

# WHO Classification

## Developmental Cysts

### Odontogenic

### Non Odontogenic

- Nasopalatine duct cyst
- Nasolabial cyst
- Median Palatal
- Others

- ✓ Dentigerous **25%**
- ✓ Eruption **0.5 %**
- ✓ OKC **5-8%**
- ✓ Lateral Periodontal **0.5%**
- ✓ Gingival **0.3%**
- ✓ Glandular **0.05%**

### Inflammatory Cysts

### Radicular **65%**

### Paradental **0.5-4%**

- Apical
- Lateral
- Residual

# ODONTOGENIC KERATOCYST

**Synonyms:** keratocystic odontogenic tumor

**Disease Mechanism:** WHO classify it based on tumor-like characteristics of lining epithelium. Expansion is due to growth potential of lining epithelium + osmotic pressure.

**Age:** 2<sup>nd</sup>-3<sup>rd</sup> decade

**Origin:** dental lamina.

**Location:** any site in the jaw, with about 2/3 of the cases occurring in the mandible, primarily in the posterior body & ramus area.

**Periphery & shape:** smooth, round or oval

May have scalloped outline.

**Internal structure:** Radiolucent

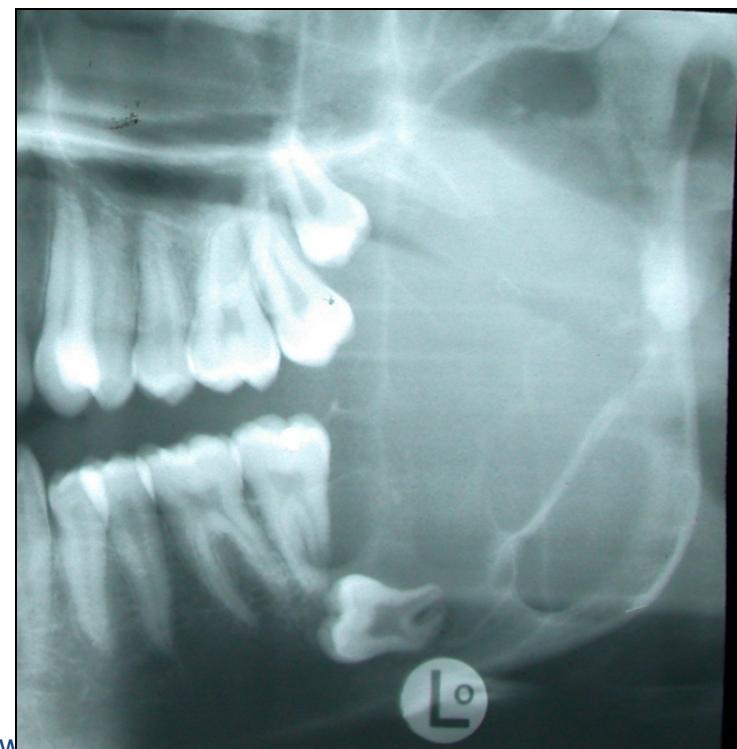
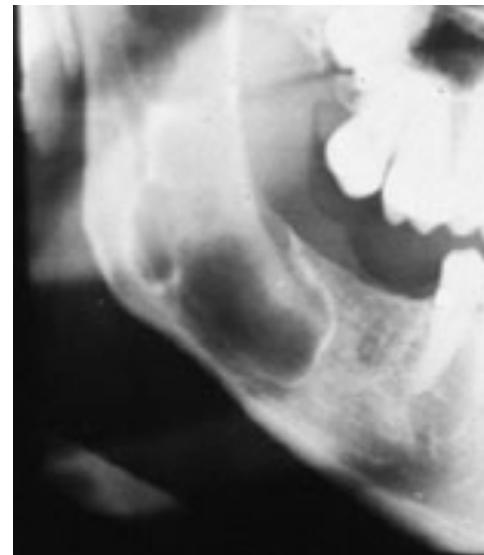
Sometimes, curved internal septa--- ML appearance.

**Effects on surrounding structures:** Minimal expansion of cortical plates (late detection) Occasionally displace & resorb teeth.

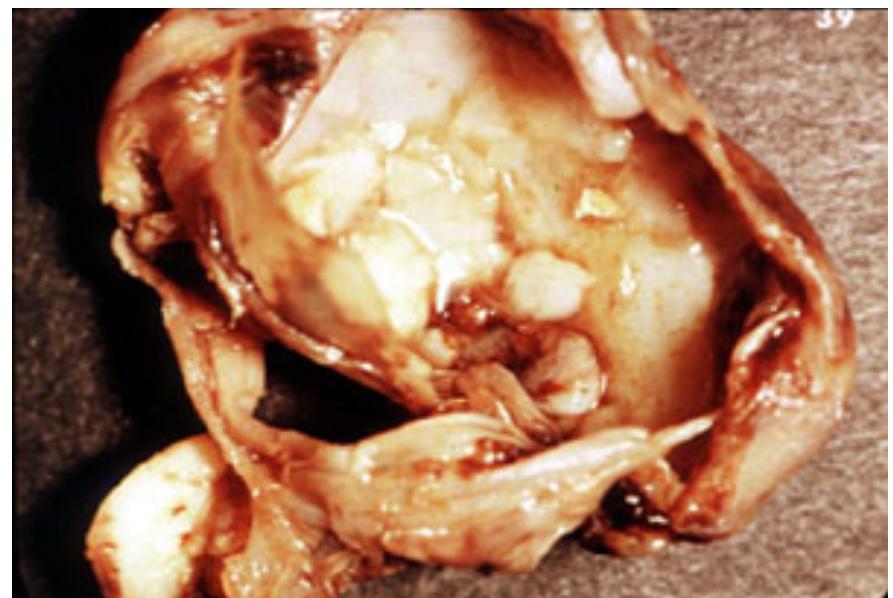
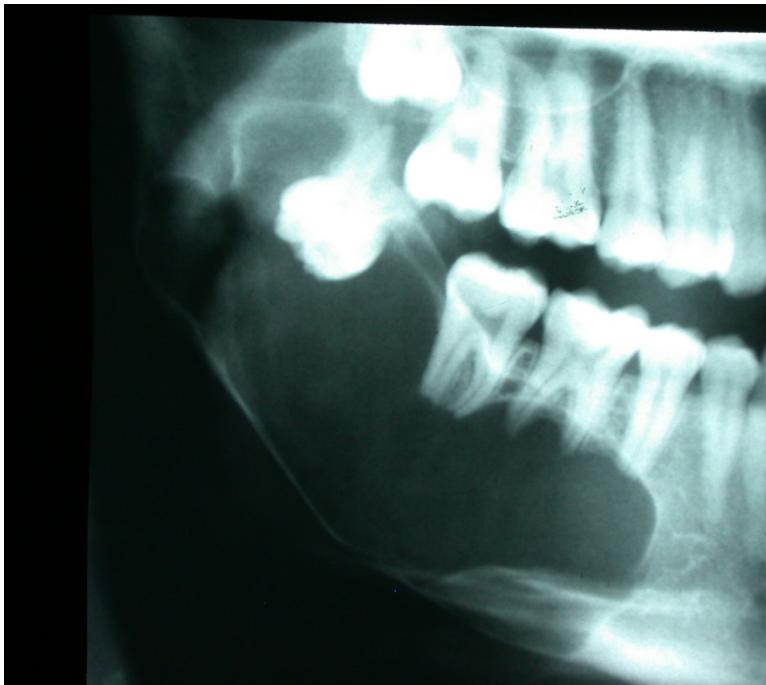
Displacement if IAC;

**Behavior:**

- Possesses a remarkable growth potential, greater than other odontogenic cysts & can attain a large size resulting in massive bone destruction.



