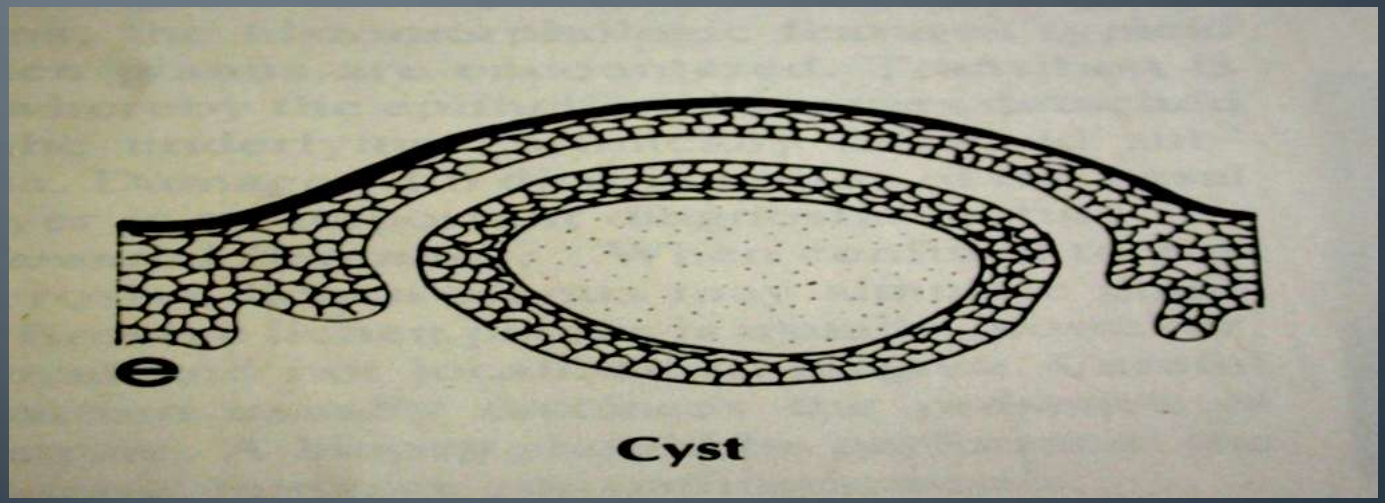
CYSTS OF OROFACIAL REGION

DR.ABHINAV SHARMA
SENIOR LECTURER
ORAL MEDICINE AND RADIOLOGY
SUBHARTI DENTAL COLLEGE
SWAMI VIVEKANAND SUBHARTI UNIVERSITY, MEERUT

DEFINITION OF CYST

- A Cyst is a pathological cavity having fluid, semifluid or gaseous contents and which is not created by the accumulation of pus. Most cysts, but not all, are lined by epithelium. (KRAMER 1974).



