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

Markéta Hermanová

### **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 %		

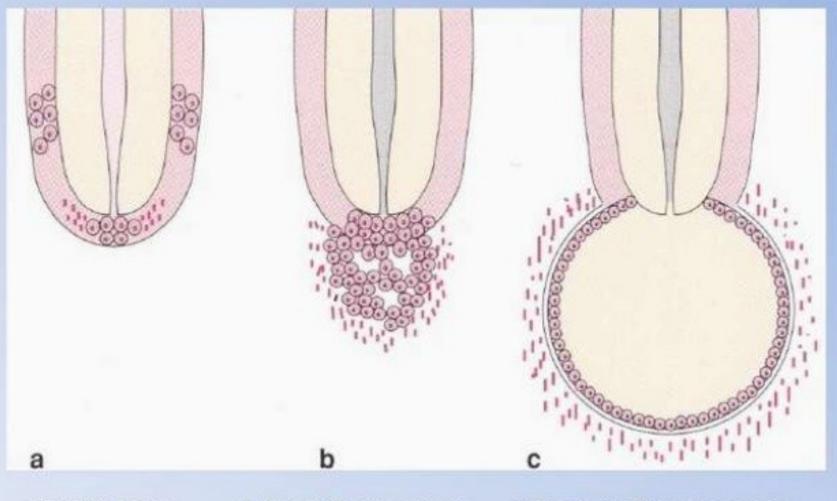
## Origins of odontogenic cysts

- 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**

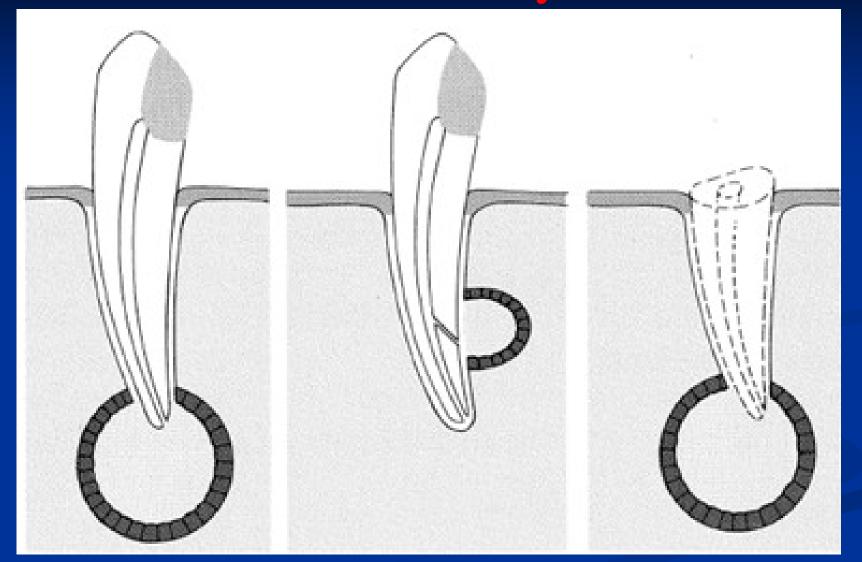
- Apical, residual periapical, or lateral sub-types
- Apical most common
- Associated with non-vital tooth
- Apical radiolucency indistinguishable from a periapical granuloma
- May be symptomless
- Enlargement of cyst leads to bone resorption