- OKC exhibits a recurrence rate of 25-69% similar to that of a neoplasm ( also named **Keratotic odontogenic tumor**).
- **Differential Dx:**
  - Dentigerous cyst
  - Ameloblastoma (ML KOT)
  - Odontogenic Myxoma (ML )
  - Simple bone cyst ( Scalloping with minimal expansion)



Dr. Natheer Al-Rawi

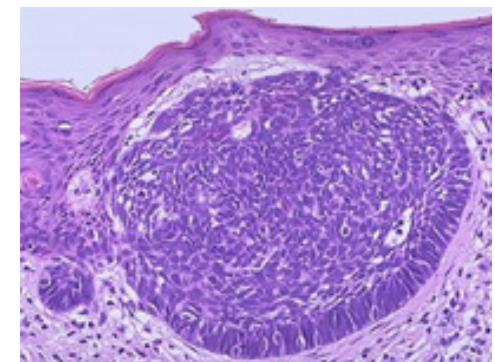
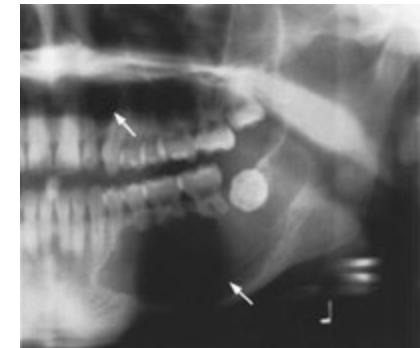
### **Clinical Features:**

- Present as a single lesion, it can occasionally occur as a **multiple cysts** that sometimes occupy all four quadrants of the jaw.
- Multiple OKC are one of the consistent features of the **Nevoid Basal Cell Carcinoma Syndrome ( Gorlin-Goltz Syndrome) (4-5%)**



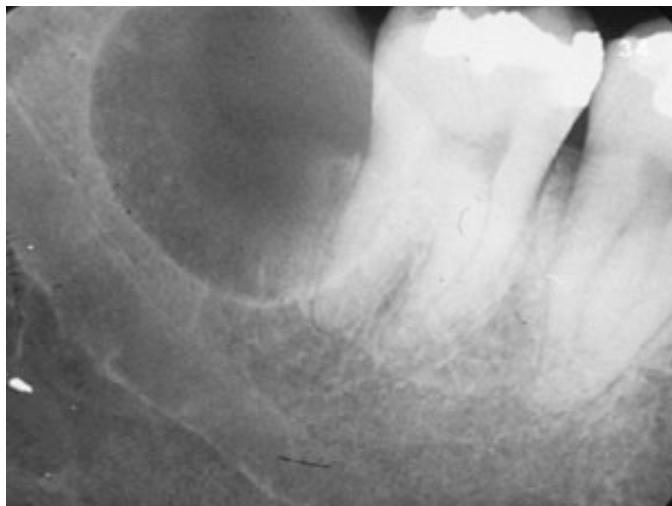
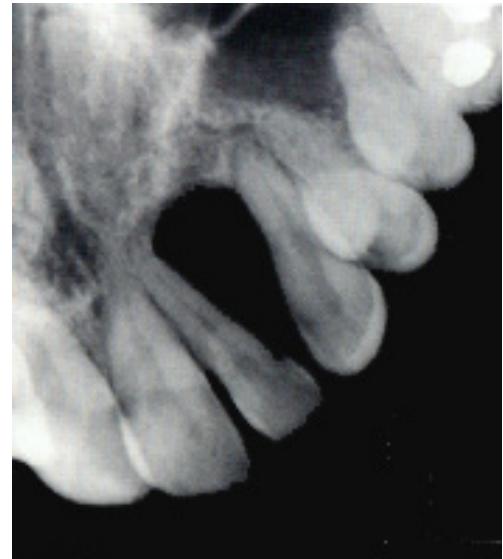
## The predominant features of this syndrome are:

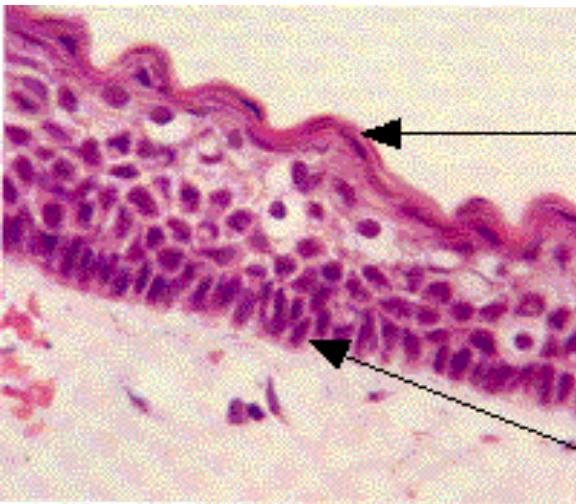
1. Multiple OKC of jaws.
2. Multiple Basal cell carcinoma of skin.
3. Bifid ribs & vertebral deformities.
4. Calcification of Falx cerebri.
5. Palmer & planter dyskeratosis.
6. Frontal bossing.
7. Hypertelorism.
8. Ovarian fibromas.
9. An important clinical feature of OKC is their tendency to recur after surgical treatment.



## **Radiographically:**

- Well-defined solitary lesion or as multilocular/polycystic radiolucencies exhibiting a thin corticated margin.
- Many present in apparent **dentigerous relationship** associated with unerupted third molar, but the crown of such teeth are usually separated from the cyst cavity.

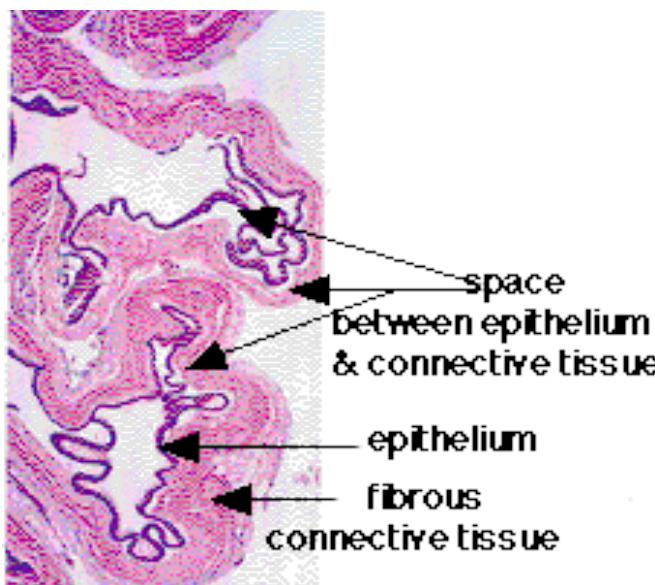




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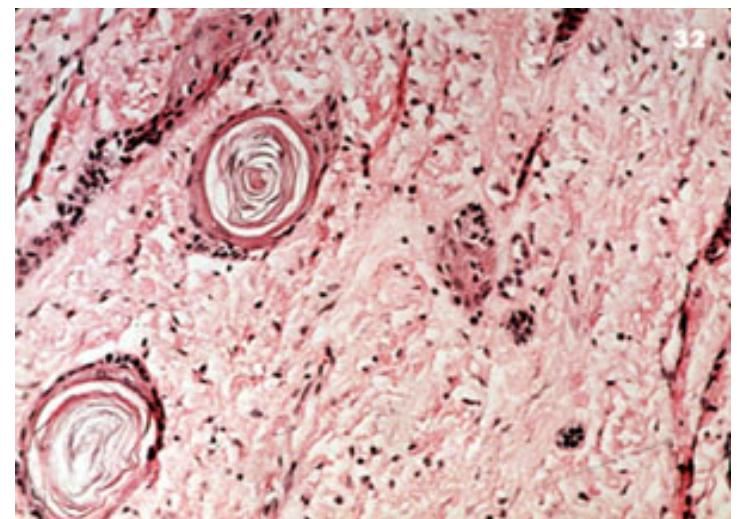
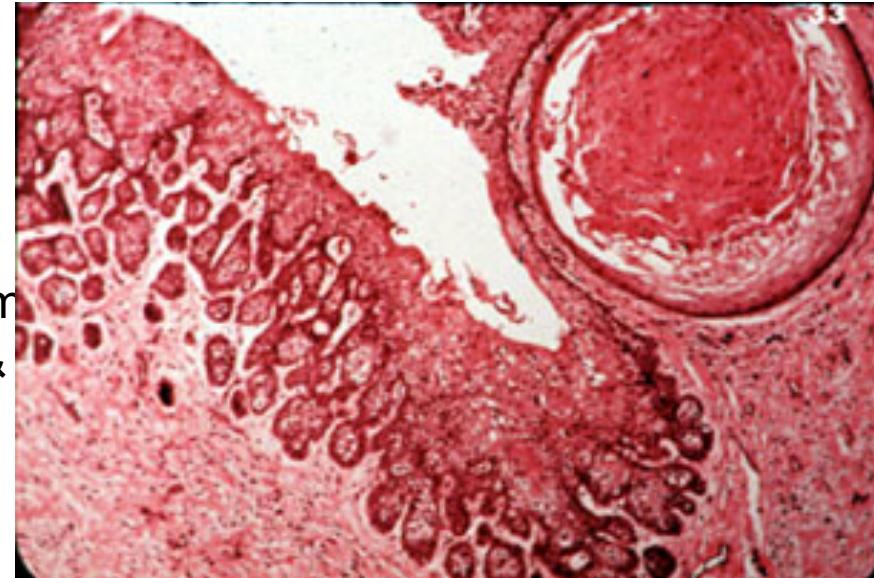
The microscopic appearance of OKC is distinctive & characterized by:

