

# 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

- developmental
- inflammatory

## ■ Non-odontogenic cysts

## ■ Non-epithelialized 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 (nasopalveolar) cyst
- Median cysts
- Palatal cyst of the newborn (Epstein pearls; Bohn's nodules)

# Non-epithelialized 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

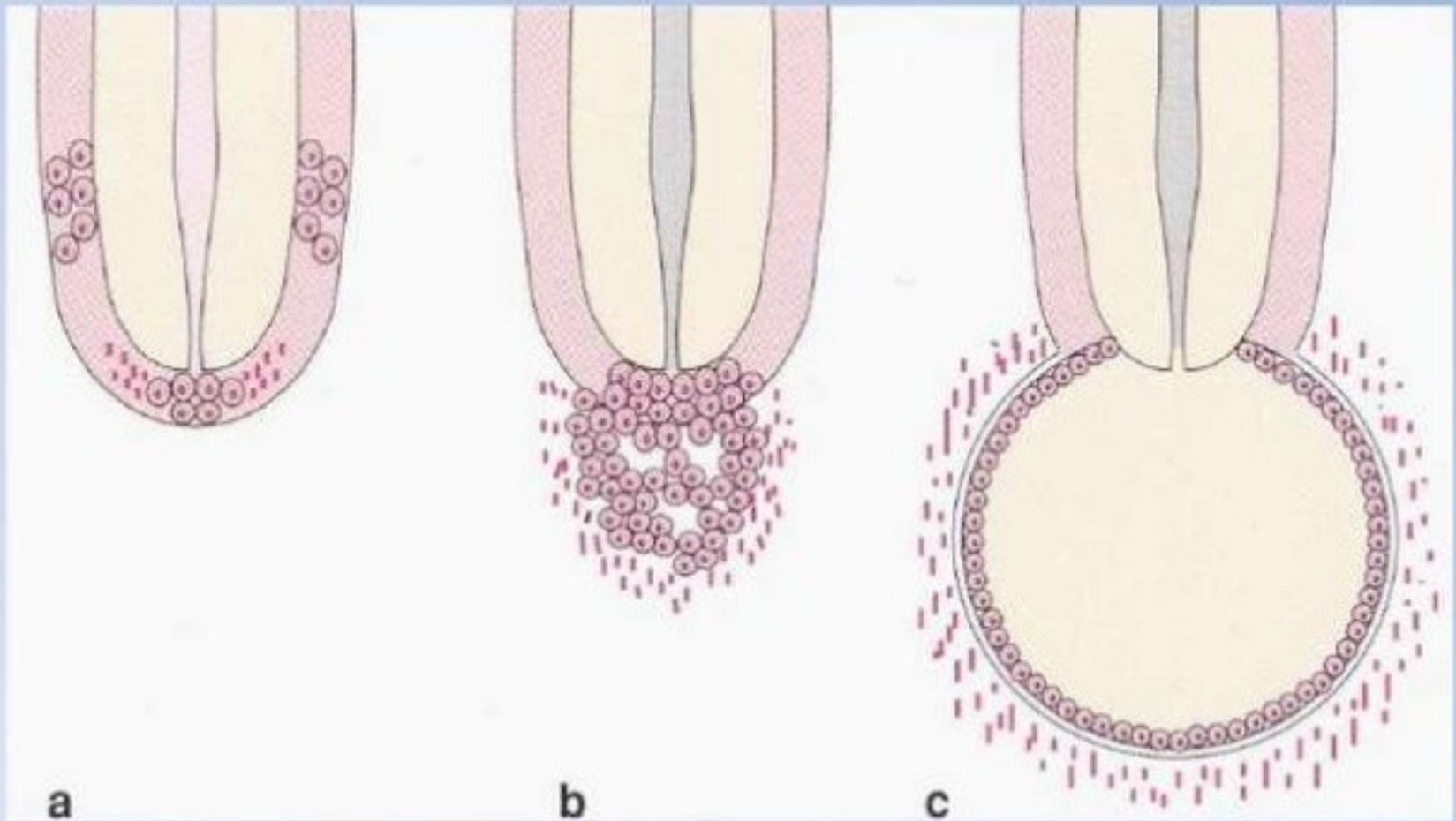
- **Derived from epithelial residues of the tooth-forming organ**
- **The main cyst types derived from each residue are:**
  - **Dental lamina rests/gland of Serres**
    - (a) odontogenic keratocysts
    - (b) some lateral periodontal and gingival cysts
  - **Reduced enamel epithelium**
    - (a) dentigerous 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***

