Sri Aurobindo College of Dentistry

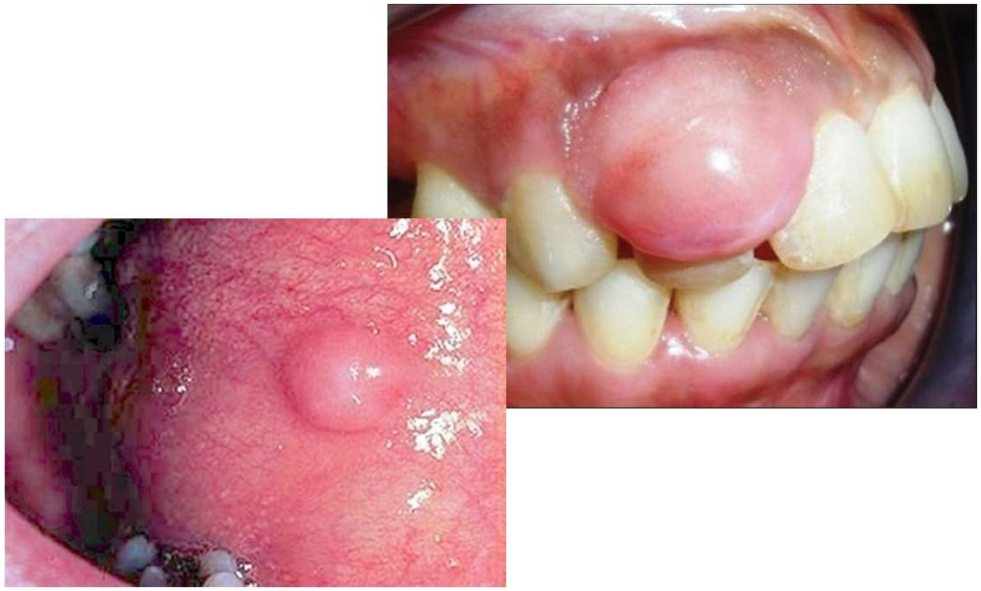
Indore, Madhya Pradesh

INDIA

MODULE PLAN

- TOPIC : **BENIGN TUMORS OF ORAL CAVITY**
- SUBJECT: OMDR
- TARGET GROUP: UNDERGRADUATE DENTISTRY
- MODE: POWERPOINT – WEBINAR
- PLATFORM: INSTITUTIONAL LMS
- PRESENTER: DR.TANVI DOSI

BENIGN TUMORS OF ORAL CAVITY



PRESENTED BY- DR. TANVI DOSI
(M.D.S)

Definition

- *Neoplasia* means "new growth,"
- A new growth is called a *neoplasm*.

"A neoplasm is an abnormal mass of tissue, the growth of which exceeds and is uncoordinated with that of the normal tissues and persists in the same excessive manner after cessation of the stimuli which evoked the change."

Robbins textbook of pathology

Benign tumors

A tumour is said to be *benign* when its microscopic and gross characteristics are considered relatively innocent

- ✓ It will remain localized
- ✓ It cannot spread to other sites
- ✓ Is generally amenable to local surgical removal

The patient generally survives.

Robbins textbook of pathology

Characteristics

- Insidious onset
- Well defined mass
- Symptoms: due to swelling & pressure effect
- Painless
- Never metastasize
- Small
- Displacement of adjacent tissue

Benign tumors

- Lesions arising from fibrous tissue, adipose tissue, neve & muscles
- Benign proliferation of blood & lymphatic vessels resemble neoplasm but do not have unlimited growth potential

Differentiating features

Features	Benign	Malignant
Boundaries	Encapsulated	Poorly circumscribed
Surrounding tissue	Often compressed	Usually invaded
Size	Usually small	Often larger
Secondary changes	Less often	Frequent

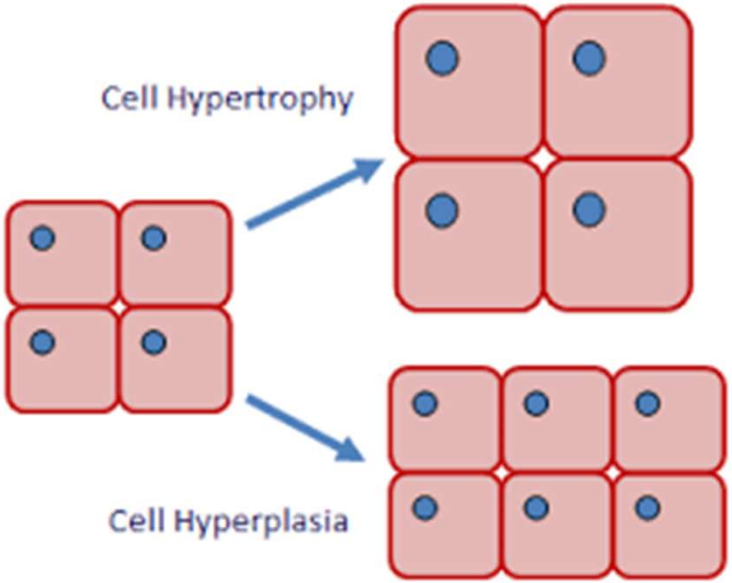
Microscopic features

Features	Benign	Malignant
Pattern	Resembles tissue of origin	Poor resemblance
Polarity	Retained	Lost
Pleomorphism	Not present	Often present
Nucleo-cytoplasmic ratio	Normal	Increased
Mitosis	May be present (typical)	Atypical

Features	Benign	Malignant
Growth rate	Slow	Usually rapid
Local invasion	Compress adjacent structure	Infiltrates tissue
Metastasis	Absent	Frequently present
Prognosis	Local complications	Death by local & metastatic effects