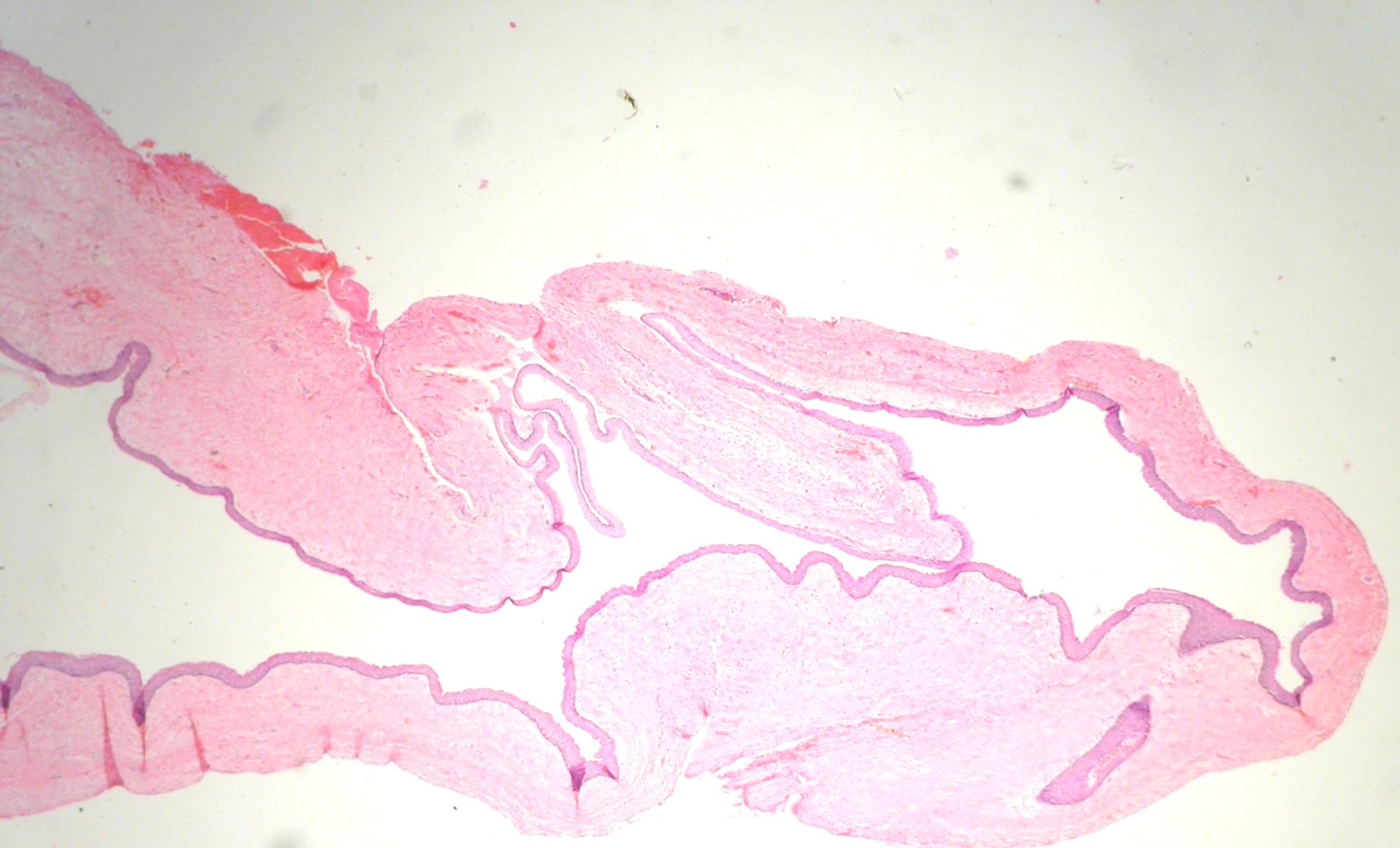
1. A thin, uniform lining of parakeratinized squamous epith. (6-10 cells in thickness).
2. A palisaded layer of colouminar or cuboidal basal cells.
3. Corrugated layer of parakeratin on its luminal surfaces.
4. Lack of rete pegs.