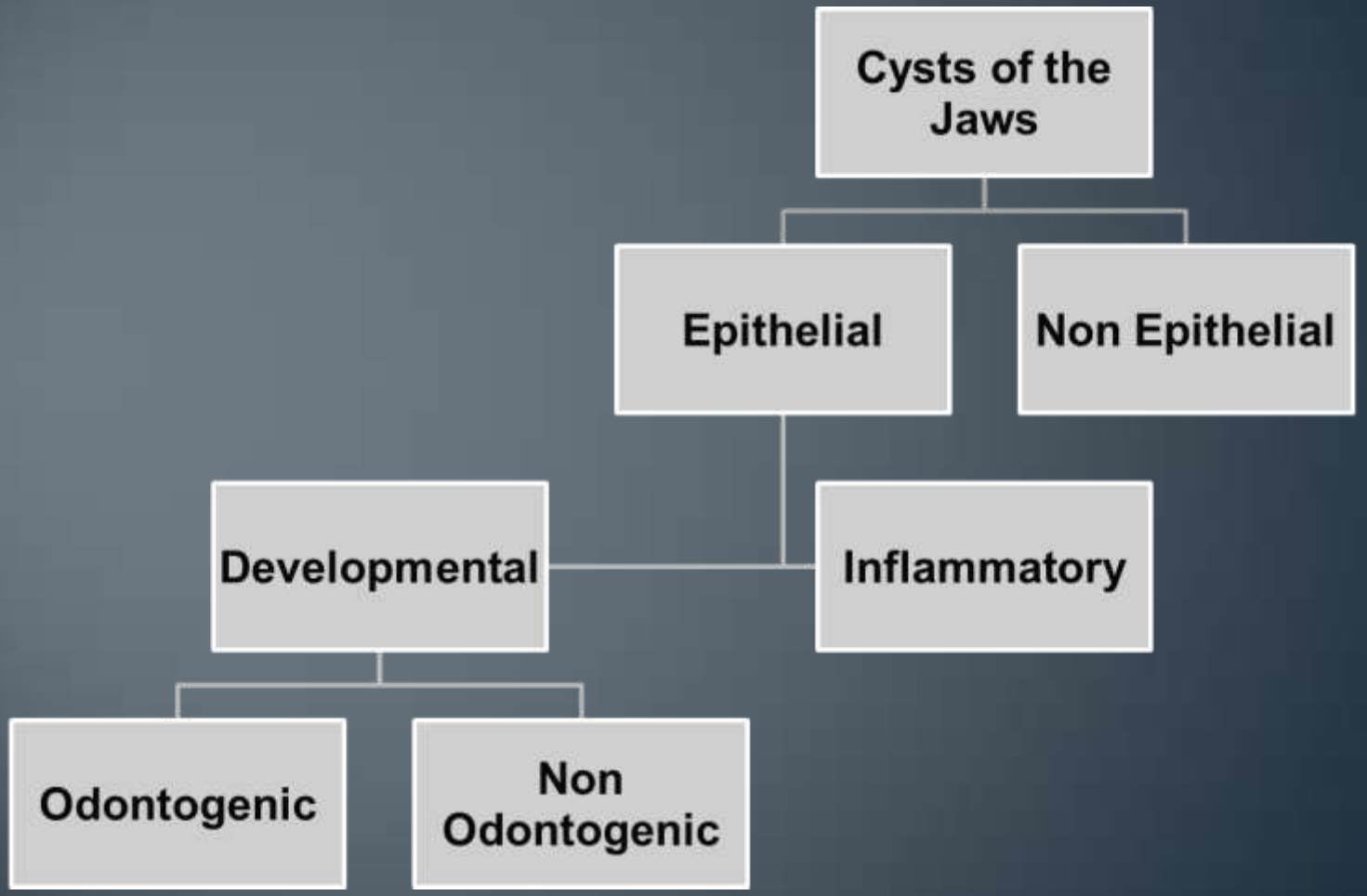
TYPES OF CYSTS

- TRUE CYSTS: that which is lined by epithelium.
- PSEUDO CYSTS: not lined by epithelium.

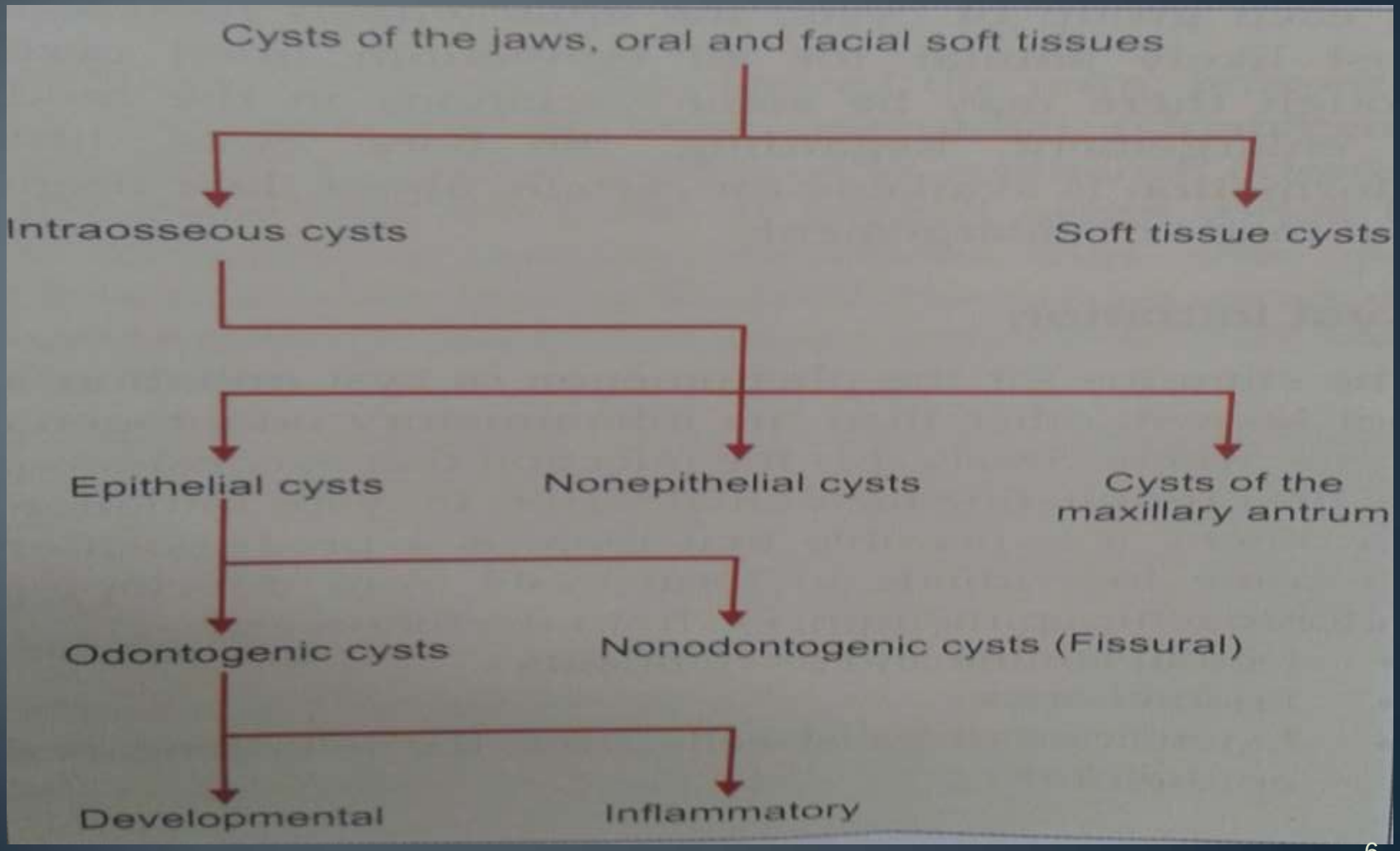
PARTS OF A CYST

- Cyst has following parts:
- WALL (made of connective tissue)
- EPITHELIAL LINING
- LUMEN OF CYST