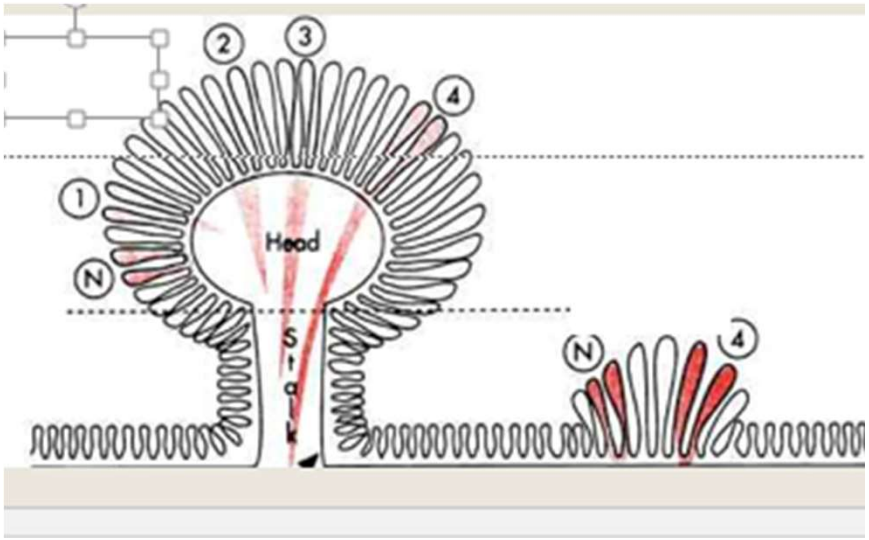
Terminology

- Hamartoma: abnormal proliferation of normal tissue at its usual location.
- *Hypertrophy*—enlargement caused by an increase in the size of cells
- *Hyperplasia*—enlargement caused by an increase in the number of the cells.



Terminologies

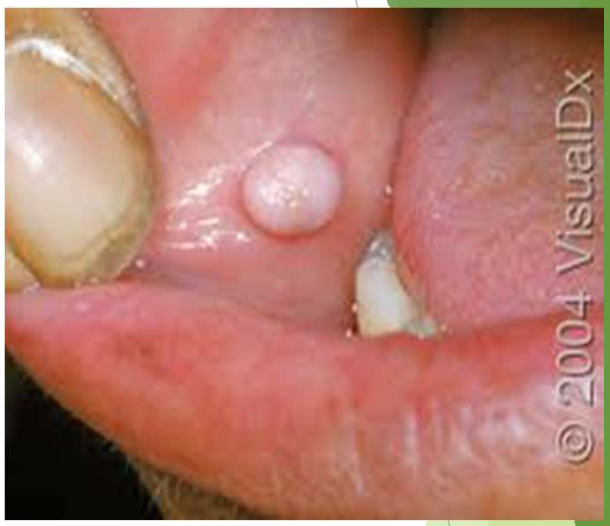
- Sessile: a raised, wide-based lesion.
- Pedunculated: a raised lesion connected by a narrow stem.



NOMENCLATURE

The suffix - ***oma*** to the cell of origin.

- Fibrous tissue is called a *fibr**oma***
- Benign cartilaginous tumour is a *chondr**oma***.



Robbins textbook of pathology

- Epithelial tumor :

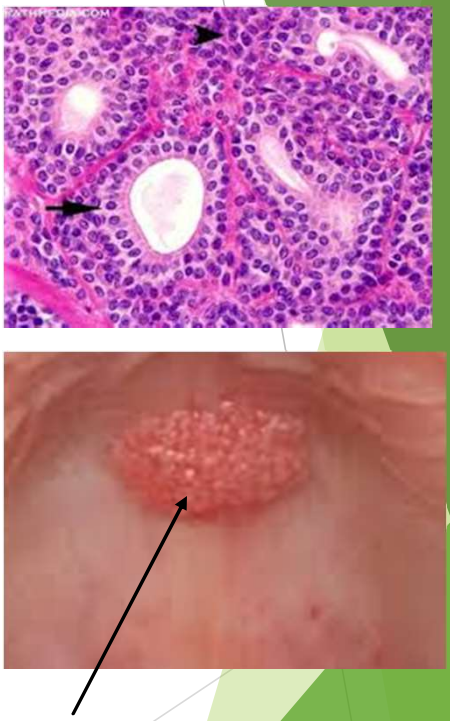
Based on

Tissue of origin

Microscopic features

Macroscopic features

- Adenoma: benign epithelial neoplasm derived from glands, may or may not form glandular structures.
- Papilloma: microscopically or macroscopically visible finger-like or warty projections from epithelial surfaces



Robbins textbook of pathology

Classification

- **Odontogenic :**

1. Odontogenic epithelium without odontogenic ectomesenchyme

i. Ameloblastoma

ii. Squamous odontogenic tumor

iii. Calcifying epithelial odontogenic tumor

iv. Adenomatoid odontogenic tumor

2. Odontogenic epithelium with odontogenic ectomesenchyme with or without hard tissue formation:

i. Ameloblastic fibroma

ii. Ameloblastic fibrodentinoma

iii. Odontoameloblastoma

iv. Calcifying odontogenic cyst

v. Complex odontoma

vi. Compound odontoma

Shafers 7th edition

3. Odontogenic ectomesenchyme with or without included odontogenic epithelium:

i. Odontogenic fibroma
ii. Myxoma (myxofibroma)
iii. Cementoblastoma (benign cementoblastoma, true cementoblastoma)

Non odontogenic tumors:

A. Based on tissue of origin:

i. **Variants of normal**

ii. **Epithelial tissue origin:**

a. Squamous papilloma (papilloma)

b. Squamous acanthoma

c. Keratoacanthoma

d. Nevus(oral nevi)

- Salivary gland tumor
  - Basal cell adenoma
  - Warthin's tumor
  - Pleomorphic adenoma

Mesenchymal origin

- **Connective tissue origin:**
  - Fibroma
  - Desmoplastic fibroma
  - Lipoma
  - Peripheral ossifying fibroma

