Cysts of jaws and oral soft tissues, including developmental cysts.

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Definition of a cyst

- A pathological cavity, lined wholly or in part by epithelium, having fluid or semifluid contents

- Broader definition: a pathological cavity, having fluid or semifluid contents, which has not been created by the accumulation of pus

Classification of cysts of the jaws

- **Odontogenic cysts**
  - developmenal
  - inflammatory
- **Non-odontogenic cysts**
- **Non-epitheliazed primary bone cysts**
- **Cysts of the soft tissues**

Odontogenic cysts

- **Developmental**
- Odontogenic keratocysts
- Dentigerous (follicular) cyst
- Eruption cyst
- Lateral periodontal cysts
- Gingival cyst
- Glandular odontogenic cyst
- **Inflammatory**
- Radicular cyst
  (a) apical
  (b) lateral
  (c) residual periapical
- Paradental cyst

Non-odontogenic cysts

- Nasopalatine duct (incisive canal) cyst
- Nasolabial (nasoalveolar) cyst
- Median cysts
- Palatal cyst of the newborn (Epstein perls; Bohn´s nodules)

Non-epitheliazed primary bone cysts

- Solitary bone cyst (simple, traumatic, haemorrhagic bone cyst)
- Aneurysmal bone cyst
- Stafne´s idiopathic bone cavity

Incidence of cyst of the jaws

Odontogenic cysts (90 %)		Non-odontogenic c.(10%)	
Radicular cysts	60-75 %	Nasopalatine cyst	5-10 %
Dentigerous cyst	10-15 %	Other non-odontogenic and primary bone cysts	<1 %
Keratocyst	5-10 %		
Paradental cyst	3-5 %		
Gingival cyst	<1 %		
Lateral periodontal c.	<1 %		

Origins of odontogenic cysts

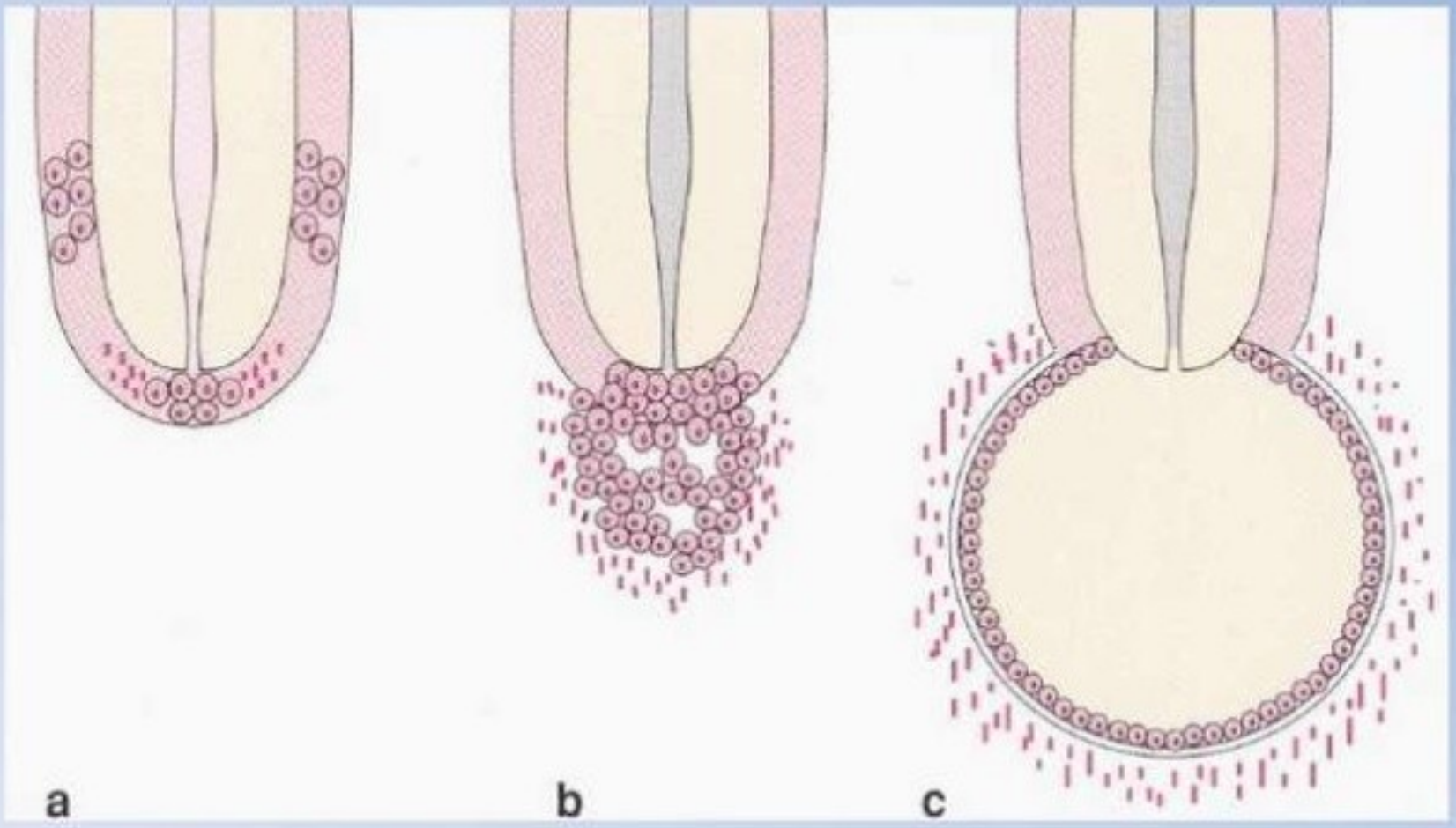
- **Derived from epithelial residues of the tooth-forming organ**
- **The main cyst types derived from each residue are:**