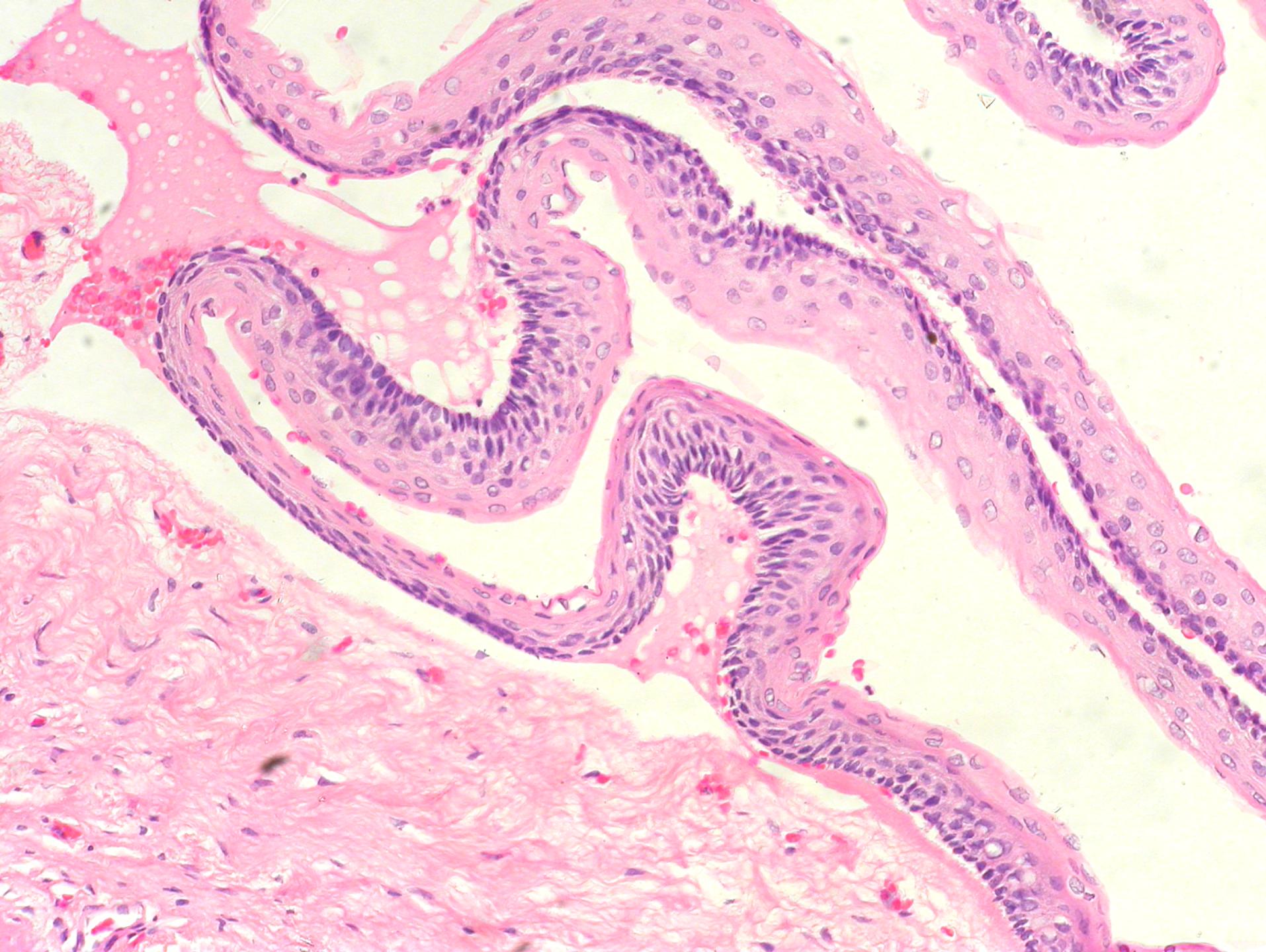


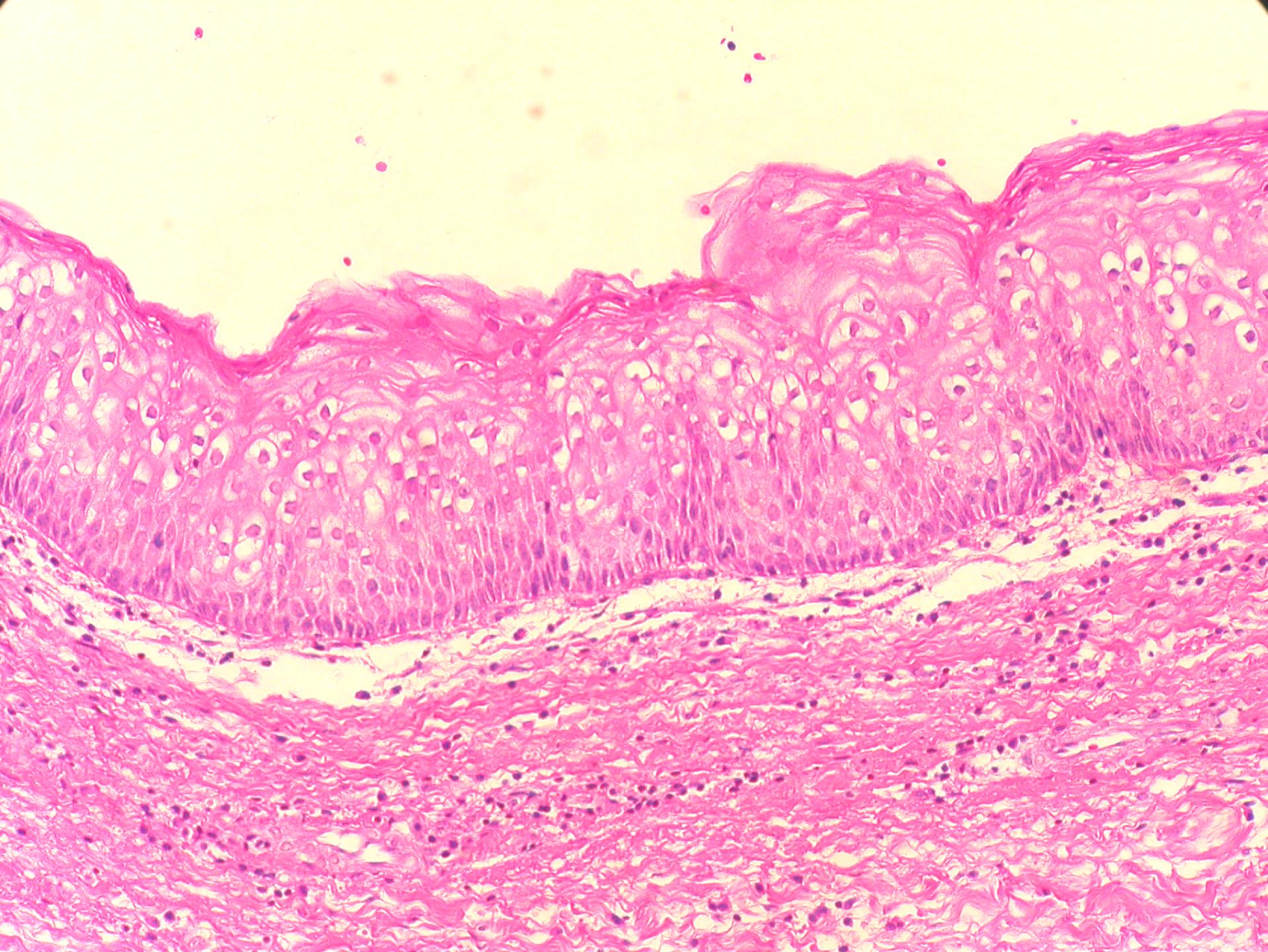
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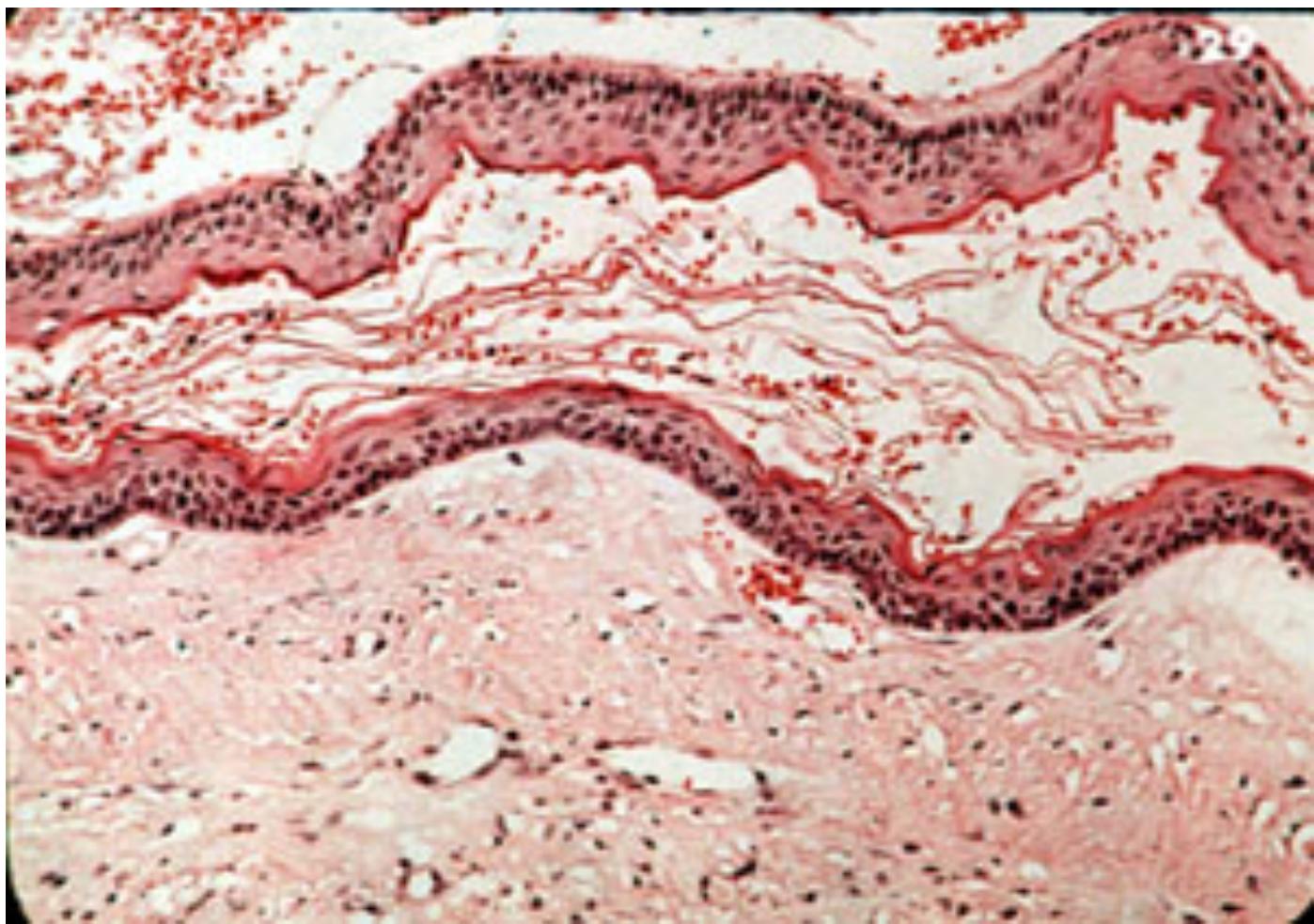
5. Focal separation of epithelial lining from the adjacent C.T which is often loose & fibrillar &
  - usually free of inflammation.
6. The cystic lumen contains variable amount of desquamated parakeratin & gray /white cheesy materials consisting of **keratinous debris**.
7. Remnant of dental lamina, **microcyst** formation, **satellite "daughter"** cyst present in capsule wall.
8. **Epithelial budding** from basal cell area.











Dr. Natheer Al-Rawi

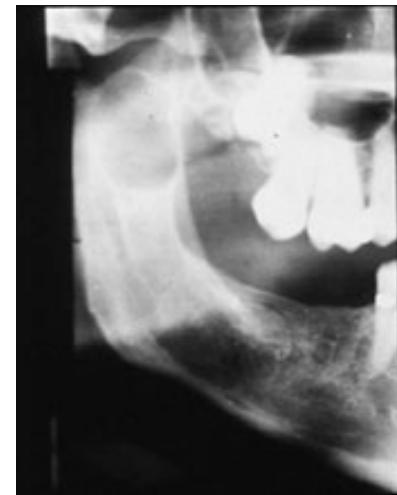
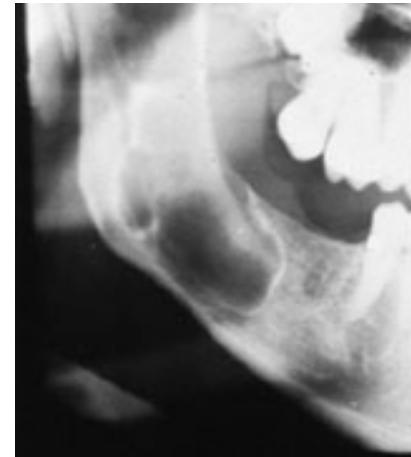
## **Treatment & Prognosis:**

Surgical **enucleation** or in severe cases surgical resection.

**Recurrence rate is high** & close clinical follow-up of the surgical site is advisable.

### ***RECURRANCE COULD BE DUE TO:***

1. **Thickness of the cyst wall** & its low tensile & rupture. Strength compared to Radicular cyst make enucleation more difficult & recurrence may thus follow retention of fragments of torn lining.
2. **Presence of daughter cysts** in cyst wall.
3. **Focal separation** of epith. Lining from underlying C.T make surgical removal very difficult.



## ***Pathogenesis & Expansion of OKC:***

Although hydrostatic forces are probably involved in expansion.

Other hypothesis have been suggested to account for the peculiar growth pattern of the lesion.

### **Possible factors involved in expansion include:**

1. **Hydrostatic forces:** Same mechanism suggested for radicular cyst.
2. **Keratocyst contents** are hypertonic when compared with serum & the lining acts as an efficient semipermeable membrane. However, hydrostatic pressure alone would result in a unicentric ballooning pattern of expansion.

### **3. Active epithelial growth:**

Epith. Lining of keratocyst exhibits **greater mitotic activity** than other odontogenic cysts.

Proliferation of local groups of epith. Cells could account for folding in the cyst lining & projection of the cyst along cancellous spaces resulting in a multicentric pattern of growth.