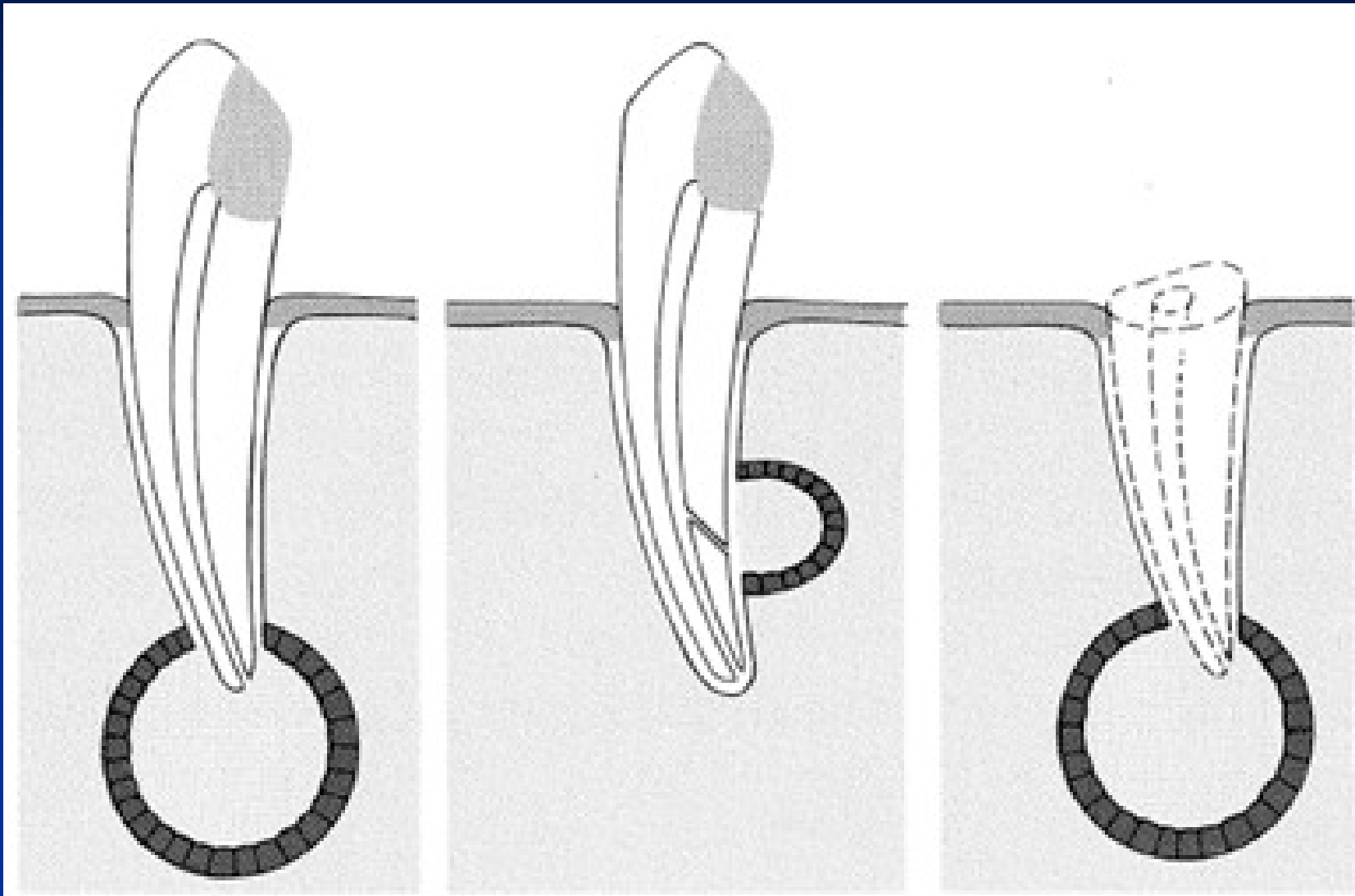


***a Initiation***

***b Cyst formation***

***c Cyst enlargement***

# Radicular cyst



apikální