- Dental lamina rests/gland of Serres
  (a) odontogenic keratocysts
  (b) some lateral periodontal and gingival cysts
- Reduced enamel epithelium
  (a) dentigerous cysts
  (b) paradental cysts
- Rests of Malassez
  (a) radicular cysts

Radicular cysts

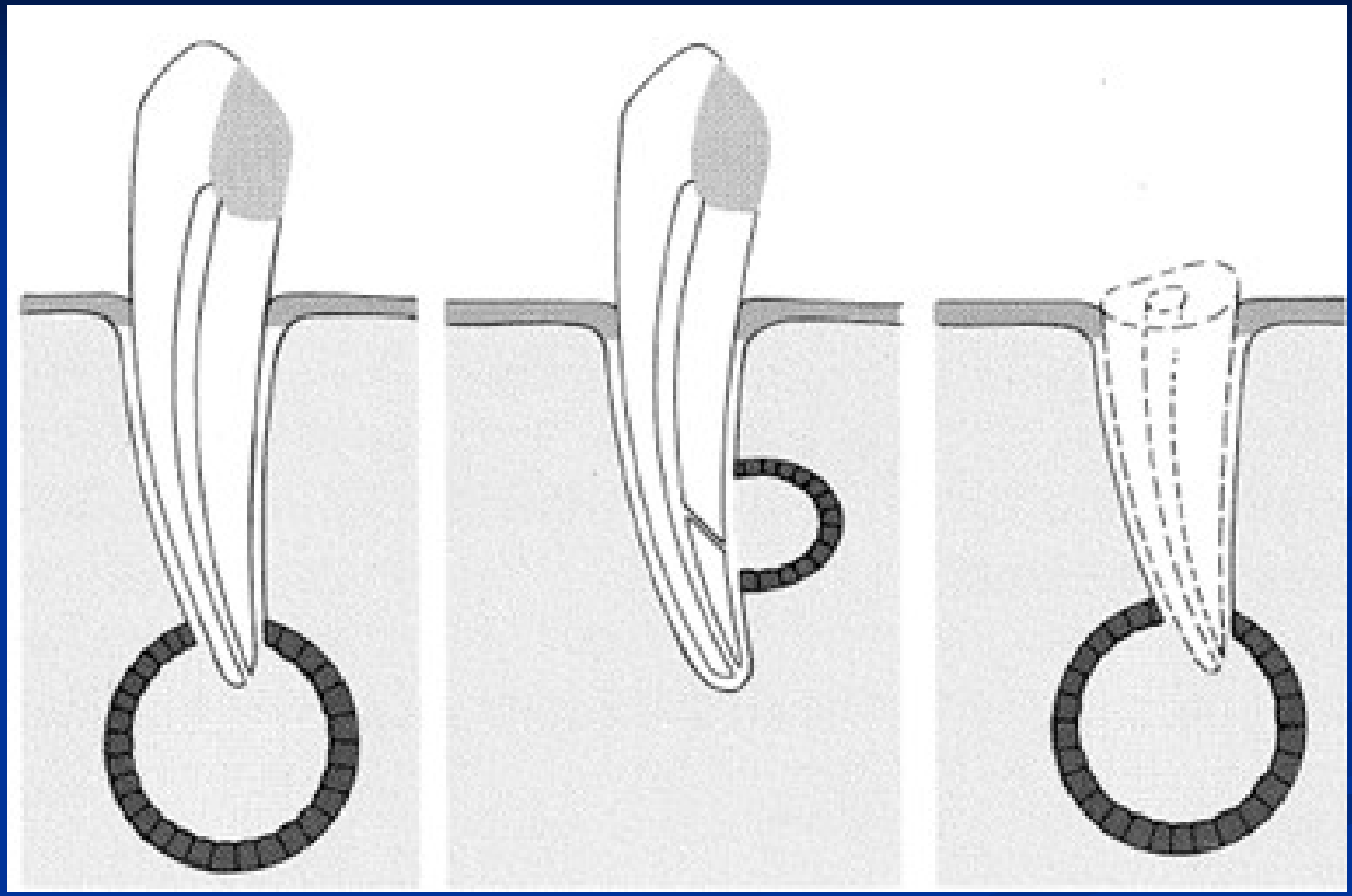
- Apical, residual periapical, or lateral sub-types
- Apical most common
- Associated with non-vital tooth
- Apical radiolucency indistinguishable from a periapical granuloma
- May be symptomless
- Enlargement of cyst leads to bone resorption