CLASSIFICATION



WHO CLASSIFICATION



I. Cysts of the jaws

A. EPITHELIAL-LINED CYSTS

1 Developmental Origin

- **(a) Odontogenic**

i. Gingival cyst of infants
ii. Keratocystic odontogenic tumour
iii. Dentigerous cyst
iv. Eruption cyst
v. Gingival cyst of adults
vi. Developmental lateral periodontal cyst
vii. Botryoid odontogenic cyst
viii. Glandular odontogenic cyst
ix. Calcifying cystic odontogenic tumour

- **b) Non-odontogenic**

i. Midpalatal raphe cyst of infants
ii. Nasopalatine duct cyst
iii. Nasolabial cyst

I. Cysts of the jaws

- 2 INFLAMMATORY ORIGIN

i. Radicular cyst
ii. Residual cyst
iii. Paradental cyst
iv. Inflammatory collateral cyst

- ***B.*** **NON-EPITHELIAL-LINED CYSTS**

1. Solitary bone cyst
2. Aneurysmal bone cyst
3. stafne's bone cyst

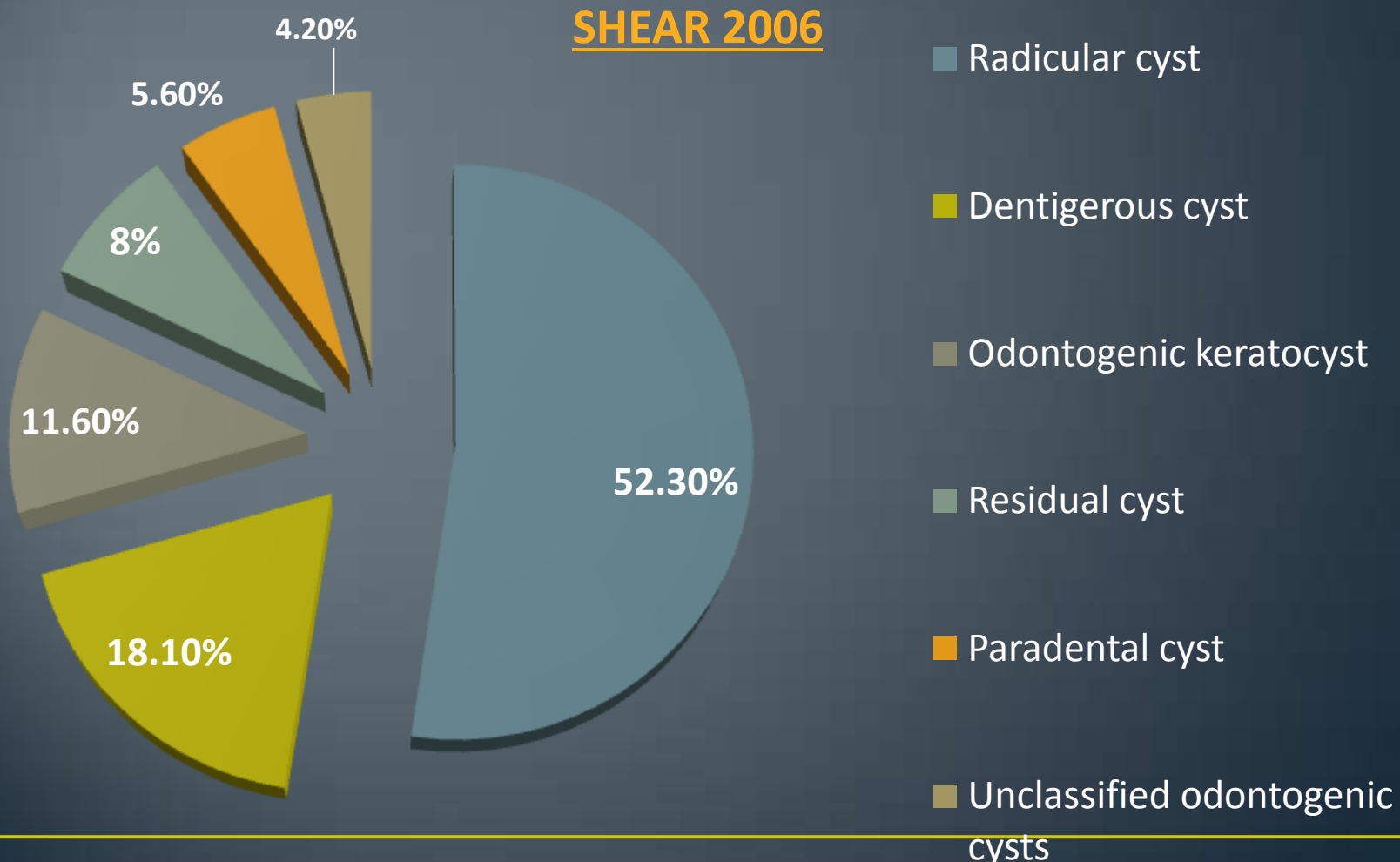
II. Cysts associated with the maxillary antrum

