, secondary to gelatinous quality and lack of capsule
Odontoma

Etiology
• A hamartomatous or benign mixed odontogenic tumor of the jaw
• Composed of enamel, dentin, cementum, and pulp tissue

Clinical Presentation
• Two forms, as follows:
  • Complex: a randomly arrayed mixture of dental tissues with no gross resemblance to a tooth
  • Compound: multiple, tooth-like structures
• Mean age of occurrence, 12 to 16 years
• Asymptomatic, usually small and discovered incidentally
• Jaw expansion may be present with large lesions.
• Presence may be heralded by an over-retained primary tooth or by alveolar swelling.

Radiographic Findings
• Well-localized, mixed radiolucent and radiopaque lesion
• Within alveolar segment of jaws
• Complex form most commonly noted in mandibular molar area
• Compound form favors anterior jaw region, usually the maxilla; may contain a few small teeth or large numbers of tiny tooth-like structures

Diagnosis
• Radiographic presentation
• Histologic demonstration of dental hard tissues

Differential Diagnosis
• Ameloblastic fibro-odontoma
• Adenomatoid odontogenic tumor
• Calcifying odontogenic cyst
• Focal sclerosing osteitis, osteoma

Treatment
• Conservative excision/curettage

Prognosis
• Excellent
Peripheral Odontogenic Fibroma

Etiology
• A benign proliferation neoplasm of fibroblastic and odontogenic epithelial origin

Clinical Presentation
• Asymptomatic, firm, slow-growing mass of the attached gingiva
• Overlying mucosa unremarkable and intact
• Sessile growth pattern
• Usually along facial or buccal aspect of gingiva
• Calcifications may be present radiographically.
• Underlying alveolar bone is spared.
• Uncommon to rare
• Also seen centrally (within bone)

Diagnosis
• Fibrous to myxoid stromal tissue
• Scattered islands and strands of odontogenic epithelium
• Some cells may be vacuolated.
• The degree of epithelial proliferation may vary from minimal to prominent.

Differential Diagnosis
• Peripheral giant cell granuloma
• Pyogenic granuloma
• Peripheral fibroma
• Peripheral ameloblastoma

Treatment
• Excision: local and conservative

Prognosis
• Excellent