Radicular cyst / pathogenesis



a Initiation *b Cyst formation* *c Cyst enlargement*

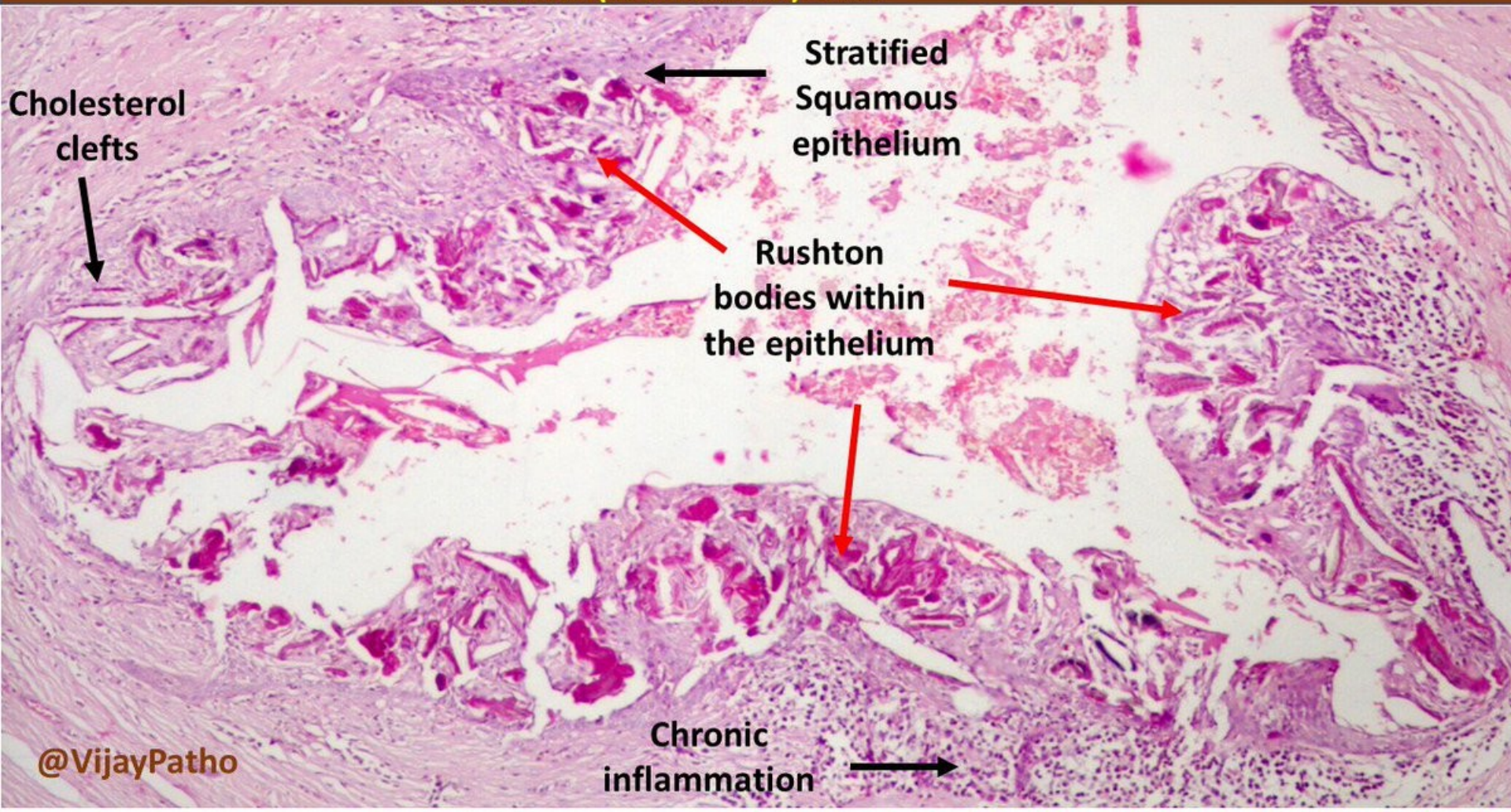
Radicular cyst

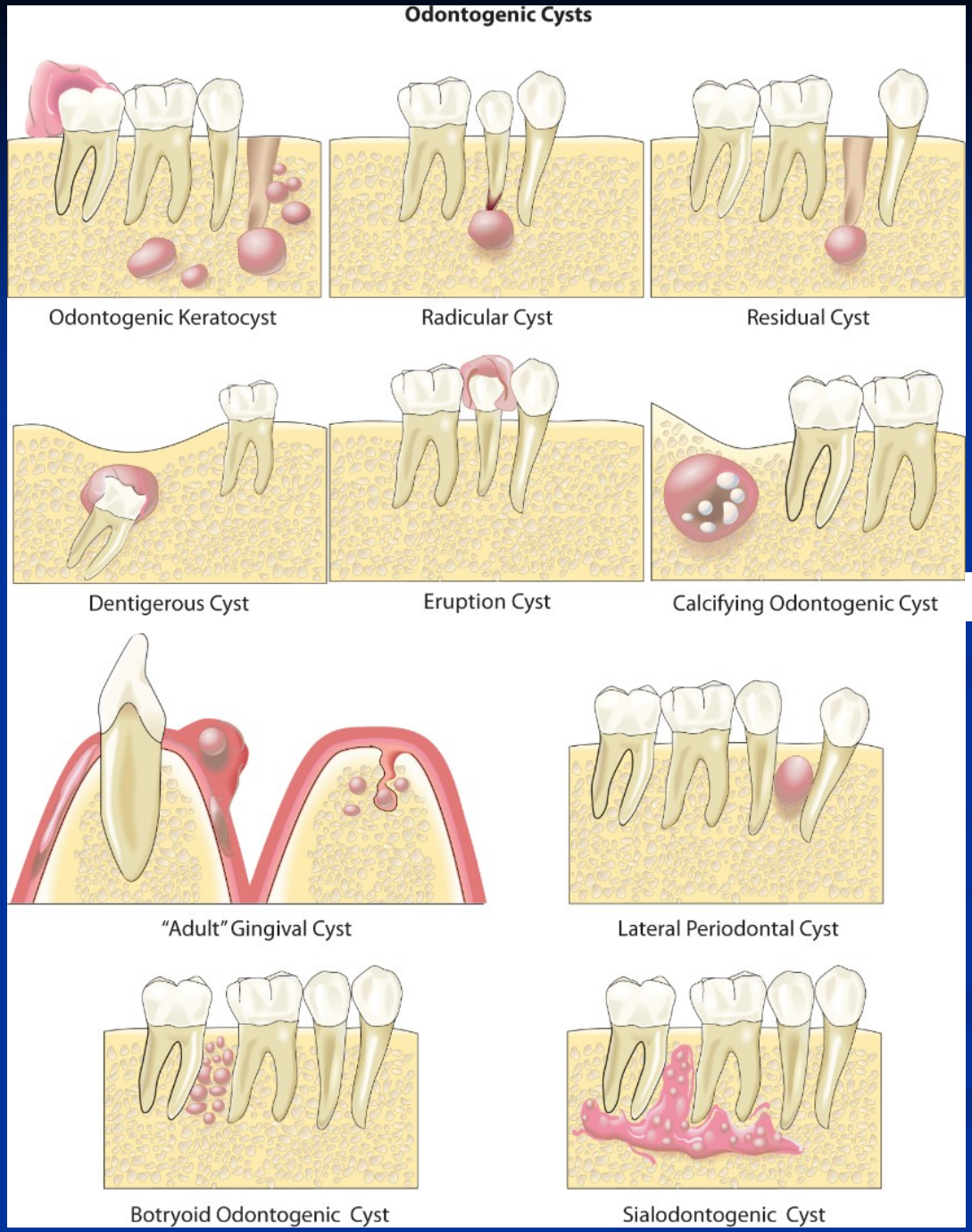


apikální laterální reziduální

Radicular cyst

PERIAPICAL (RADICULAR) CYST





=Kalcifikující odontogenní tumor

Radicular cyst-histology

- Arise from proliferation of the rests of Malassez within chronic periapical granulomas
- Lined by non-keratinizing squamous epithelium
- Supported by a chronically inflammed capsule
- Capsule may contain collections of cholesterols
- Hypertonic content: breakdown products, serum proteins, water and electrolytes, cholesterol crystals

Expansion of radicular cyst

- Hydrostatic pressure of the cyst fluid increased due to hypertonic content
- Water drawn into the cyst cavity along this osmotic gradient
- Cyst expansion
- Bone resorption