1. Mucocele
2. Retention cyst
3. Pseudocyst
4. Postoperative maxillary cyst

III. Cysts of the soft tissues of the mouth, face and neck

1. Dermoid and epidermoid cysts
2. Lymphoepithelial (branchial) cyst
3. Thyroglossal duct cyst
4. Anterior median lingual cyst (intralingual cyst of foregut origin)
5. Oral cysts with gastric or intestinal epithelium (oral alimentary tract cyst)
6. Cystic hygroma
7. Nasopharyngeal cyst
8. Thymic cyst
9. Cysts of the salivary glands: mucous extravasation cyst; mucous retention cyst; ranula; polycystic (dysgenetic) disease of the parotid gland
10. Parasitic cysts: hydatid cyst

Frequency of Epithelial Cysts of Jaws



EPITHELIAL-LINED-DEVELOPMENTAL ORIGIN

Odontogenic cysts

DENTIGEROUS CYST(FOLLICULAR CYST)

The dentigerous cyst is defined as a cyst that originates by the separation of the follicle from around the crown of an unerupted tooth.

- The dentigerous cyst encloses the crown of an unerupted tooth and is attached to the tooth at the cementoenamel junction.
- The pathogenesis of this cyst is uncertain, but apparently it develops **by accumulation of fluid between the reduced enamel epithelium and the tooth crown.**

Dentigerous cyst

CLINICAL FEATURES

- AGE : 1st to 3rd decades.

- GENDER : more frequently in males than in females.

- SITE :
- 2/3rd of follicular cyst associated with unerupted mandibular teeth, primarily IIIrd molar.
- Maxillary canine
- Mandibular premolar
- Maxillary 3rd Molar
- Supernumerary tooth also can be involved

Signs & symptoms

- Most cysts grow to a large size before being discovered accidentally while observing a dental x-ray to detect the cause of an unerupted tooth.
- Large lesions can cause cortical expansion, leading to facial asymmetry, teeth displacement, root resorption of adjacent teeth, even pain, if infected secondarily.
- Syndromes associated are- gorlin goltz syndrome, cleidocranial dysplasia, morateaux lamy syndrome.

RADIOLOGICAL FEATURES

- **Location**- The epicenter is found just above the crown of the involved tooth.
- The cyst is attached at the CEJ level.
- Cyst related to maxillary molar often grow into the maxillary antrum and cyst involving mandibular molars may extend into the ramus region.

- **Periphery**- Manifests as unilocular, well defined radiolucency with sclerotic margins, associated with crown of impacted / unerupted tooth.

- **Internal structure-** completely radiolucent except the crown of involved tooth.
- **Effect on surrounding structures**- displaces and resorbes adjacent teeth.
- The involved tooth is commonly displaced in an apical direction.
- The cyst may displace the floor of the max antrum and inf alveolar nerve canal.
- Expansion of the outer cortical

Radiographic features

A central type of dentigerous cyst showing resorption of the root of the first mandibular molar

Radiographic features

Radiograph of two dentigerous cysts in the same patient. The cyst on the right is a lateral type; that on the left is a circumferential type

DIFFERENTIAL DIAGNOSIS

1. **HYPERPLASTIC FOLLICLE.**
   The size of the normal follicular space is 2 to 3 mm. If the follicular space exceeds 5 mm, a dentigerous cyst is more likely.

2. **ODONTOGENIC KERATOCYST**
   Less expansion of the bone; less likely to resorb teeth, not attached at the CEJ.

3. It may not be possible to differentiate a small **AMELOBLASTIC FIBROMA** from a dentigerous cyst if there is no internal structure.

. Other rare lesions that may have a similar pericoronal appearance are **ADENOMATOID ODONTOGENIC TUMORS AND CALCIFIED ODONTOGENIC CYSTS**, both of which can surround the crown and root of the involved tooth.

Aspiration often yields a straw coloured thin liquid; cholesterol crystals may be seen in the aspirate.

TREATMENT- surgical removal of the cyst.

COMPLICATIONS

1. Recurrence due to incomplete surgical removal.

2. Development of ameloblastoma either from lining epithelium or from odontogenic islands in the connective tissue wall.

3. Development of squamous cell carcinoma from same two sources.

4. Development of mucoepidermoid carcinoma from mucus secreting cells in the lining.

KERATOCYSTIC ODONTOGENIC TUMOUR(OKC AND PRIMORDIAL CYST)

The KCOT is a distinctive form of developmental odontogenic tumour that deserves special consideration because of its specific histopathologic features and clinical behavior.