- **Neural tissue:**
  - Neurofibroma And Schwanoma
  - Neurofibromatosis
  - Melanotic neuroectodermal tumor of infancy

  - **Vascular Tissue origin:**
  - Hemangioma
  - Lymphangioma

- **Cartilage:**
  - *Chondroma*
  - *Chondroblastoma*

  - ***Benign lesions of bone**:*
  - *Osteoblastoma*
  - *Osteoma*
  - *Fibrous dysplasia*

- **Miscellaneous:**
  - *Teratoma*

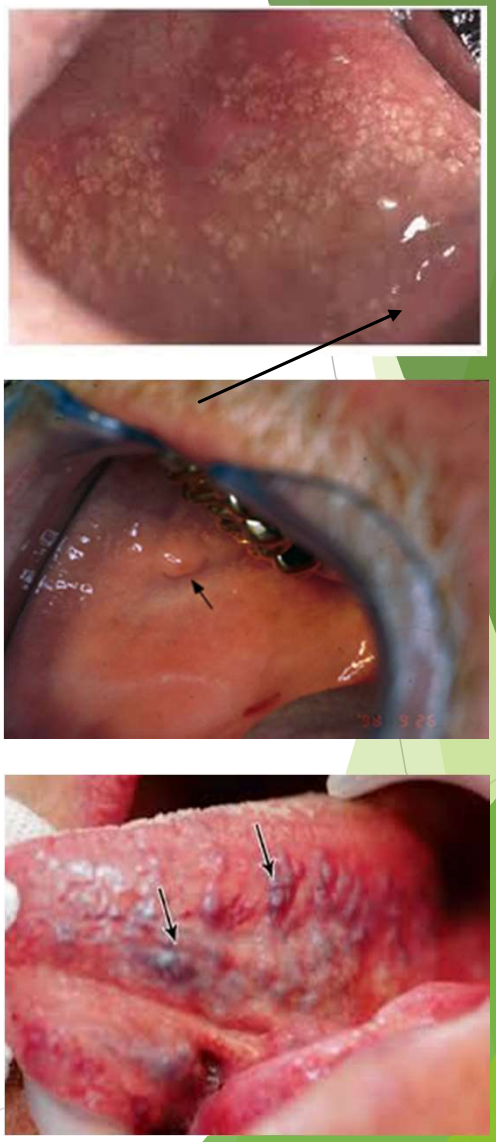
Shafer's 7th edition

VARIANTS OF NORMAL

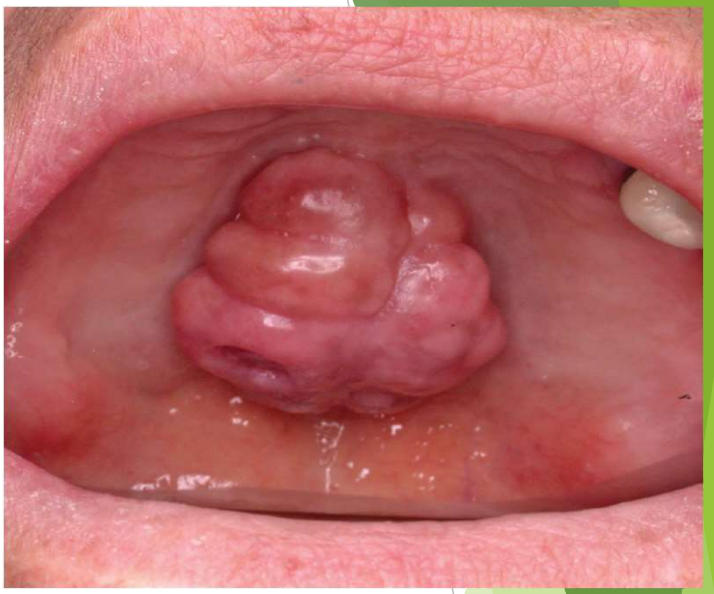
- Structural variations of the oral cavity, mistakenly identified as tumors,
- Usually easily recognized
- Biopsy is rarely indicated

Example:

- Tori
- Localized nodular connective tissue thickening of the attached gingiva
- Enlarged papillae associated with the opening of stensen's duct
- Fordyce spots
- Sublingual varicosities



1. Tori



Localised Exostosis of cortical bone of : occurs frequently :

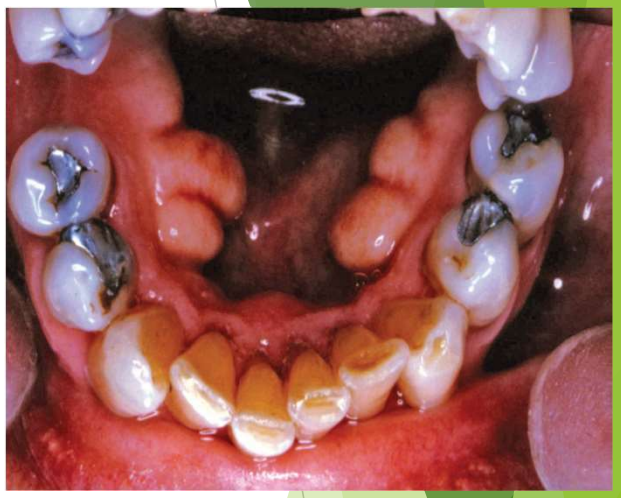
- The midline of the palate (torus palatinus),
- The lingual aspect of the mandible (torus mandibularis),
- The buccal aspects of either jaws

And its considered as normal structural varients.

The lack of obvious irritants for most tori, and their negligible growth after an initial slow period of development, suggest that they are usually neither inflammatory hyperplasias nor neoplasms.