Dentigerous (follicular) and eruption cyst

- Most frequently involve impacted/late-erupting teeth
- Develop between reduced enamel epithelium and crown
- Surround part or all of the involved crown
- Cysts attached to amelocemental junction
- Lined by thin, non-keratinizing squamous epithelium; often shows mucous cell metaplasia
- Non-inflamed capsule; may contain odontogenic epithelial rests
- Eruption cyst = extraalveolar dentigerous cyst

Odontogenic keratocysts

- Bimodal age distribution – 2nd-3rd decades and 5th decade
- Few symptoms; cause little expansion; may reach large size
- Unilocular/multilocular radiolucency; may mimic dentigerous cyst
- More common in mandibula than in maxilla
- Tendency to recur
- May be multiple; associated with nevoid basal cell carcinoma syndrome

Naevoid basal cell carcinoma syndrome (Gorlin syndrome)

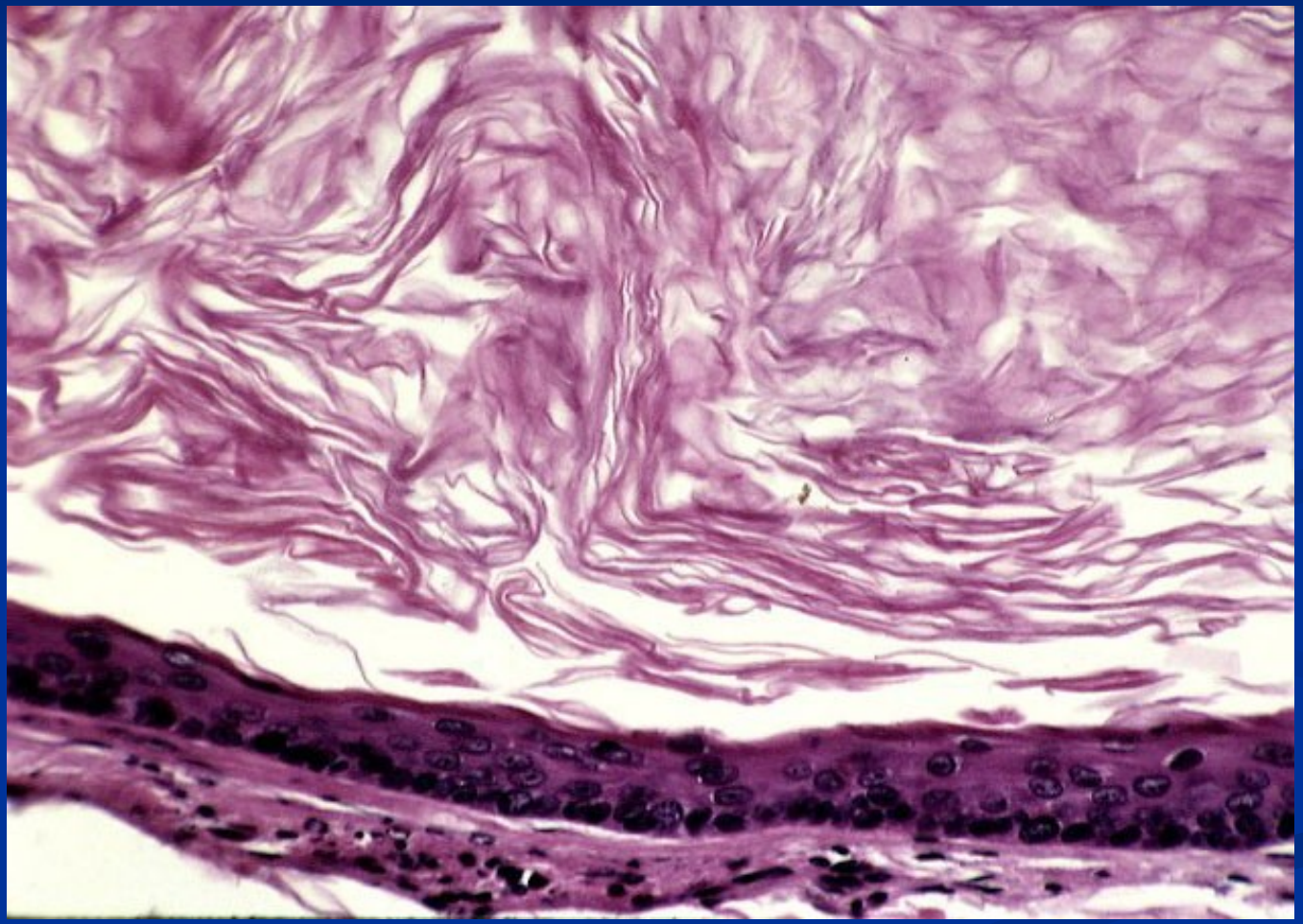
- AD
- **Multiple naevoid BCC + multiple odontogenic keratocysts + skeletal abnormalities (rib abnormalitites, vertebral deformities, polydactyly, cleft lip/palate) + calcified falx cerebri + brain tumours**
- Mutation in tumor supperssor gene PTCH (9q)
- Mutations of PTCH affect the normal function of *Hedgehog* signalling pathway
- *Hedgehog* signalling pathway controls transcription of the genes involved in the developlment, patterning, and growth of numerous tissues and organs