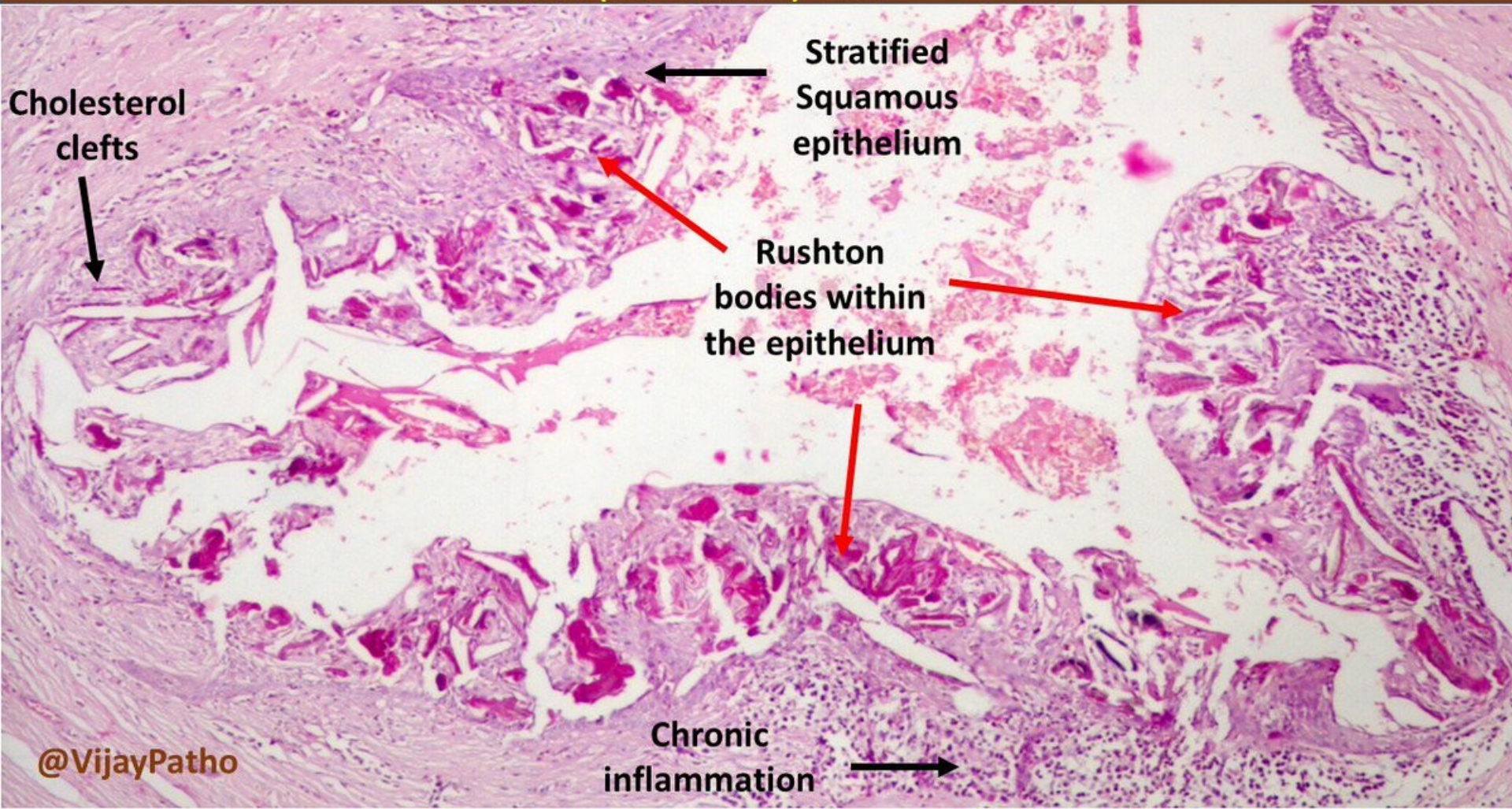
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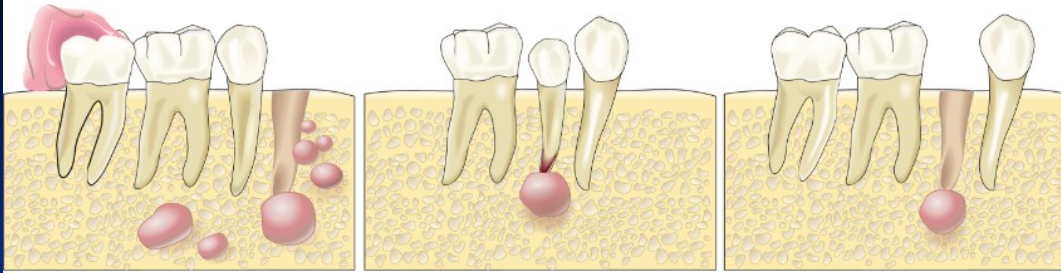
# Radicular cyst