Etiology

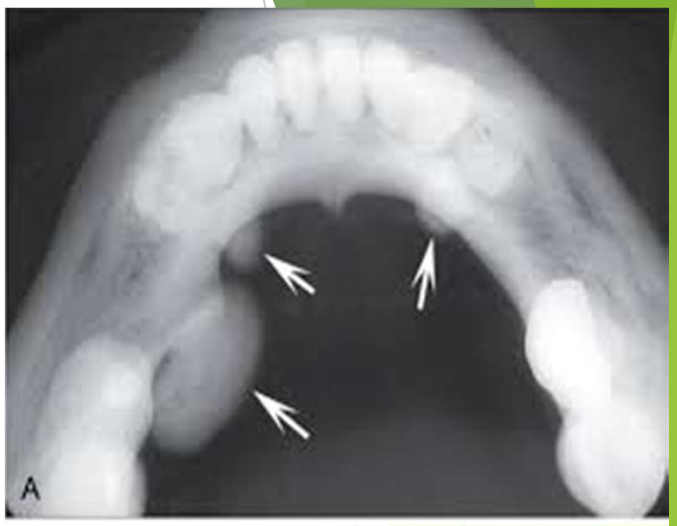
- *Genetic*—it is inherited as autosomal dominant trait
- *Functional stress*—environmental factors



- *Signs*
  - it is covered with normal mucosa, which appears pale occasionally ulcerated, when traumatized.

- Tori may pose a mechanical problem in dentures construction
- frequently traumatized
- frequent ulceration seen

Radiographic Features



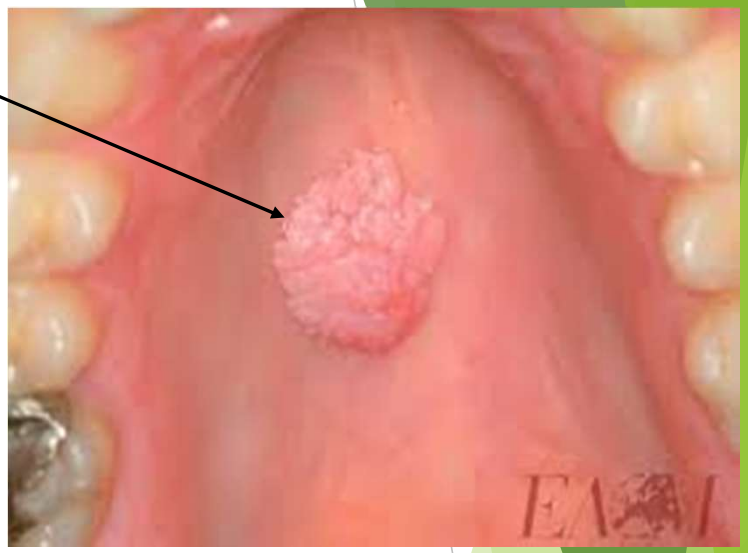
- *Radiodensity*—there is relatively dense radiopaque shadow.
- *Margins*—borders are well defined as the surface of the torus is of compact bone.
- *Shape*—there is more or less rounded and sharply defined eminence.
- Mandibular tori: radiopaque, homogenous, knobby protuberances from the lingual surface of mandible.
- Borders are not sharp between it and bone, but it is continuous suggesting that it is a part of the bone rather than a growth.

Management

- Surgery—
  - Usually not treated
  - Can cause undercuts & affect denture fitting
  - Except when patient requires a complete denture In these cases surgical removal of tori is indicated.

Epithelial benign tumors/Tumors of epithelial tissue origin

1.Papilloma



- Relatively a common, benign neoplasm
- Fourth most common oral mucosal mass, found in 4 of every 1,000.
- Originates from the surface of stratified squamous epithelium
- HPV types 6 and 11, commonly associated with squamous papilloma.
- HPV lesion are infective .

Types

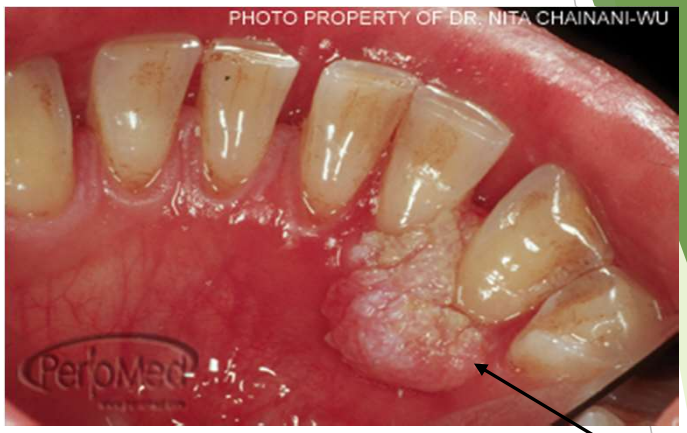
- ***Squamous cell papilloma***—it may arise in the tongue, cheek, lip and esophagus
  - *Congenital*—it is usually present since birth.
  - *Infective*—it arises from viral infection.
  - *Soft papilloma*—it is often seen in eyelids of elderly people.
  - *Keratin horns*—it is due to excess keratin formation and seen in older people

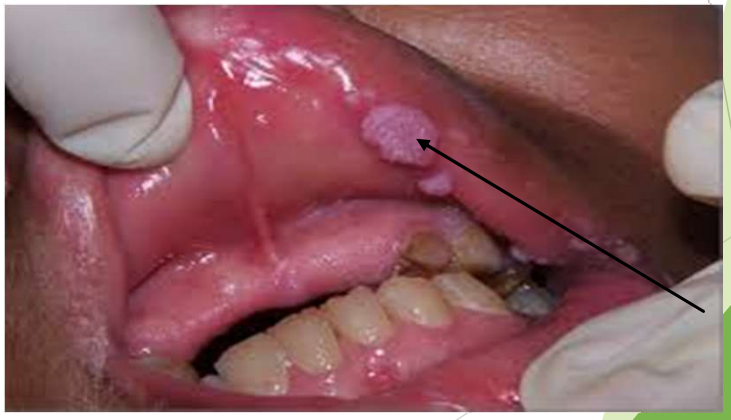
- ***Basal cell papilloma*—it** is also called as '*seborrhoeic or senile wart*'.