Odontogenic keratocysts

- **Thin, easily torn wall**
- **Lined by an even layer of parakeratinized squamous epithelium**
- **Palisaded basal cell layer**
- **Satellite cysts in capsule**
- **Tendency to recur due to difficulty of surgical removal**
  - thin, easily ruptured wall
  - Projection into cancellous spaces easily torn
  - Satellite cysts in capsule
- **Cyst enlargement involves**
  - Focal areas of active growth of the cyst wall
  - Extension of proliferating areas along cancellous spaces
  - Production of bone resorbing factors

- **Gingival cyst**
- in neonates, arise from remnants of the dental lamina, disappear spontaneously
- **Developmental lateral periodontal cyst**
- Canine and premolar region of the mandibula, vital teeth
- Non-keratinizing or cuboidal
- **Glandular odontogenic cyst**
- Anterior part of mandibula, potentially aggresive
- Lining by cuboidal, columnar and mucous cells
- **Paradental cyst**
- Alongside partly eruptive 3rd molar involved by pericoronitits
- Histologically resemble radicular cysts-inflammatory

Odontogenic keratocyst



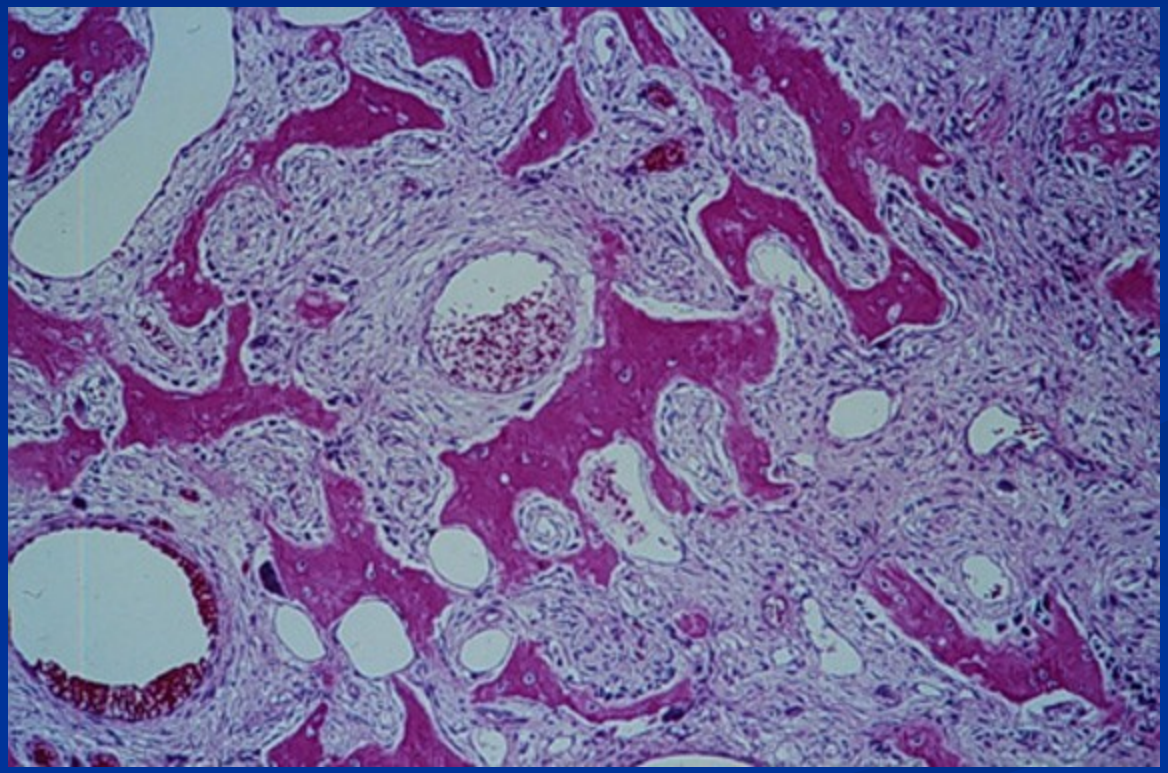
Non-odontogenic cysts

- **Nasopalatine duct (incisive canal) cyst**
  - Commonest of the non-odontogenic cysts
  - Derived from nasopalatine duct residues; midline anterior palate
  - Lining: stratified squamous epithelium, pseudostratified ciliated columnar epithelium, mucous cells, columnar or cuboidal epithelium
- **Nasolabial cyst**
  - In soft tissue of the upper lip; also bilateral
  - Lining: pseudostratified columnar epithelium, stratified squamous epithelium, mucous cell, ciliated cells
  - Derived from remnants of the lower part of the embryonic nasolacrimal duct
- **Palatal cyst of the newborn (Epstein perls; Bohn´s nodules)**
  - 1-3 mm papules, midline near the junction of soft and hard palate
  - Keratin filled, lined by stratified squamous epithelium
- **Median cyst**
  - Palate, mandibula
  - Displaced nasopalatine duct cyst???
  - In mandibula odontogenic???