### Radicular cyst / pathogenesis



a Initiation b Cyst formation c Cyst enlargement

# Radicular cyst



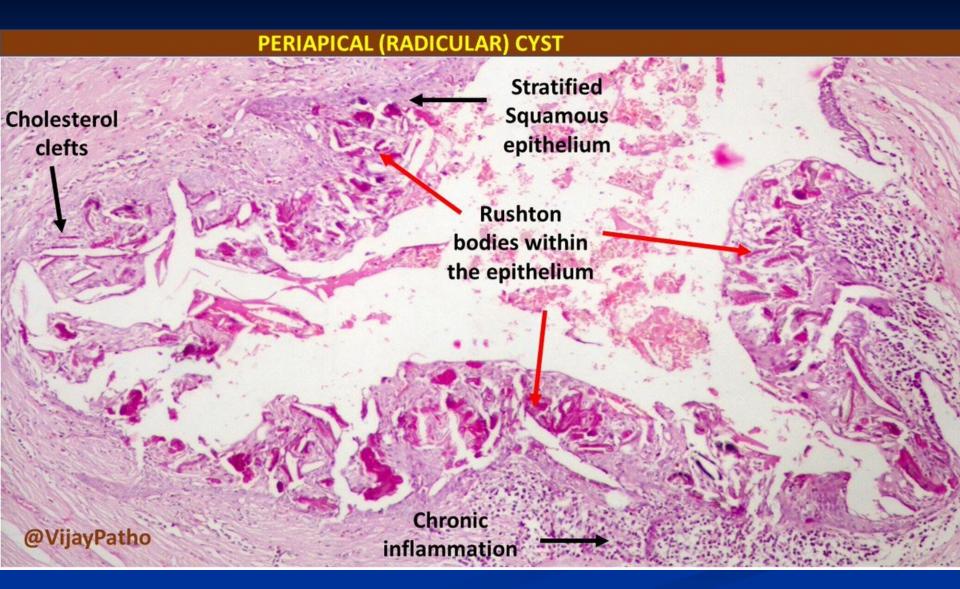
apikální

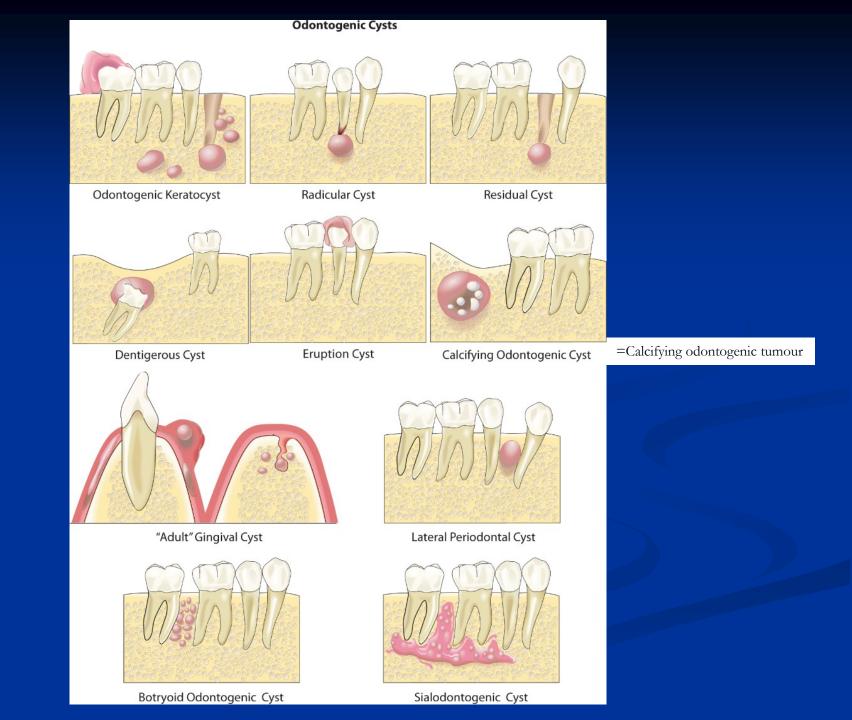
laterální

reziduální

# Radicular cyst







### 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

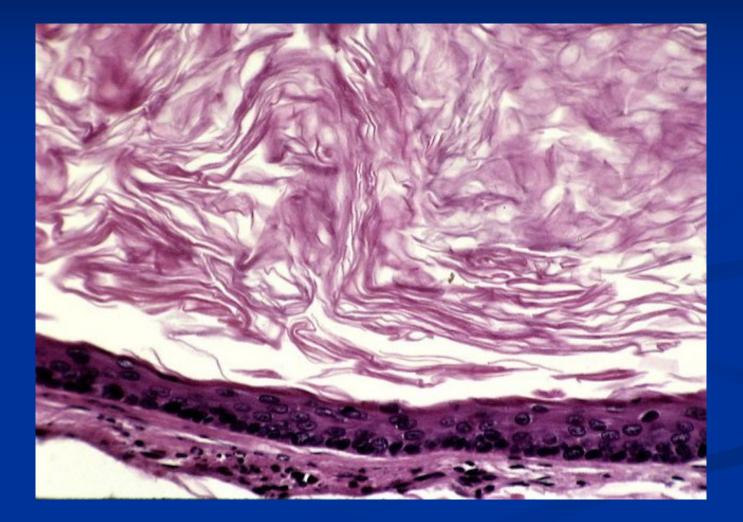
## **Odontogenic** keratocysts

- 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