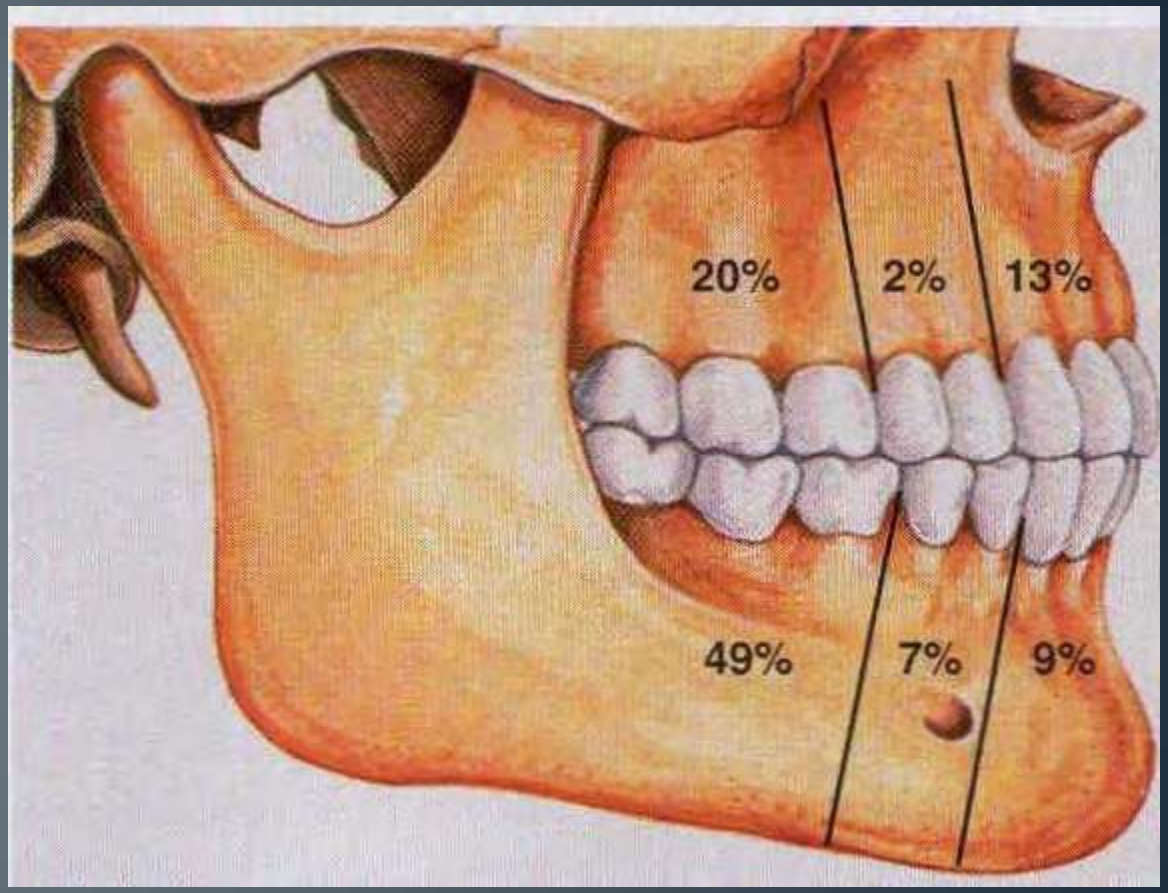
- There is general agreement that the **KCOT arises from cell rests of the dental lamina**.
- This TUMOUR shows a different growth mechanism and biologic behavior from the more common dentigerous cyst and radicular cyst.
- KCOT and their growth may be related to unknown factors inherent in the epithelium itself or enzymatic activity in the fibrous wall.

CLINICAL FEATURES

- AGE : occur over a wide age range and cases have been recorded as early as the first decade and as late as the ninth.

  In most series there has been a pronounced peak frequency in the second and third decades.
- GENDER : more frequently in males than in females.
- SITE - mandible is involved far more frequently than maxilla
- 50% cases occur in angle region and extend to ascending ramus and forwards to body of mandible.

SITE DISTRIBUTION



Relative distribution of KCOT in the jaws.

- Usually asymptomatic, Pain may occur when sec infected; mild swelling or discharge.
- Occasionally, paraesthesia of the lower lip or teeth.
- Some are unaware of the lesions until they develop pathological fractures.

RADIOGRAPHIC FEATURES

- **Location**- most common is body and ramus of the mandible.
  Epicenter- superior to inf alveolar nerve canal.

- **Periphery** - KCOT demonstrate a well-defined radiolucent area with smooth and often corticated margins or it may have a scalloped outline.

- **Internal structure-** totally radiolucent. In some cases curved internal septa may be present that give it a multilocular appearance.

- **Effect on surrounding structures**- KCOT grows along the internal aspect of the jaw causing minimal expansion.
- KCOT can displace and resorb teeth but to a slightly lesser degree than dentigerous cyst.
- May displace inf alveolar nerve canal and maxillary antrum.
- **On aspiration dirty creamy white viscoid suspension is seen.**

RADIOGRAPHIC FEATURES

Radiograph of a small odontogenic keratocyst.

RADIOGRAPHIC FEATURES

Radiograph of an odontogenic keratocyst with scalloped margins.

RADIOGRAPHIC FEATURES

Radiograph of a multilocular odontogenic keratocyst.