Non-epitheliazed primary bone cysts

- **Solitary bone cyst**
  - Mainly molar region mandible; second decade
  - Empty cavity, no epithelial lining; loose fibrous tissue covering the bone
  - Pathogenesis: haemodynamic distrubance in medullary bone (trauma, haemorrhage)
- **Aneurysmal bone cyst**
  - Primary or secondary; uni- or multilocular
  - Blood filled spaces separated by cellular fibrous tissue
  - Pathogenesis: haemodynamic distrubance in medullary bone
- **Stafne´s idiopathic bone cavity**
  - Developmental anomaly of the mandible
  - Usually contains ectopic salivary tissue in continuity to submandibular salivary gland

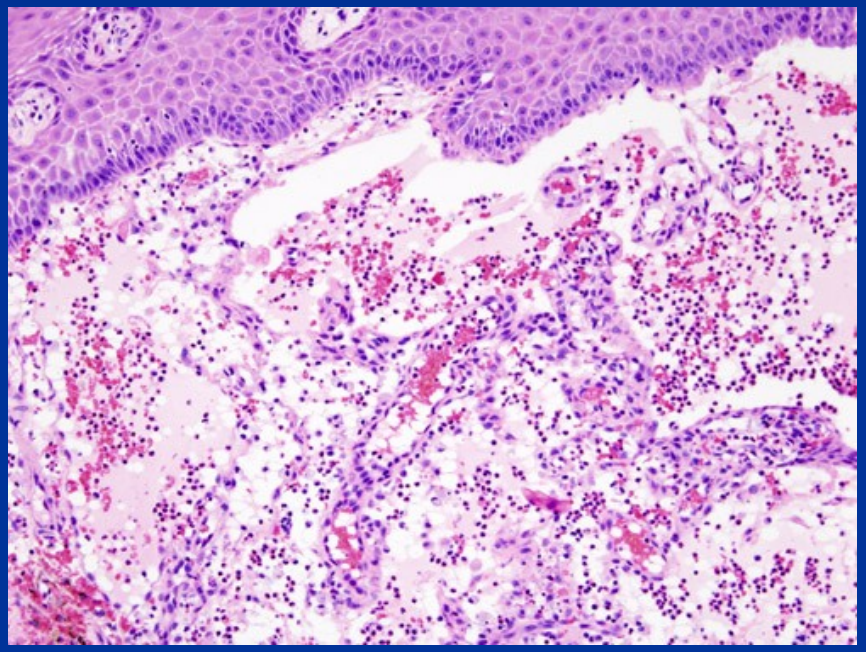
Aneurysmal bone cyst

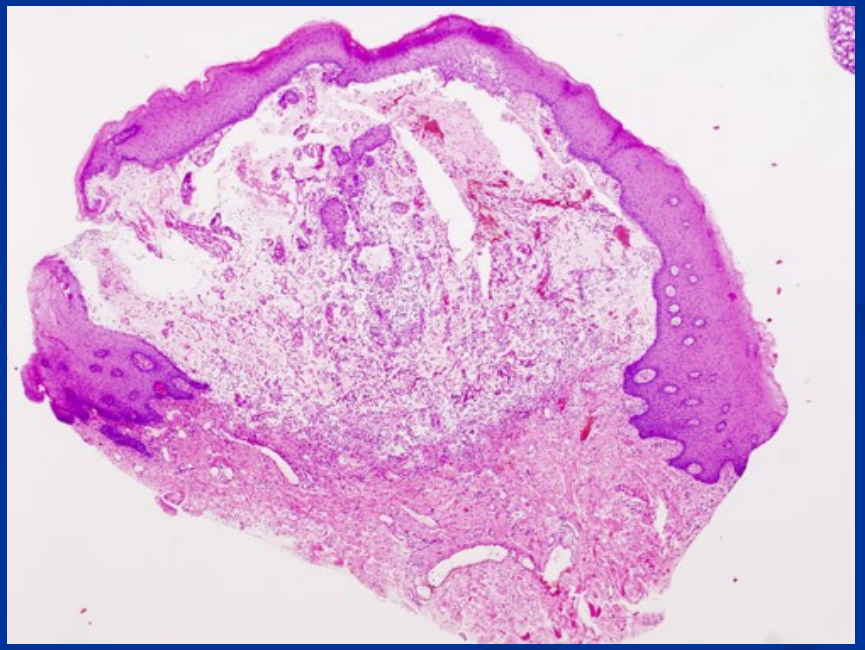


Cysts of the soft tissues

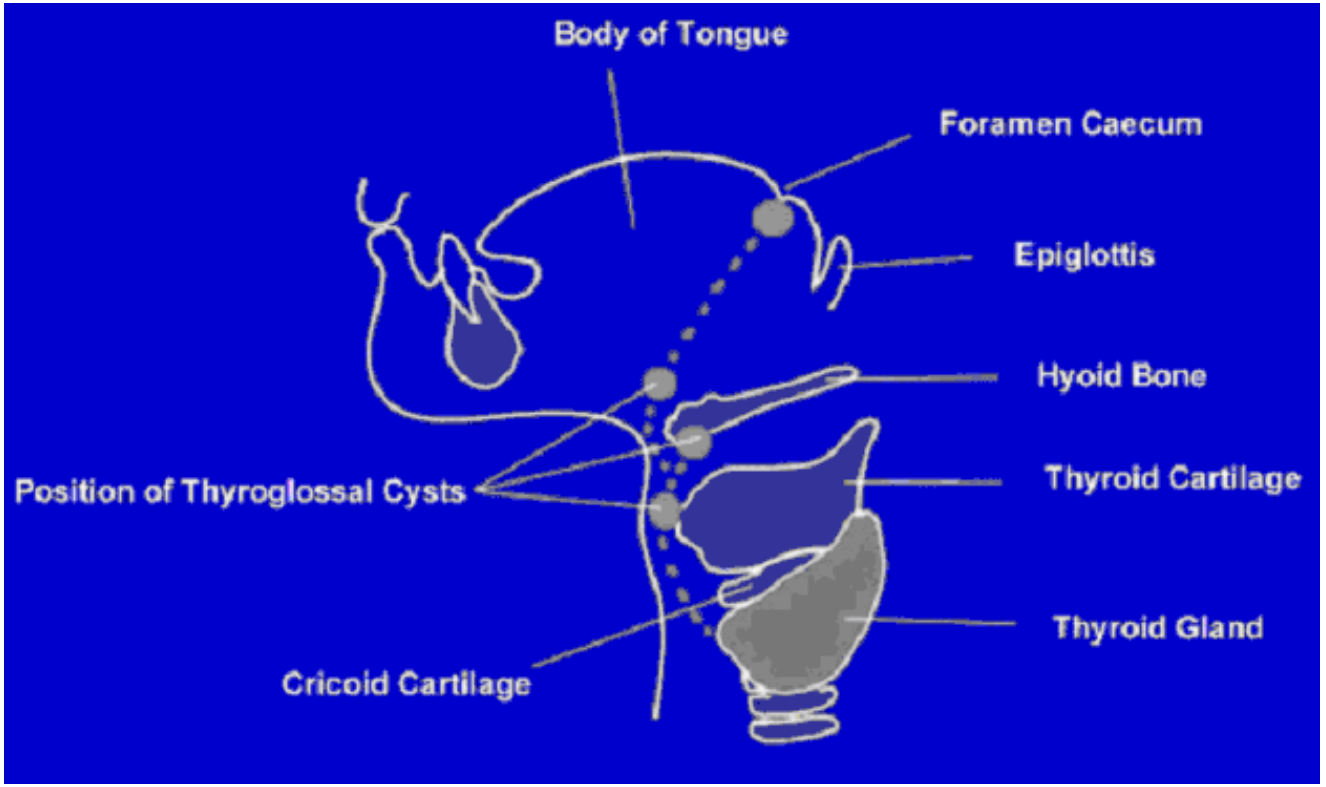
- **Salivary mucoceles**
  - **Mucous extravasation cyst**
    (lower lip, cheek, floor of the mouth; mucin-filled cystic cavity lined by inflammed granulation tissue, mucophages; **ranula** – clinical term, swelling of the floor of the mouth; usually mucous extravasation cyst)
  - **Mucous retention cyst**
    (no in lower lip; cystic dilatation of the duct)
- **Dermoid and epidermoid cysts**
  - Dermoid cysts: Developmental lesions; lined by orthokeratinized stratified squamoud epithelium, with skin appendages in the wall
  - Epidermoid cysts: usually aquired, traumatic implantation of epithelium, cystic change and expansion
- **Lymphoepithelial cyst**
  - Also classified as branchial cyst
  - Lined by stratified squamous epithelium with well-organized lymphoid tissue in the wall
- **Thyreoglossal cyst**
  - developmental, from the embryonic thareoglossal duct, localised in the midline of the tongue

Mucocele





Thyreoglossal cyst



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