## PERIAPICAL (RADICULAR) CYST



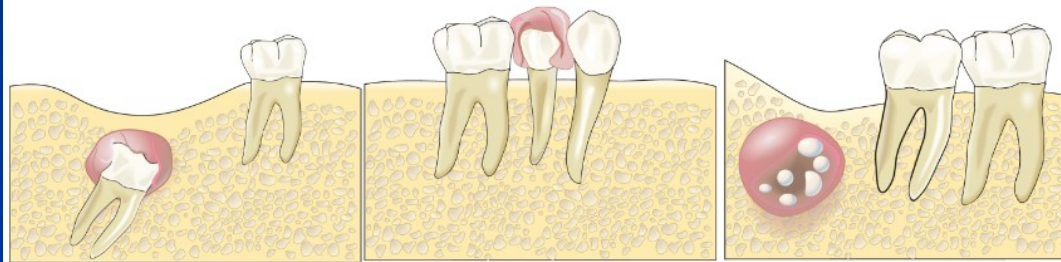
# Odontogenic Cysts



Odontogenic Keratocyst

Radicular Cyst

Residual Cyst

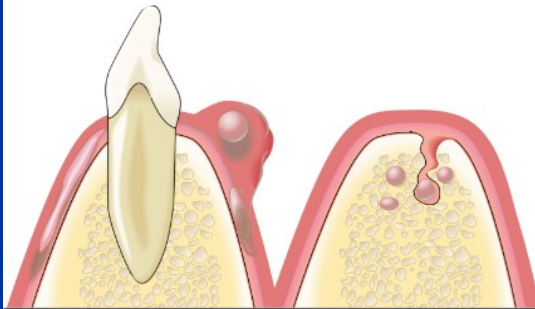


Dentigerous Cyst

Eruption Cyst

Calcifying Odontogenic Cyst

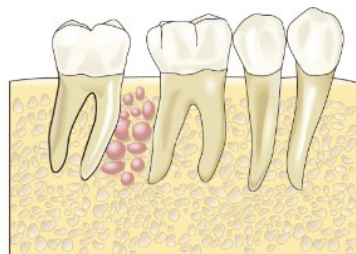
=Calcifying odontogenic tumour



"Adult" Gingival Cyst



Lateral Periodontal Cyst



Botryoid Odontogenic Cyst



Sialodontogenic Cyst