  It occurs on the trunk, face, arms and armpits.

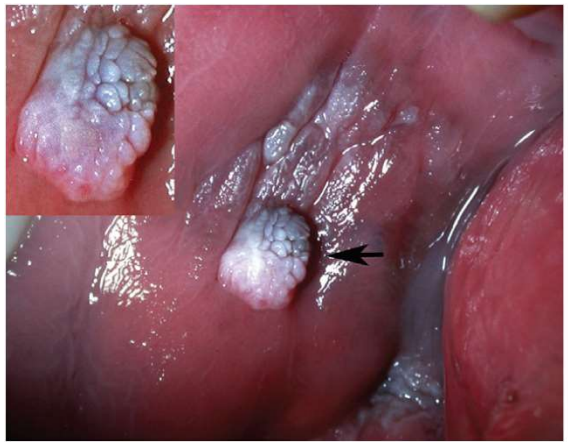
Clinical features

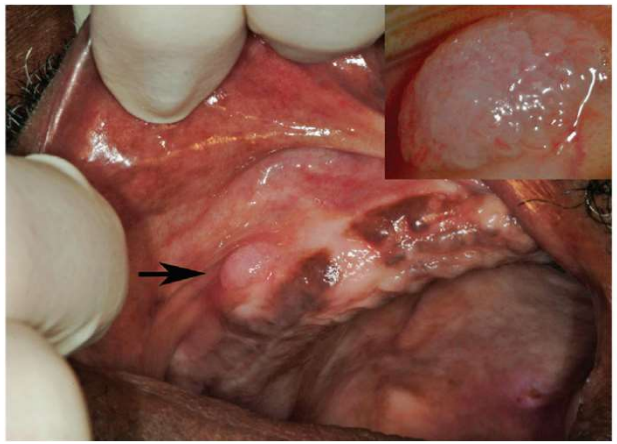
- At all ages
- 30-50 yrs
- As outgrowth with finger like projections
- Well circumscribed
- Mostly pedunculated, occasionally sessile
- Painless
- Cauliflower like growth: blunt or pointed
- Pebbely surface

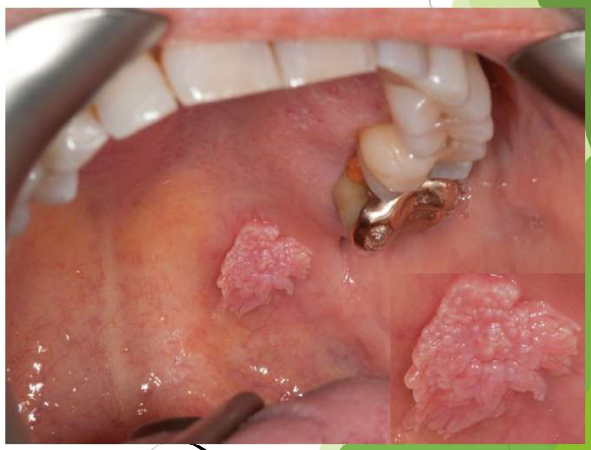




- White to pink coloured: keratin production
- Size: usually 0.5 cm
- Number: Usually single, occasionally more than one
- Site: any site, preferably tongue, lips, buccal mucosa, gingiva & soft palate

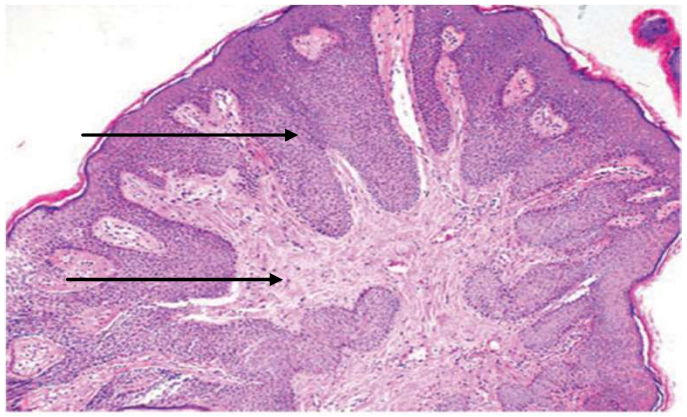


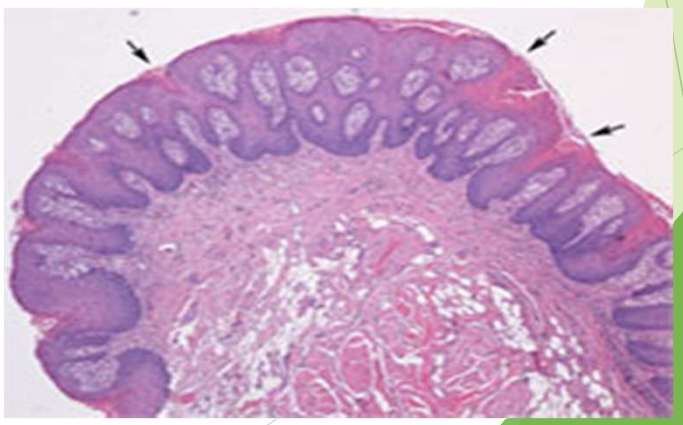




Histopathology

- Finger like projections
- Made up of continuous layer of Keratinized stratifies squamous epithelium
- Containing a thin, central connective tissue core.
- Spinous layer cell proliferation
- Fibro-vascular connective tissue core





Differential diagnosis

- Verruca vulgaris
  - Common in skin
  - A sessile base

- Papillary squamous cell carcinoma
  - Base is not pedunculated.
  - It grows rapidly and exceeds 0.5 to 2 cm in size.

- Verrucous carcinoma—
  - Age of 60 and 70 years
  - Associated with smoking and chewing tobacco or snuff,
  - The mass is wider than the surface area with the base almost as wide as the lesion.
  - It does not achieve much vertical length

- Pseudoepitheliomatous hyperplasia
  - It has got sessile base.
- Verruciform xanthoma
  - Rare in the oral cavity, has a broad base and vertical projections are minimum.