### **4. Production of bone resorbing factors:**

Including Prostaglandins & IL-1 & 6.

### **5. Accumulation of mural squames:**

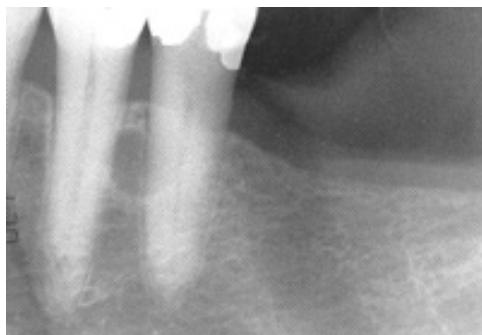
Which might result in localized areas of increased pressure that lead to resorption of bone.

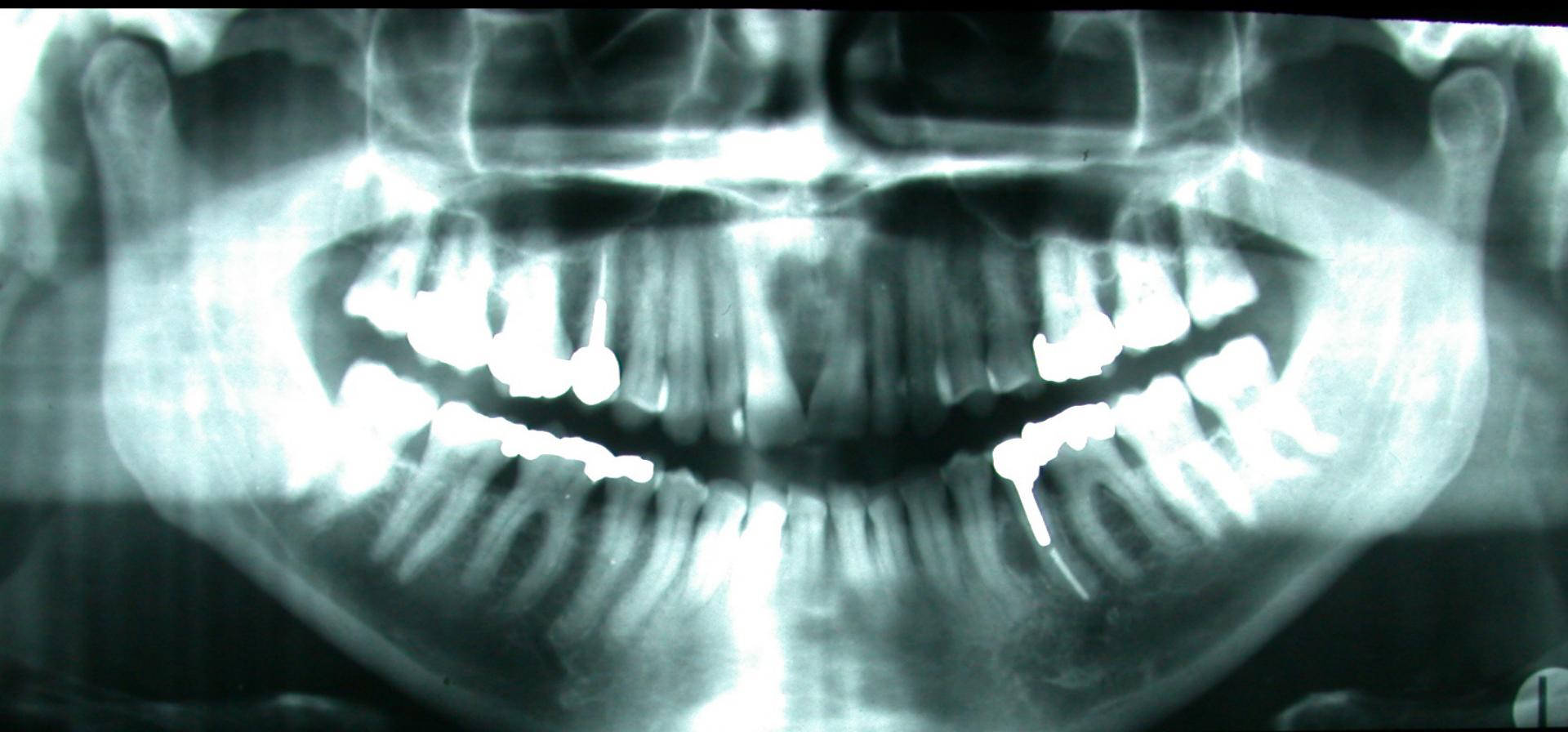
# LATERAL PERIODONTAL CYST:

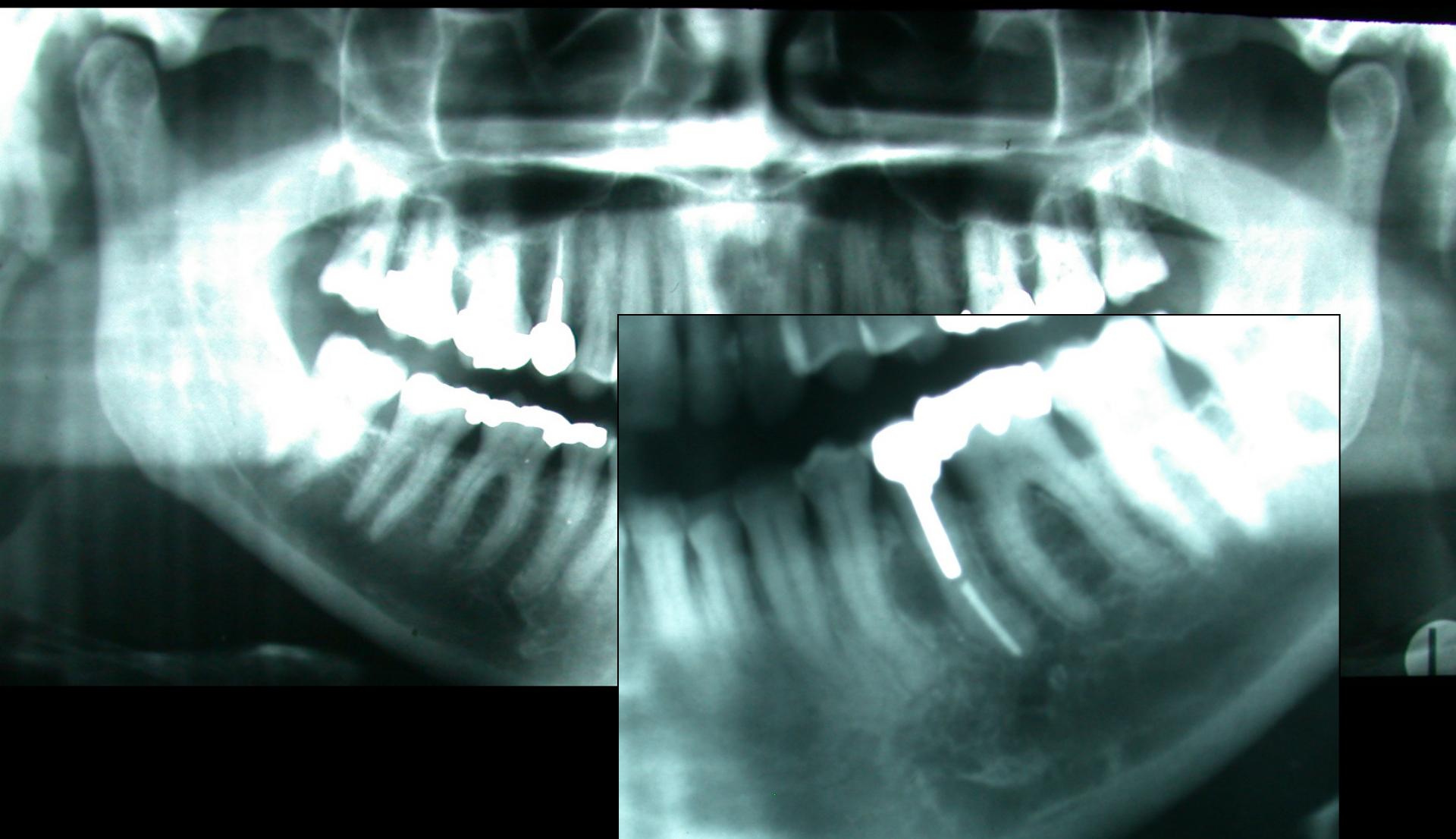
✓ Uncommon, asymptomatic, share gingival cyst in clinical & morphological features.

**Origin: dental lamina, mainly arise in canine & premolars region of mandible of mid aged individuals.**

✓ Causes bony expansion or may be a chance radiographic finding.