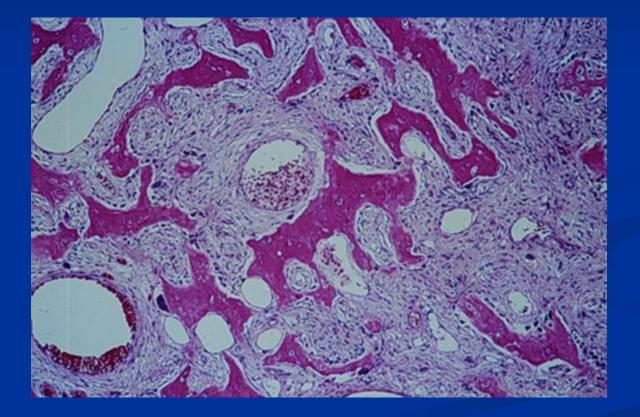
### Solitary bone cyst

- 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

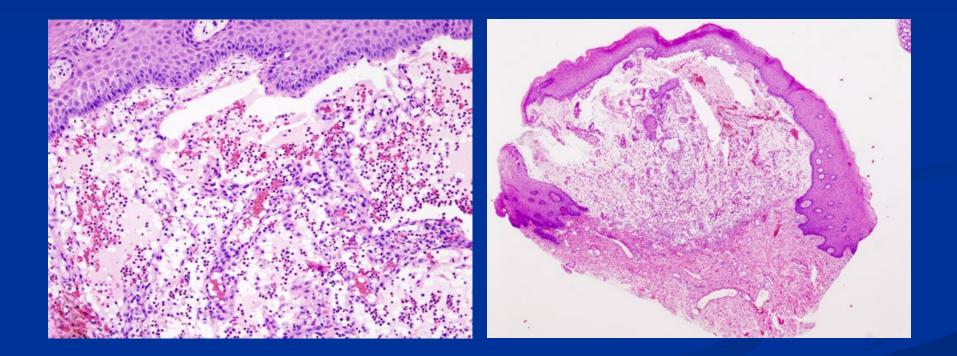
#### Salivary mucoceles

- 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

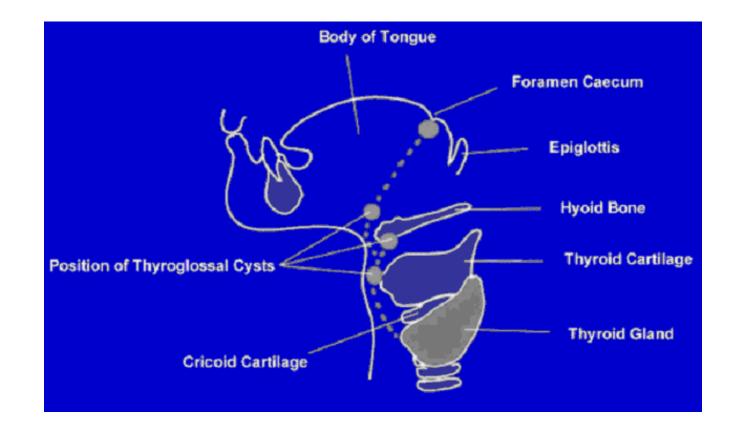
(no in lower lip; cystic dilatation of the duct)

- 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



Thank you for your attention ...