Management

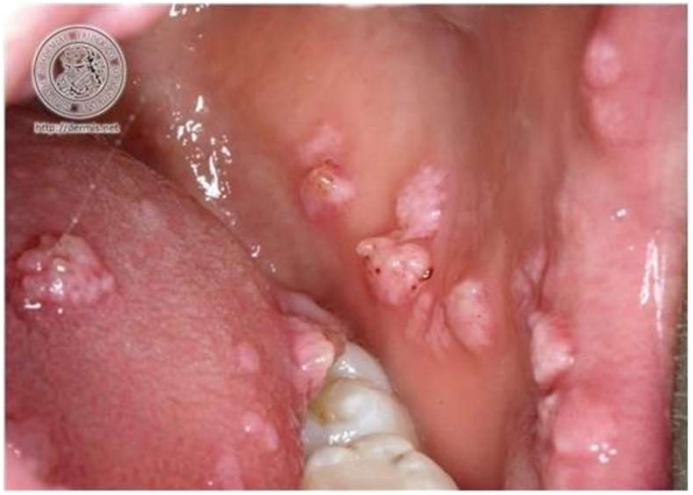
- Surgical excision
  - Elliptic incision in base of mucosa, into which the pedicle or stalk is inserted.
  - If the tumor is properly excised, recurrence is rare.

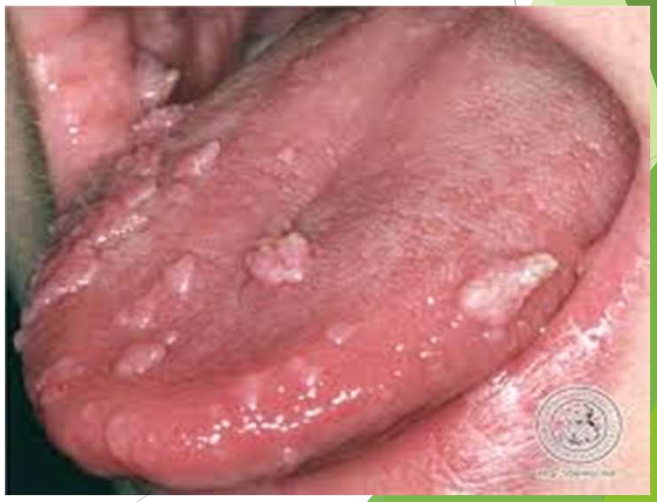
- Other modalities
  - Application of formaldehyde at night
  - Silver nitrate application
  - Liquid nitrogen cryotherapy

Focal epithelial hyperplasia

- Heck’s disease
- Numerous soft, well-circumscribed, flat, and sessile (i.e., Nonpapillomatous) papules

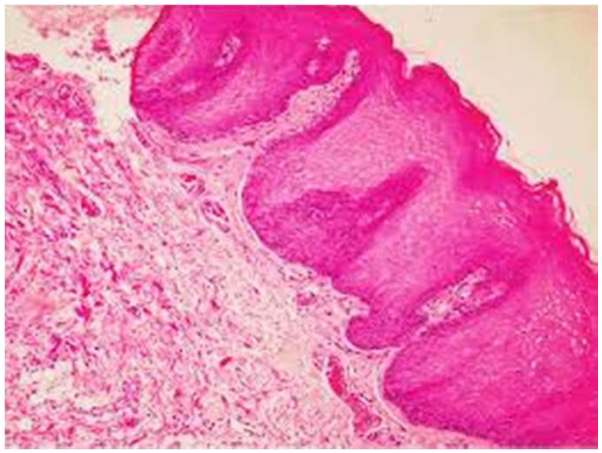
Distributed throughout the oral mucosa.





Histopathology

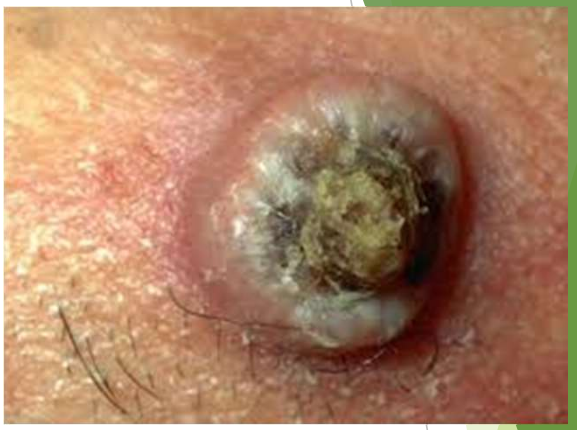
- Non dyskeratotic nodular acanthosis, which forms the basis of the papules
- A subepithelial lymphocytic infiltration.
- HPV DNA 13 and 32 are detected

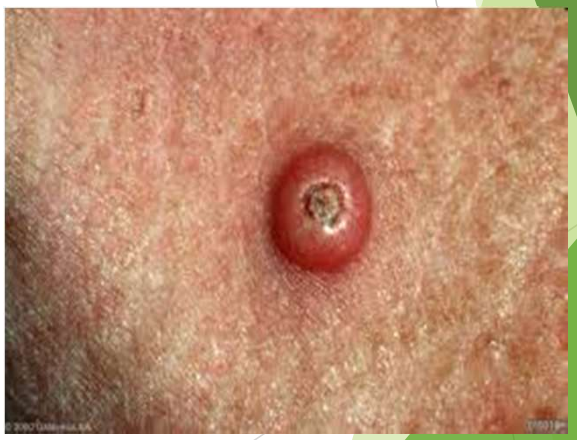


2.Keratoacanthoma

- *'Self healing carcinoma', 'molluscum sebaceum', and pseudocarcinoma'.*

- Histologically, resembles epidermoid carcinoma
- Relatively common low grade malignancy that originate in pilosebaceous gland.
- Mistaken as cancer.