# LATERAL PERIODONTAL CYST:

**Location:** 50-75% in the mandible (canine & PM region)

**Periphery & shape:** Well- defined, round, oval RL

**Effect on surrounding structures:** Teeth displacement if large.

**Differential Dx:**

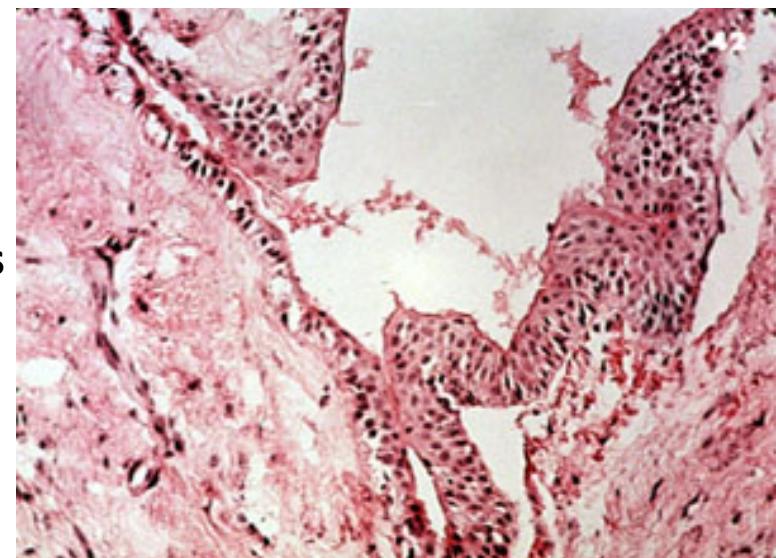
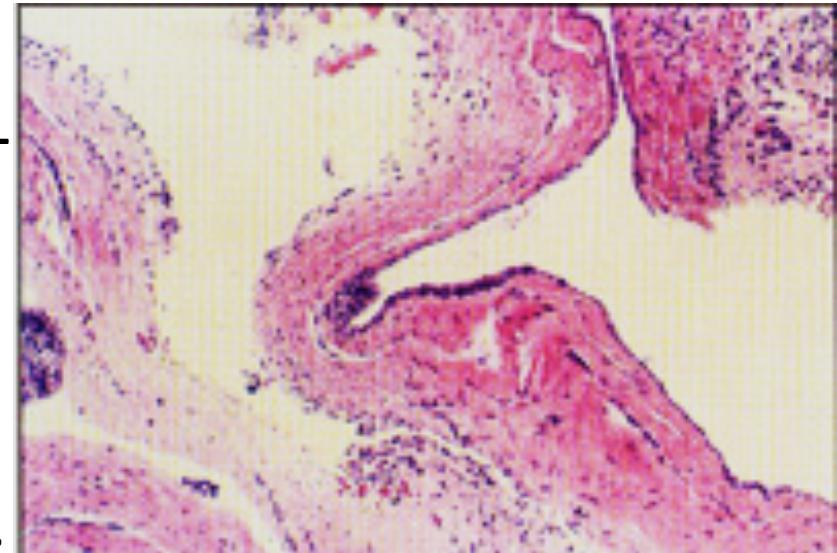
- Small okc
- Mental foramen
- Radicular cyst

**Cyst lining** is of non-keratinized squamous epith.

**Pathogenesis** is uncertain, but it could arise initially as lateral dentigerous cyst which for unknown reasons retained in bone when the tooth erupts.

Occasionally , **polycystic “Bortryoid odontogenic cyst”** can be seen which represents simultaneous cyst changes in multiple adjacent rests of dental lamina.

**Treatment:** Enucleation with uncommon recurrence.



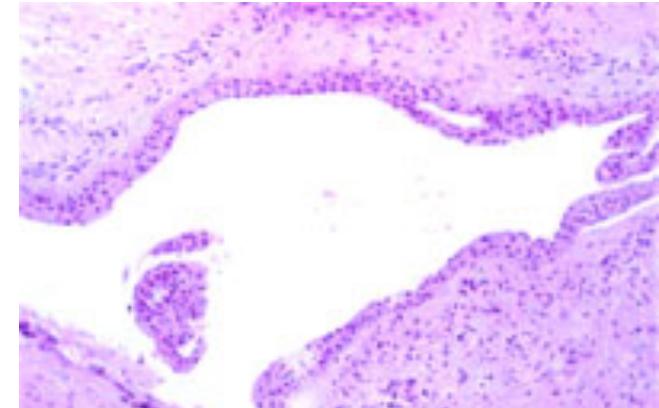
## **GINGIVAL CYSTS OF ADULTS:**

**Clinically:** Firm, but compressible, fluid-filled swelling on mandibular or maxillary facial gingival in premolar & cuspid region.

**Radiographically :** None, sometimes **saucerization** of the underlying bone

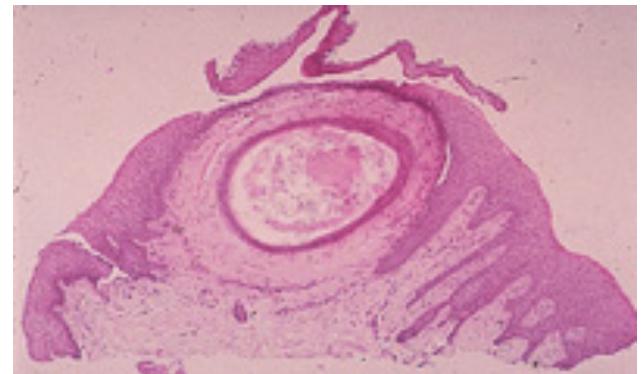
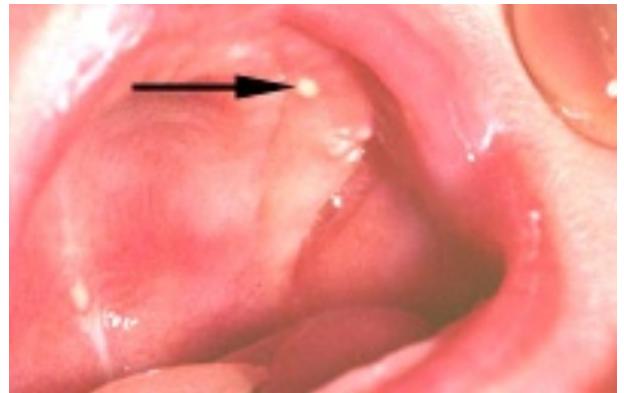
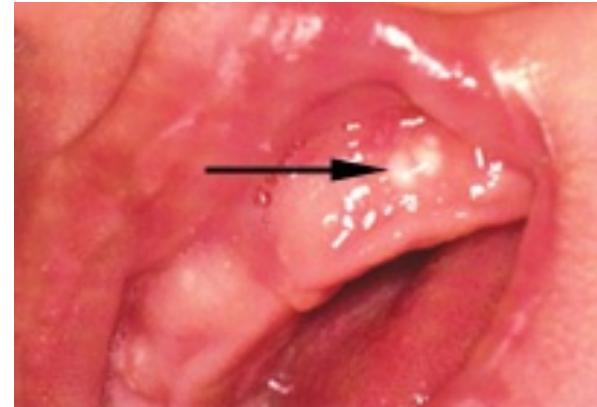
**Histologically:** Like lateral periodontal cyst.

**Treatment:** Enucleation.



# DENTAL LAMINA CYST OF NEWBORN:

- Uncommon soft tissue raised nodules on edentulous alveolar ridges of the infants which is resolved without treatment.
- It is derived from rests of dental lamina & composed of keratin-producing epith.



# GLANDULAR ODONTOGENIC CYST:

**Synonyms:** Sialo-odontogenic cyst

**Clinical Features:** Aggressive, Large, solitary or multilocular odontogenic cyst, probably derived from dental lamina (rests).

**Location:** Anterior mandible or anterior maxilla.

**Periphery & shape:** smooth or scalloped with cortical boundaries.

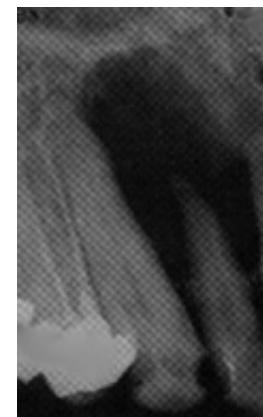
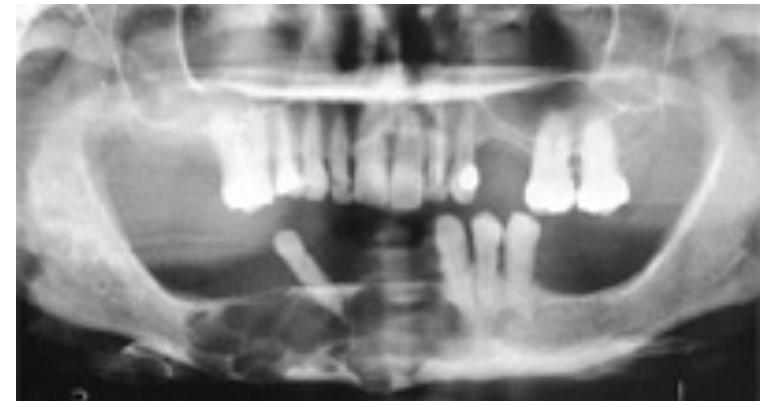
**Internal structure:** Uni or multilocular RL.