# 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 suppersor 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

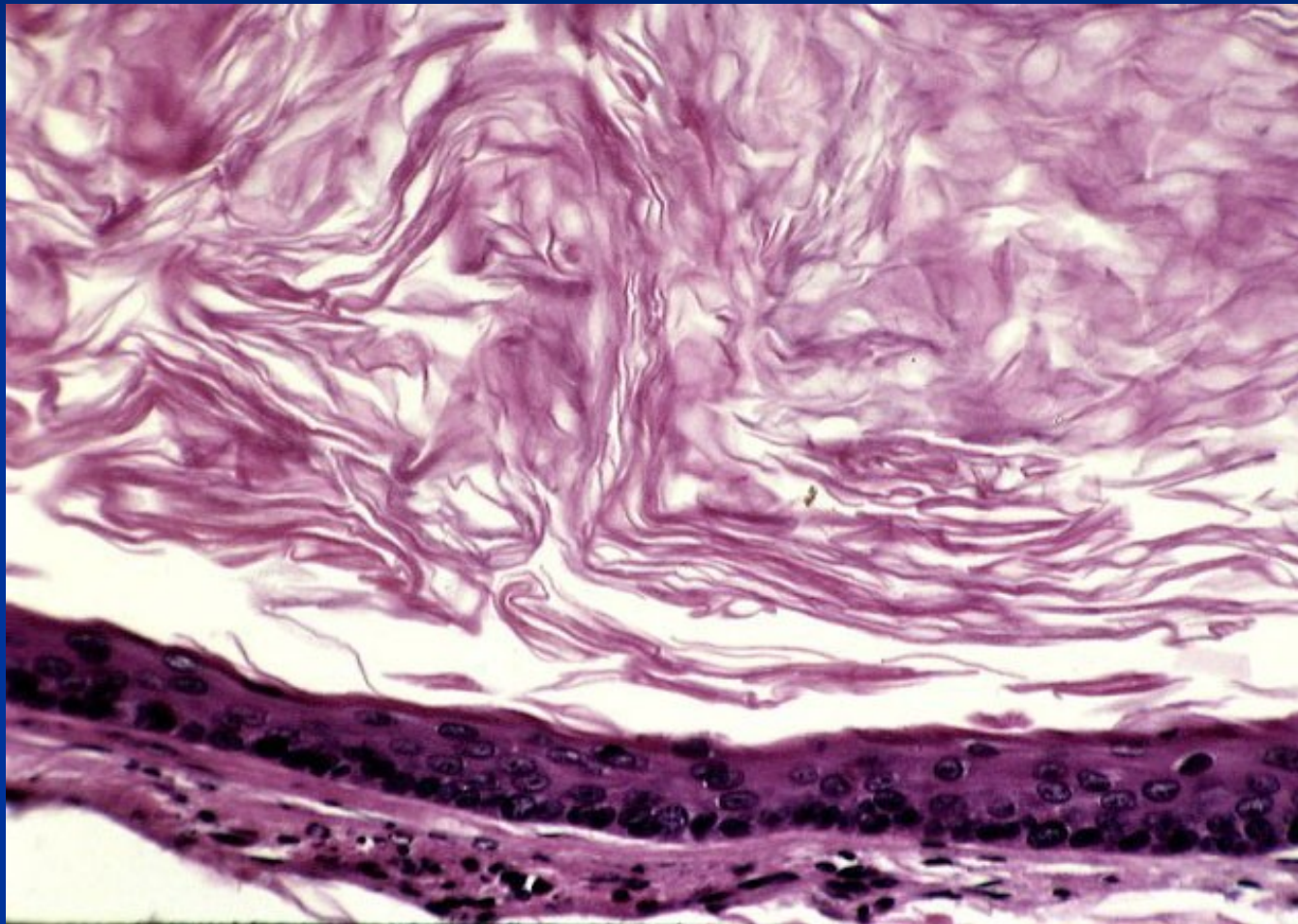
## ■ **Glandular odontogenic cyst**

- Anterior part of mandibula, potentially aggressive
- 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 pearls; 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-epithelialized 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 disturbance in medullary bone (trauma, haemorrhage)