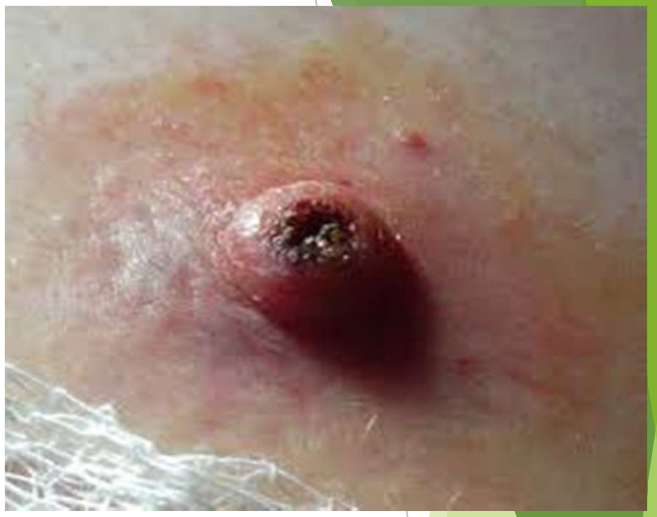


Etiology

Unknown

- **May be Genetic**
- **Viral**: HPV 26 or HPV 37
- **Sun exposure**: more commonly seen on sun exposed skin.
- **Chemical**: coal tar and mineral oil (industrial workers)
- **Trauma**: association is controversial.

Clinical Features

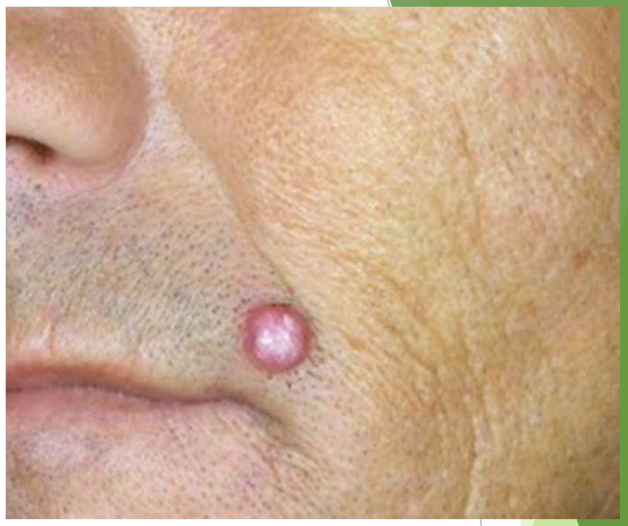


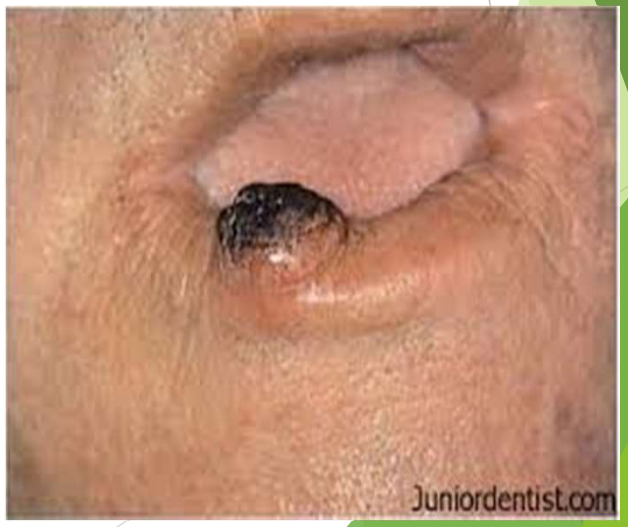
- *Age and sex*
  - Solitary lesion
  - male to female ratio is 2:1
  - Occurs between the ages of 50 to 70 years
  - Less common in darker skin individuals.
- *Common site*
  - exposed skin including cheeks, nose and dorsum of the hands.
  - Intraoral lesion is uncommon; if found, is more common on lips
  - 8.1% of the cases occurred on the lips and the vermilion border of both the upper and lower lip.
- *Symptoms*—the lesion is often painful and regional lymphadenopathy may be present.

- *Appearance*— elevated umbilicated or crateriform with depressed central core appears to be fixed to surrounding tissue.

- *Shape*—it appears as dome shaped.
- *Size*— maximum size of 1 to 2 cm in diameter.
- *Lip*—on the lower lip, the lesion shows smooth, raised, rolled borders with a central plug of hard keratin.

- *Margins*
  - sharply delineated
  - elevation of the rolled margins.





Clinical course

- *Progress*
  - it begins as small, firm nodules that develops to full size over a period of four to eight weeks
  - persist as static lesions for another 4 to 8 weeks
  - Then spontaneous regression over the next six to eight weeks period
- May be scar formation seen .
- Recurrance is rare

Diagnosis

- *Clinical diagnosis*—elevated lesion with central keratin plug on sun exposed skin will aid in diagnosis of keratoacanthoma.

- *Laboratory diagnosis*—on biopsy there is thickened layer of parakeratin or orthokeratin with central plugging.

Differential diagnosis

- ***Keratinizing squamous cell carcinoma*** —cancerous lesion usually fails to exhibit a smooth round regularity, which is present in keratoacanthoma.

- ***Warty dyskeratoma***— is usually small, i.e. less than 0.5 cm, as compared to keratoacanthoma which can attain a dimension of 1-2cm.
- Actinic keratosis
- Molluscum contagiosum
- Verrucous carcinoma

Management

- *Lesions usually treated with Surgical excision. Prognosis is excellent following an excisional surgery.*
- *Recurrent tumors may require more aggressive therapy.*
- *Regular follow up should be done for developing SCC*

3.Nevus/ Oral Nevi:

- Categorised as hamartomas, developmental malformation
- Benign proliferations of nevus cells in either epithelium or connective tissue.
- May classified as congenital or acquired.
- **Junctional nevus** : nevus cells are limited to the basal cell layer of the epithelium.
- **Compound nevus** : nevus cells are in epidermis and dermis
- **Intradermal nevus** : nests of nevus cells are entirely in dermis.