RADIOGRAPHIC FEATURES

Radiograph of an odontogenic keratocyst that has enveloped an unerupted tooth to produce a ‘dentigerous’ appearance.

DIFFERENTIAL DIAGNOSIS

- Dentigerous cyst
- Adenomatoid odontogenic tumour
- Ameloblastoma
- Calcifying epithelial odontogenic tumour
- Central giant cell granuloma
- Aneurysmal bone cyst

- TREATMENT-

  Surgical excision

- COMPLICATIONS IN OKC :

1. Malignant transformation of cyst lining rare, but has been reported.
2. Recurrence – high rate of recurrence.

ERUPTION CYST

ERUPTION CYST

- Typical clinical feature of an eruption cyst is a bluish colored, dome shaped swelling over the unerupted tooth.

- The dentigerous cyst develops around the crown of an unerupted tooth lying in the bone,

- The eruption cyst occurs when a tooth is impeded in its eruption within the soft tissues overlying the bone.

Eruption cysts involving the maxillary permanent central incisors.

CLINICAL FEATURES

AGE : found in children of different ages, and occasionally in adults if there is delayed eruption

SITE : most commonly associated with the first permanent molars and the maxillary incisors

Radiological features

- The cyst may throw a soft-tissue shadow, but there is usually no bone involvement except that the dilated and open crypt may be seen on the radiograph.

LATERAL PERIODONTAL CYST

- Uncommon, but well recognized type of odontogenic cyst.

- The designation ‘lateral periodontal cyst’ is confined to those cysts that occur in the lateral periodontal position and in which an inflammatory etiology and a diagnosis of collateral OKC have been excluded on clinical and histological grounds

  (Shear and Pindborg, 1975).

LPC are thought to arise from epithelial rest in periodontium lateral to the tooth root.

This condition usually is unicystic, but it may appear as a cluster of small cyst, a condition referred to as BOTRYOID ODONTOGENIC CYST.

CLINICAL FEATURES

- Age : 20 – 60 years, peak in 6th decade.
- Sex : slight Male predilection.
- Site : Lateral PDL regions of mandibular premolars, followed by anterior maxilla

Signs & symptoms

- Usually asymptomatic as it occurs on the lateral aspect of root of tooth.
- Occasionally pain and swelling may occur.
- Associated teeth are vital, unless otherwise affected.
- Cysts rarely < 1cm in size, except for BOTRYOID VARIETY which is larger and also a multilocular lesion.

Radiological features

- **Location**- 50 to 70% occurs in mandible mostly lateral incisor to second premolar.
- **Periphery**-Round to ovoid radiolucency with sclerotic margins.
- **Internal structure-** totally radiolucent.
- **Effect on surrounding structures-** small cyst may efface the lamina dura of adjacent tooth, large cyst may displace adjacent tooth and cause expansion.

Radiograph of a lateral periodontal cyst lying between the mandibular premolar teeth. The margins are well corticated, indicative of slow enlargement.

Lateral periodontal cyst. Radiolucent lesion between the roots of a vital mandibular canine and first premolar.

Lateral periodontal cyst. A larger lesion causing root divergence.

Differential diagnosis

- Periapical abscess
- Mental foramen
- TREATMENT- surgical enucleation

INFLAMMATORY ORIGIN CYSTS

RADICULAR CYST

RADICULAR CYST

- Also called **APICAL PERIODONTAL CYST, ROOT END CYST.**

- Radicular cyst is a cyst that most likely results when rest of epithelial cells(malassez) in the periodontal ligament are stimulated to proliferate and undergo cystic degeneration by inflammatory products from a non vital tooth.

CLINICAL FEATURES

- **Age :** peak in 3rd, 4th and 5th decades.
- **Sex :** Slightly more in males.
- **Site :** Maxillary anterior region.
- **Frequency:** Commonest cystic lesion of jaws.

Signs & symptoms

- Primarily symptom less. Pt may complain of pain when secondarily infected.
- Slowly enlarging hard bony swelling initially. Later, if cysts breaks through cortical plates, lesion becomes fluctuant.
- Diagnostic criteria – **associated teeth are non vital**
- Rare in deciduous teeth.

RADIOLOGICAL FEATURES

Location- epicenter is located at the apex of a non vital tooth.

- **Periphery**- well defined cortical border;If infection supervenes, the margins become indistinct, making it impossible to distinguish from a peripaical granuloma or abscess.the outline of RC is curved or circular.
- **Internal structure**- radiolucent.

Radiograph of a radicular cyst. The lesion is a well defined radiolucency associated with the apex of a non-vital root filled tooth.

- **Effect on surrounding structures-** if radicular cyst is large, displacement and resorption of adjacent teeth roots may occur. The resorption pattern may have curved outline. The outer cortical plates of maxilla or mandible may expand in a curved or circular shape.

- **On aspiration the contents of cyst may vary from brown to straw color depending on contents of cyst.**

DIFFERENTIAL DIAGNOSIS

- Periapical granuloma
- Periapical abscess

MANAGEMENT

RCT or extraction of the tooth along with the removal of cyst and followed by complete curettage.