## ■ Aneurysmal bone cyst

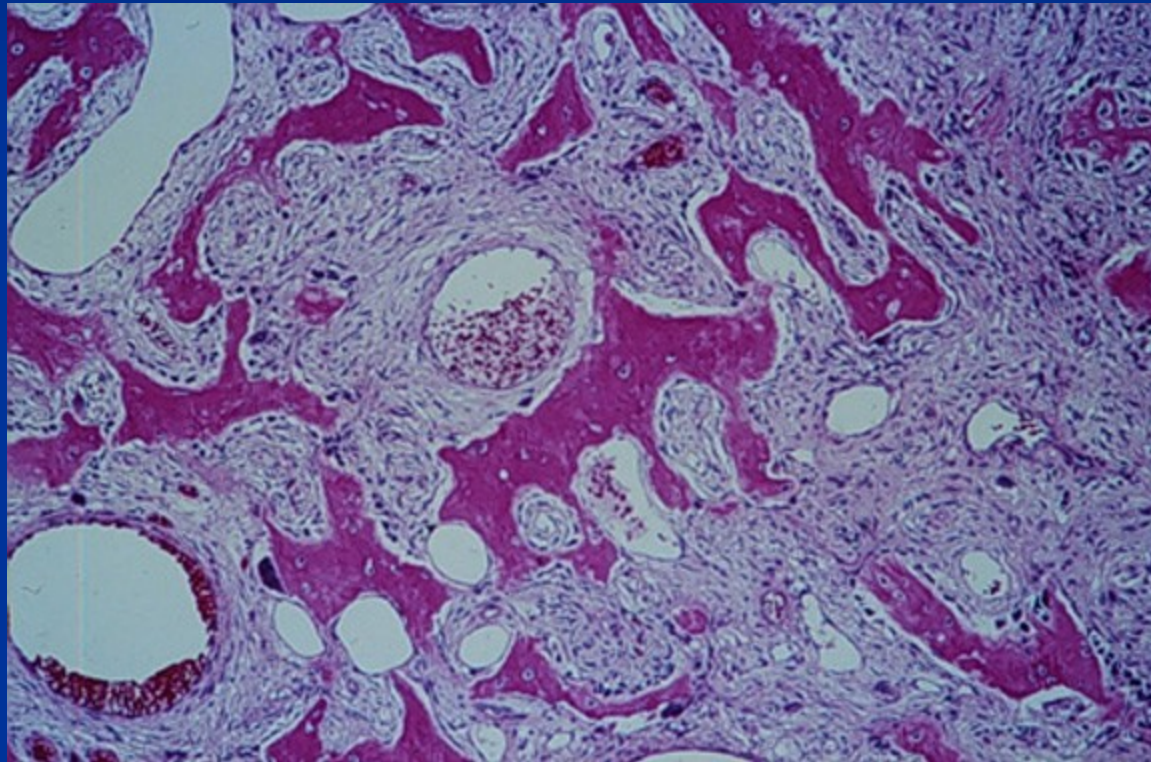
- Primary or secondary; uni- or multilocular
- Blood filled spaces separated by cellular fibrous tissue
- Pathogenesis: haemodynamic disturbance in medullary bone

## ■ 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 inflamed 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 squamous epithelium, with skin appendages in the wall

- Epidermoid cysts: usually acquired, traumatic implantation of epithelium, cystic change and expansion