**Effect of surrounding structures:**

- Teeth Displacement
- Cortical perforation

**Differential Dx:**

- Ameloblastoma
- KOT
- Central muco-epidermoid carcinoma

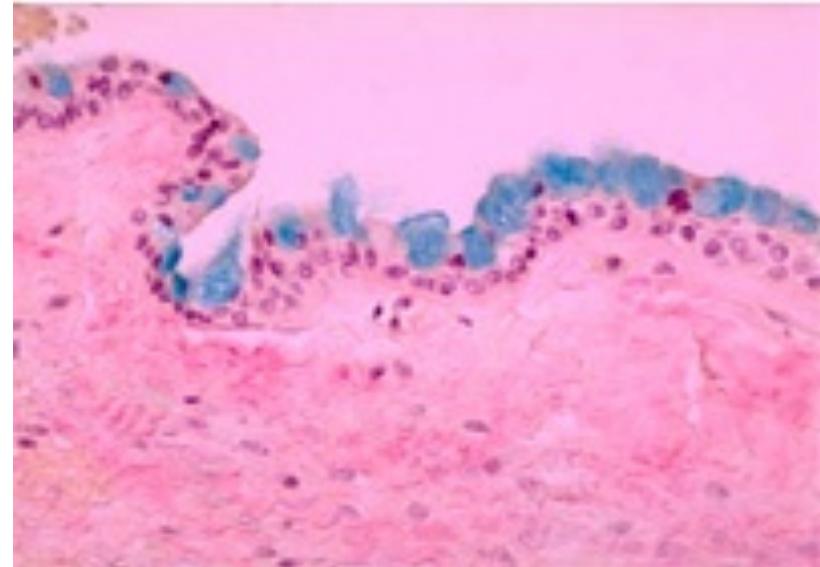


## Histologically:

1. Uniform thickness of squamous epith.  
With focal thickening.
2. Variable number of small glandular structures or microcysts within the lining epith.
3. A single layer of columnar or cuboidal cells lining the glandular structure, replacing the surface layer of stratified squamous epith. Of cyst lining.
4. Occasionally, goblet-like mucous secreting cells like in intestinal mucosa are present.
5. High rate of recurrence

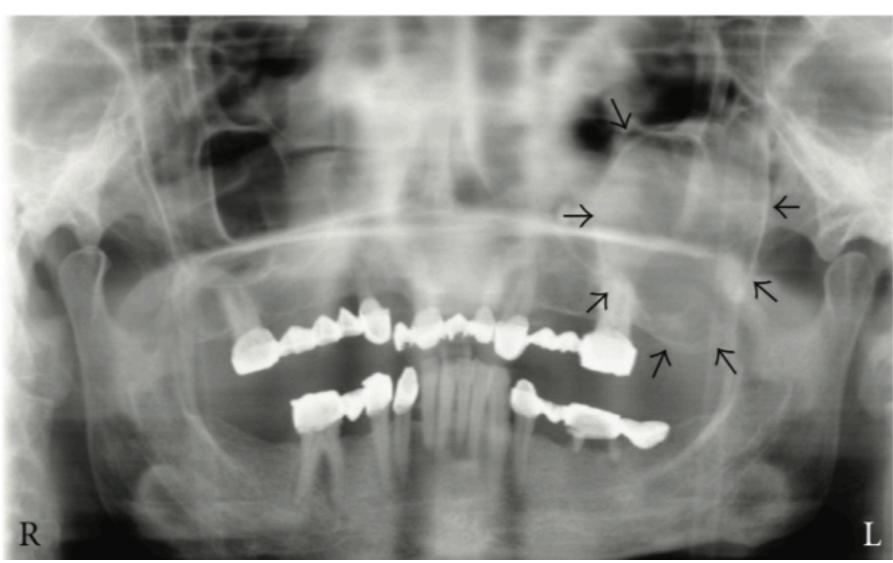
## Treatment:

Resection with periodic follow up.



**Table 15.1** Cysts of the maxillary antrum. (After Meer and Altini, 2006.)

	<b>Key features</b>
Mucocoele	Occupies the entire sinus. Cystic structure filled with mucus and lined by antral epithelium. Associated with blockage of the ostium and may be secondary to chronic sinusitis. Expansile and may destroy and perforate adjacent bone
Retention cyst	Epithelial lined cyst caused by mucus retention as a result of blockage of a duct. Often small and clinically silent and found associated with thickened mucosa in sinusitis or in polyps. Dome-shaped radiopacity of antral wall, may be indistinguishable from a pseudocyst or polyp
Pseudocyst	Inflammatory in origin caused by accumulation of exudates that raise the mucosa from the bone of the antral floor. Most often secondary to odontogenic infection. Dome-shaped radiopacity on the floor of the sinus
Postoperative maxillary cyst	Secondary to an operative procedure. Most often a Caldwell–Luc incision into the antrum, or an osteotomy. Probably arises from entrapped antral lining. True cyst filled with mucus and lined by antral epithelium



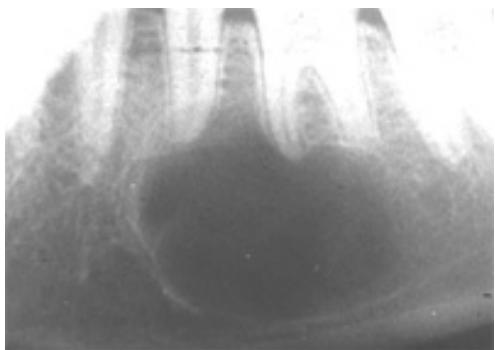
## Non Epithelial Primary Bone cysts

SOLITARY BONE CYST( Simple or traumatic or Hemorrhagic bone cyst)

Seen in children & adolescents.

Arise in premolar & molar regions of mandible.

Asymptomatic & are chance radiographic finding.



### *Surgical exploration:*

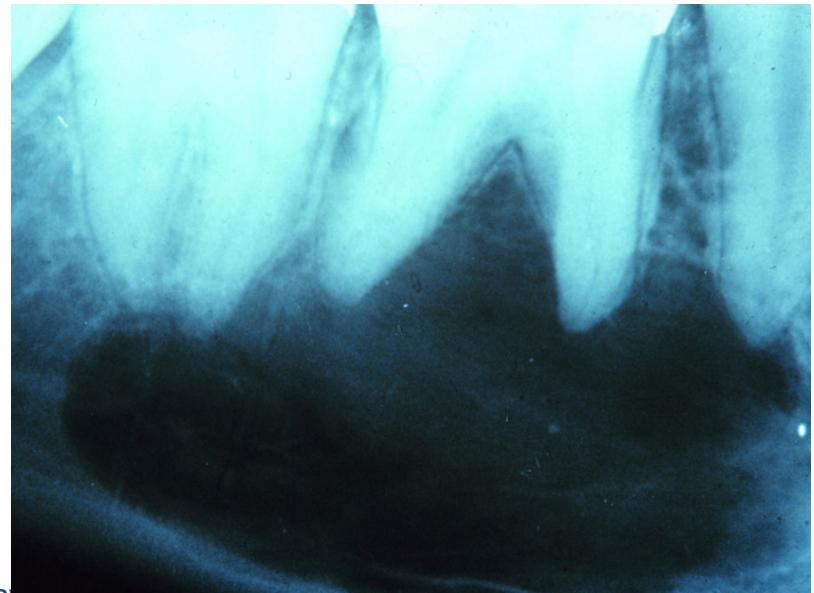
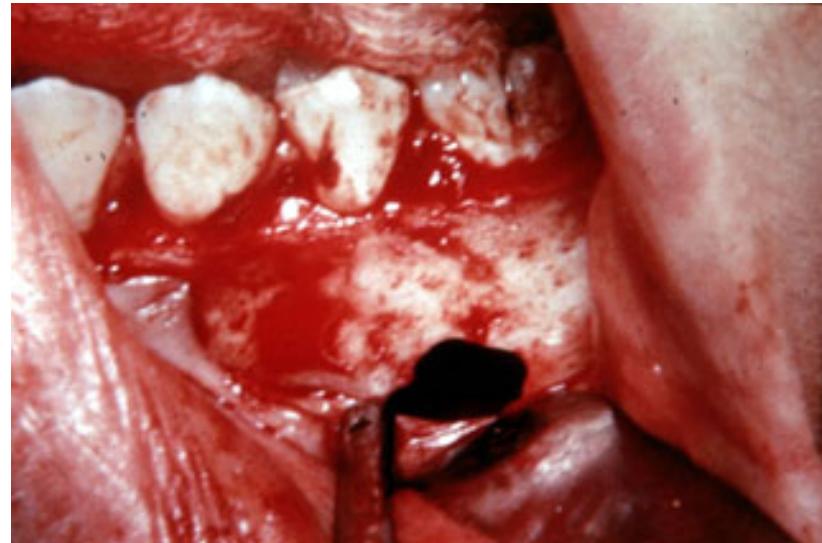
Rough bony-walled cavity devoid of any detectable soft tissue lining.

The **cavity is empty** or with little clear or blood stained fluid.