Residual cyst

Residual cysts

- A residual cyst is a cyst that remains after incomplete removal of the original cyst.
- The term residual is used most often for a radicular cyst that may be left behind, most commonly after extraction of the tooth.
- It is usually asymptomatic.
- Some expansion of the jaw or pain in the case of sec. infection.

Radiographic features

Location- occur in both the jaw;
Slightly more often in mandible. Epicenter is positioned in the former periapical region of the involved and missing tooth.

Periphery- oval and circular in shape;has a cortical margin.

Internal structure- typically radiolucent.

Effect on surrounding structures-it can cause tooth displacement or

Radiographic appearance of a large residual cyst left behind after extraction of 1st mandibular molar.

DIFFERENTIAL DIAGNOSIS:

Following lesions must be distinguished from other periapical radiolucencies–

1. Periapical granuloma
2. Odontogenic keratocyst- lesser degree of expansion as compared to residual cyst.

MANAGEMENT-

Surgical removal.

Non-epithelial lined cysts

Aneurysmal Bone Cyst

Uncommon cyst, found mostly in long bones and spine.

- The term ABC was suggested by Jaffe and Lichenstein (1942) to describe the characteristic blow out of the lesion.

- **CLINICAL FEATURES: -**

1. **Age :** First 3 decades.
2. **Sex** : Mainly females.
3. **Site :** molar regions of mandible & maxilla.

- **Signs & symptoms**:
- Hard, rapidly growing swelling (usually buccal or labial) which can cause malocclusion.
- Pain is an occasional complaint and the involved area may be tender on palpation.
- If lesion perforates cortical plates, can cause “egg shell crackling”.

RADIOLOGICAL FEATURES

- **Location**- mandible is commonly involved (3:2) molar and ramus region.
- **Periphery**- well defined and the shape is circular or hydraulic.
- **Internal structure**- small initial lesions may show no evidence of internal structure; often the internal aspect has a multilocular appearance.septa present at right angles to the outer expanded borders mainly they are ill defined and wispy.
- **Effect on surrounding structures-** ABC produces a radiolucent area which produces an ovoid or fusiform expansion of the bone and may **balloon the cortex**. May displace or resorb adjacent teeth.

- **On aspiration dark venous blood can be seen.**

Radiograph of an aneurysmal bone cyst involving the angle and ascending ramus of the mandible. There is a ballooning expansion of the cortex.

DIFFERENTIAL DIAGNOSIS

- Ameloblastoma
- cherubism
- giant cell granuloma

- MANAGEMENT

Surgical curettage or excision

STAFNE'S BONE CYST

- Also known as latent bone cyst or static bone cavity or mandibular salivary gland depression.
- It represent a group of concavities in the lingual surface of mandible where the depression is lined with an intact outer cortex.
- majority cases have been reported in males over 40 yrs of age.

Clinical features

- Asymptomatic non progressive lesion unless discovered during radiological examination.

RADIOGRAPHIC FEATURES

- **Location**- below the inf alveolar nerve canal and anterior to angle of mandible.
- **Periphery-**Well defined round, ovoid or occasionally lobulated radiolucency 1-3 cm. margin of RL defect is well defined by a dense sclerotic RO margin of variable width.

Differential diagnosis

- Odontogenic cyst

- TREATMENT- no surgical intervention required.

Cysts associated with the maxillary antrum

Mucocele (Mucous extravasation phenomenon)

It is an expanding, destructive lesion that results from a blocked sinus ostium.

- Blockage may result from intra antral or intranasal inflammation, polyp or neoplasms.
- As mucous secretion accumulate and the sinus cavity fills the increase in intra antral pressure results in thinning, displacement and in some cases destruction of sinus wall.
- When the cavity is filled with pus it is termed as EMPYEMA/ PYOCELE.

Clinical features

- May exert pressure on the superior alveolar nerve and cause radiating pain.
- Pt c/o sensation of fullness in the cheek and the area may swell.
- Swelling may become apparent over the anteroinferior aspect of the antrum, the area where the wall is thin or destroyed.
- It expands inferiorly, may cause loosening of post. Teeth.
- There may be chances of nasal obstruction and may cause diplopia or proptosis.

RADIOLOGICAL FEATURES

- **Location**- occurs in ethmoid air cells and frontal sinus
- **Periphery-** normal shape of sinus is changed into more circular, **hydraulic** shape as the mucocele enlarges.
- **Internal structure-** uniformly radioopaque
- **Effect on surrounding structures-** shape of sinus changes as the margins are displaced outwards and bone expansion.
- Teeth may be displaced or root resorbed.

DIFFERENTIAL DIAGNOSIS

- A large odontogenic cyst

Treatment

- Surgical with a caldwell luc operation to allow the excision of the lesion.

Retention cyst

- Uncommon variant of mucous retention phenomenon most frequently encountered as an incidental finding in dental radiograph.
- This lesion appears to represent a retention phenomenon of mucous glands associated with lining of maxillary sinus.

CLINICAL FEATURES

- Mainly asymptomatic
- Occasionally discomfort in cheek or maxilla.
- No age and sex predilection.
- Pain and soreness of the face and teeth and numbness of upper lip were described by WRIGHT in 10% cases.
- Buccal expansion may be seen.