## ■ Lymphoepithelial cyst

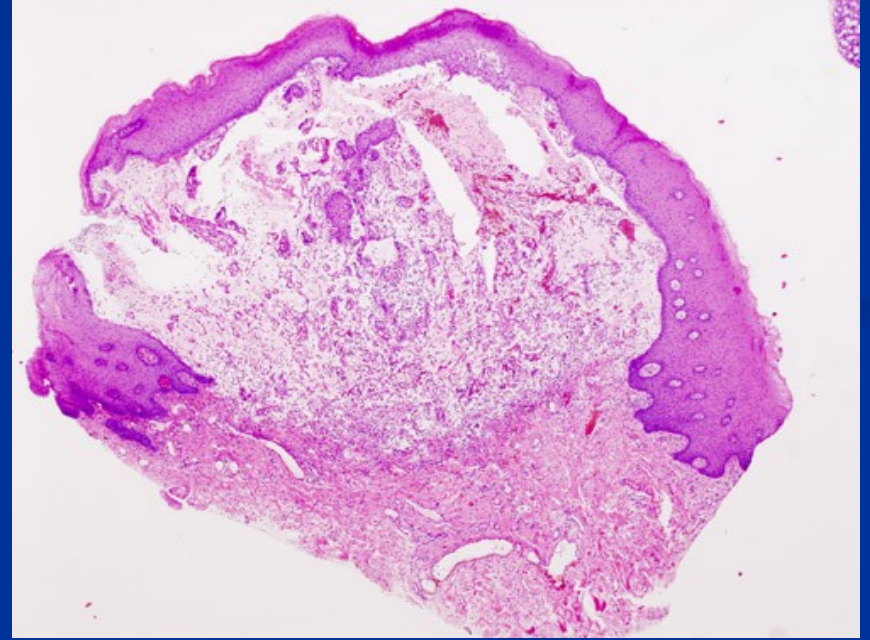
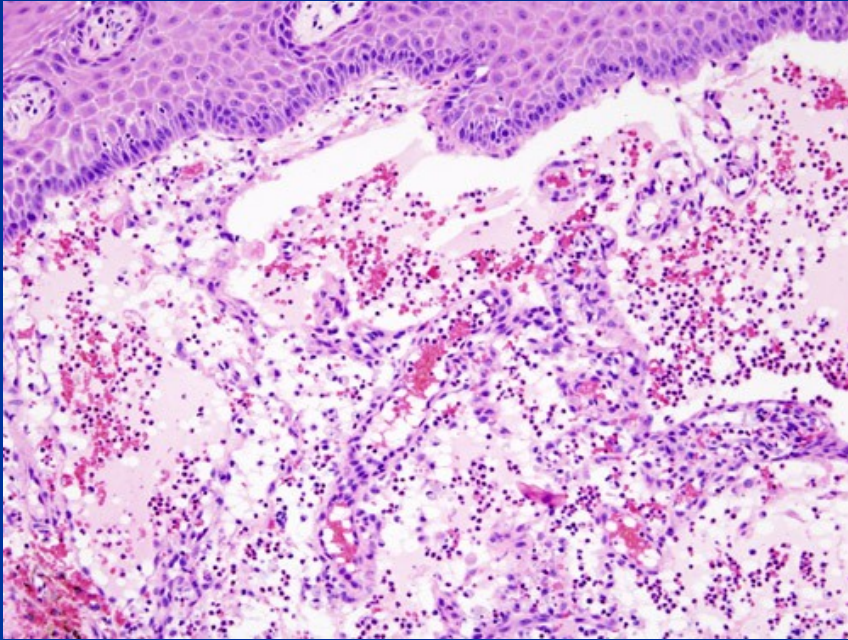
- Also classified as branchial cyst

- Lined by stratified squamous epithelium with well-organized lymphoid tissue in the wall

## ■ Thyroglossal cyst

- developmental, from the embryonic thyroglossal duct, localised in the midline of the tongue

# Mucocele



# Thyreoglossal cyst