Rapid healing follow surgical exploration & cyst resolve spontaneously with time.

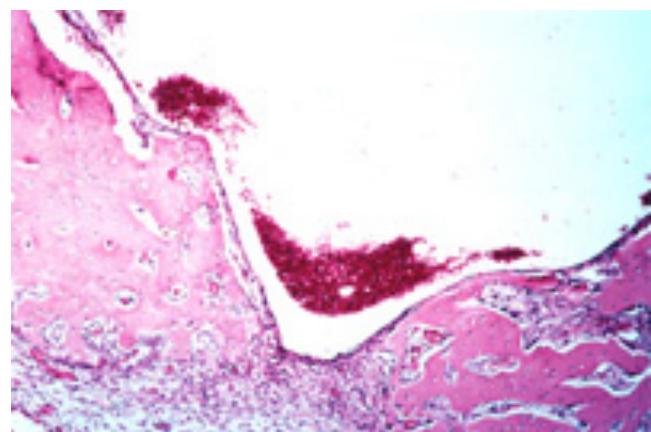
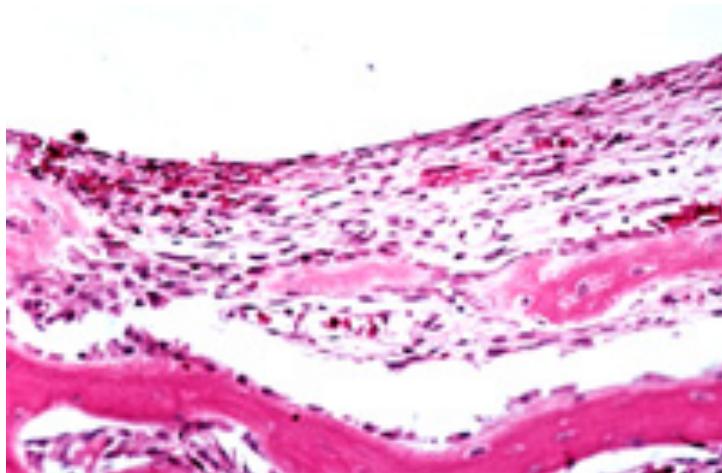
### *Radiographically:*

- ✓ Radiolucency of variable size & irregular outline.
- ✓ Scalloping which is a prominent feature especially around & between roots of standing teeth.
- ✓ The margins of the lesion are well-defined.



## Histologically

- Lack of epithelial lining therefore it is not a true cyst
- Fibrous connective tissue with occasional chronic inflammatory cells lining the bone cavity
- Empty or fluid filled cavity



## Pathogenesis:

- Uncertain, but possible relationship to trauma in 50% of cases.
- Trauma may produce intramedullary hemorrhage which for unknown reasons fails to organize & that cavitation occurs by subsequent hemolysis & resorption of clot.

# ANEURYSMAL BONE CYST (ABC):

Clinically:

Rare, arise in posterior part of the body or angle of the mandible.

Mostly affect children & young adults.

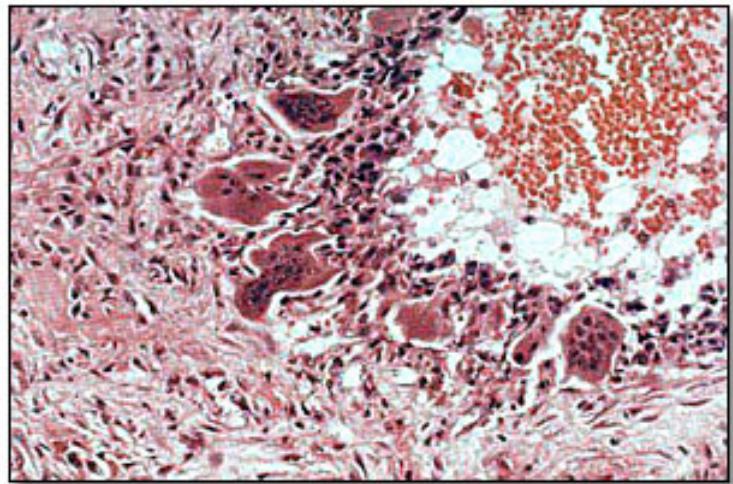
Appear as firm, painless swelling.

Radiographically:

Multilocular radiolucency with a characteristic ballooned-out appearance due to gross cortical expansion.

Histologically:

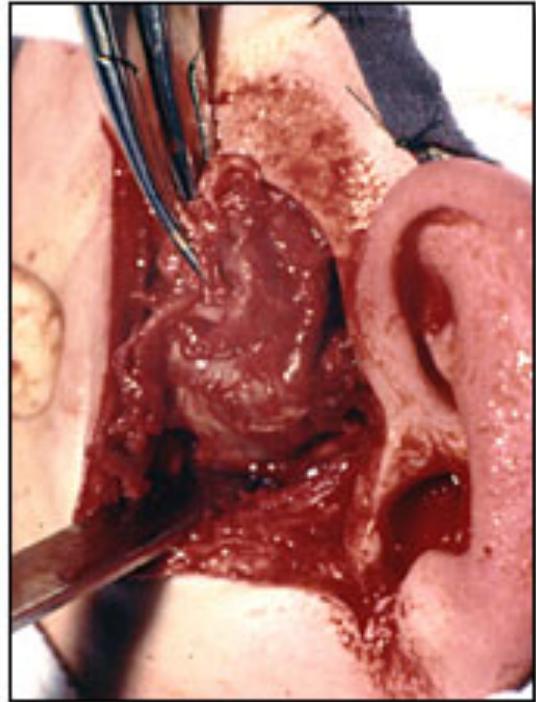
- Numerous, non-endothelial lined blood-filled spaces of varying size separated by cellular fibrous tissue.
- Multinucleated giant cells & evidence of old & recent hemorrhage are common in fibrous septa.



## Pathogenesis:

Uncertain, but many ABCs are produced by some other primary bone lesions like **Fibrous Dysplasia** or **Central Giant cell granuloma**.

- ✓ It is thought that the primary lesion initiates a vascular malformation leading to hemodynamic disturbance resulting in the development of this cyst.
- ✓ There may be a history of trauma.



# STAFNE'S IDIOPATHIC BONE CAVITY

**Clinically:**

Symptomless , chance radiographic finding, which appear as **round or oval well-demarcated radiolucency** between premolar region & angle of jaw just below inferior dental canal.

**Sialography is useful in identification??**

**Why?**

**Radiographically:** Saucer-shaped depression or concavity of varying depth on lingual aspect of the mandible.



# Thank You

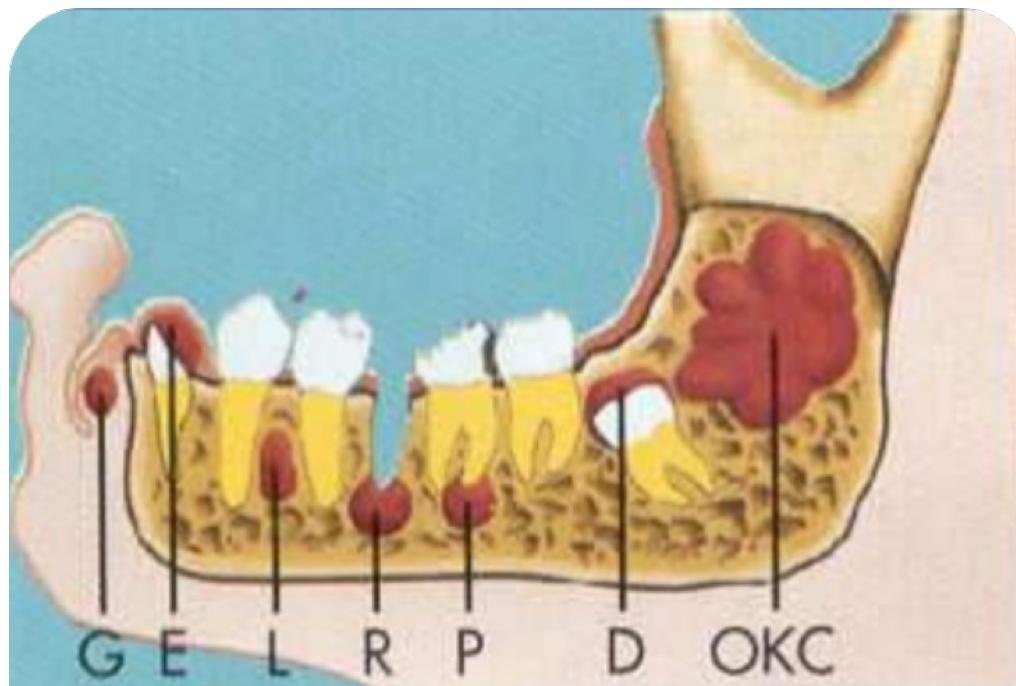


DIAGRAM OF ODONTOGENIC CYSTS BASED ON  
CLINICAL AND RADIOGRAPHIC FEATURES  
MANAGEMENT OF ODONTOGENIC CYSTS BASED ON