RADIOGRAPHIC FEATURES

- **Location-** floor of sinus, may form on the lateral walls of the roof, may vary in size from fingertip to completely filling the sinus.
- **Periphery-** well defined non corticated, smooth dome shaped RO masses.
- **Internal structure-** homogenous and more radioopaque than the surrounding air of sinus cavity.
- **Effect on surrounding structures-** no effect

DIFFERENTIAL DIAGNOSIS

- Odontogenic cyst or tumour
- Antral polyps

- **Management**- resolve spontaneously

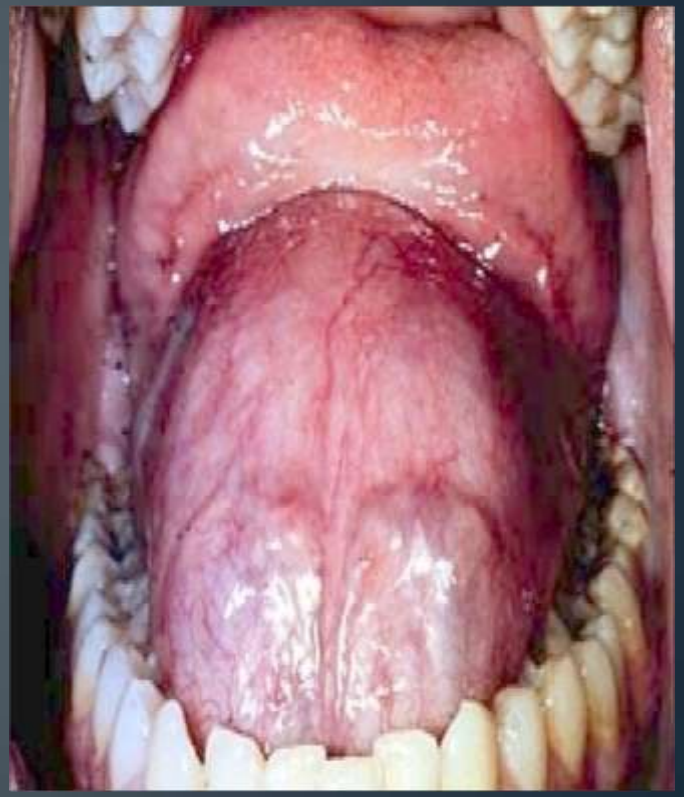
Cysts of the soft tissues of the mouth, face and neck

DERMOID CYST

- They are cystic form of teratoma thought to be derived from trapped embryonic cells that are tottipotential.
- They are lined with epidermis and cutaneous appendages and filled with keratin or sebaceous material.

Clinical features

- Dermoid cysts most commonly occur in the mid line of the floor of the mouth.
- Cysts that occur below the geniohyoid muscle often produce a submental swelling with a "double chin" appearance.
- They are most common in children and young adults.
- Swelling is slow and painless, can grow into several cm in diameter.
- May interfere with breathing speaking and eating.



RADIOGRAPHIC FEATURES

- **Location**- may occur anywhere in the body, mainly on floor of the mouth and tongue.
- **Periphery**- well defined by more RO soft tissue.
- **Internal structure-** wen it occurs in oral cavity they appear as RL on conventional radiographs. CT SCAN gives a multilocular appearance.

- DIFFERENTIAL DIAGNOSIS – Ranula

  cellulitis
- Management- surgical removal

INVESTIGATIONS

- CONVENTIONAL RADIOLOGY

a. Periapical x-rays

b. Occlusal view x-rays

c. Lateral oblique view x-rays

d. Panoramic x-rays

e. P.A view x-rays

f. Sinus view x-rays or PNS

- C.T.SCAN and MRI
- RADIOPAQUE DYES
- ASPIRATION
- BIOPSY

Various Aspirates

PATHOLOGY	ASPIRATE	Other Findings of Aspirates
Dentigerous Cyst	Clear, pale straw colour fluid	Cholesterol crystals. Total protein in excess 4 g / 100ml. Resembles serum
Odontogenic Keratocyst	Dirty, creamy white viscoid suspension	Para keratinized squames. Total protein less than 4 g /100ml. Mostly albumin
Periodontal Cyst	Clear, pale yellow straw colour fluid	Cholesterol crystals. Total protein 5 — 11g / 100ml
Infected Cyst	Pus, brownish fluid	Polymorphonuclear leukocytes, Cholesterol clefts
Mucocele, Ranula	Mucus	-----
Gingival Cysts	Clear fluid	-----

Various Aspirates

PATHOLOGY	ASPIRATE	Other Findings of Aspirates
Solitary Bone Cyst	Serous fluid, blood or empty cavity	Necrotic blood clot
Stafne's Bone Cyst	Empty cavity – yield air	---
Dermoid Cyst	Thick sebaceous material	---
Fissural Cyst	Mucoid fluid	----

REFERENCES

- White and Pharoah- oral radiology principles and interpretation 6th edition
- Wood and Goaz- differential diagnosis of oral and maxillofacial lesions 5th edition.
- Shear- cysts of jaws
- Shafer's -textbook of oral pathology- 6th edition
- Neelima malik – Textbook of oral and maxillofacial surgery – 3rd edition.


Thank You