Clinical Features

- The small nevi are greater than 1cm in diameter and usually 3-5 cm.
- The garment nevi are greater than 10cm in diameter.
- The congenital nevi occur in 1-2.5% of neonates, 15% occurs on skin of head and neck.
- Intraoral occurrence is extremely rare.
- Acquired nevi are extremely common.
- Intradermal nevus (common mole) is one of the most common lesions of the skin.
- Junctional nevi have been known to undergo transformation into malignant melanomas.

- **Treatment :**
- Surgical excision is recommended as a prophylactic measures.

Connective Tissue Origin

1. Fibroma

(Fibromatosis fibroma, Irritation fibroma, focal fibrous hyperplasia)

- Most common benign soft tissue tumor.
- Etiology: Mild grade chronic irritation
- Pathogenesis

Chronic irritation

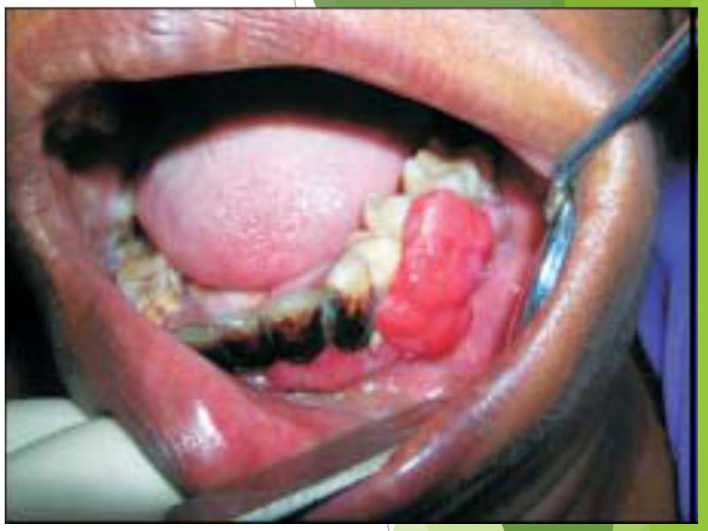
⇩

Reactive focal fibrous hyperplasia

⇩

Fibroma

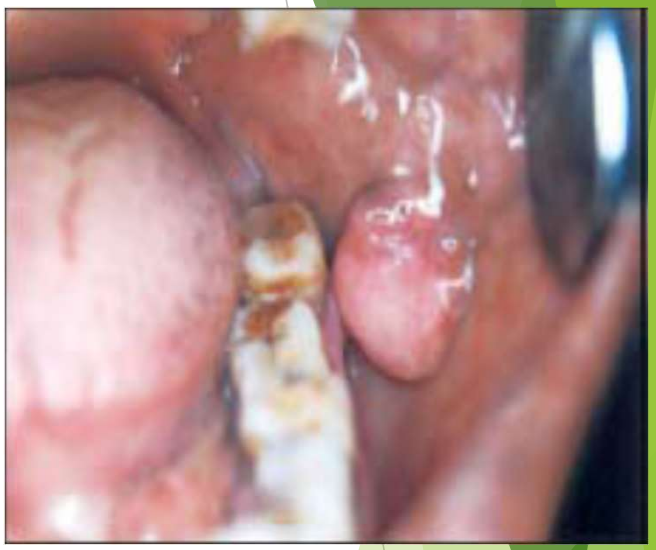
Clinical features



- *Age* — can occur at any age
  - common in 3rd, 4th and 5th decade of life.
- Sex- higher female predilection, affected 2times more than male.
- *Site*—gingiva, tongue, buccal mucosa and palate
  - (more prone to trauma)
- *Size- several centimetres in diameter*
- *Symptoms:*
  - usually painless
  - pain and discomfort due to irritation

Diagnostic Oral Medicine B K Venkatraman

- *Appearance* — elevated nodule of normal color with a smooth surface, often sessile, dome shaped or slightly pedunculated with smooth contour.
- *Signs*- sometimes becomes irritated and inflamed may show superficial ulceration.
- *Color* — pink or white (keratin deposition)
- *Surface*- smooth



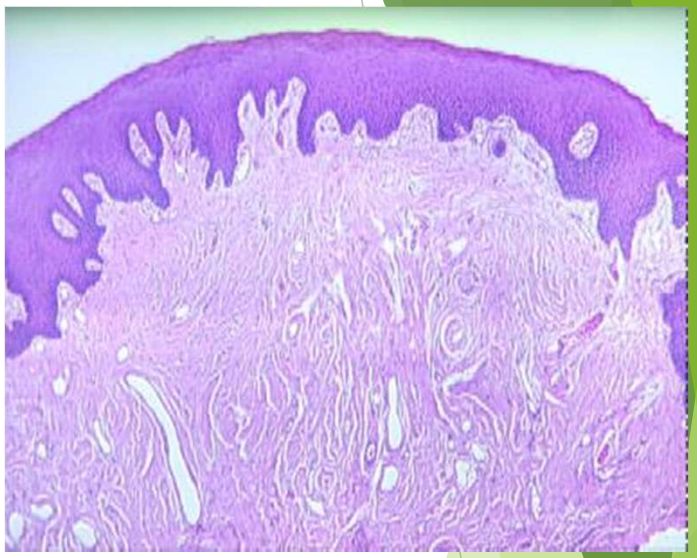
Diagnosis

- Sessile,
- Firm on palpation
- Pink color
- Smooth surface

Differential diagnosis

- Giant cell fibroma
- Neurofibroma
- Peripheral giant cell granuloma
- Mucocele
- Salivary gland tumor

Histology



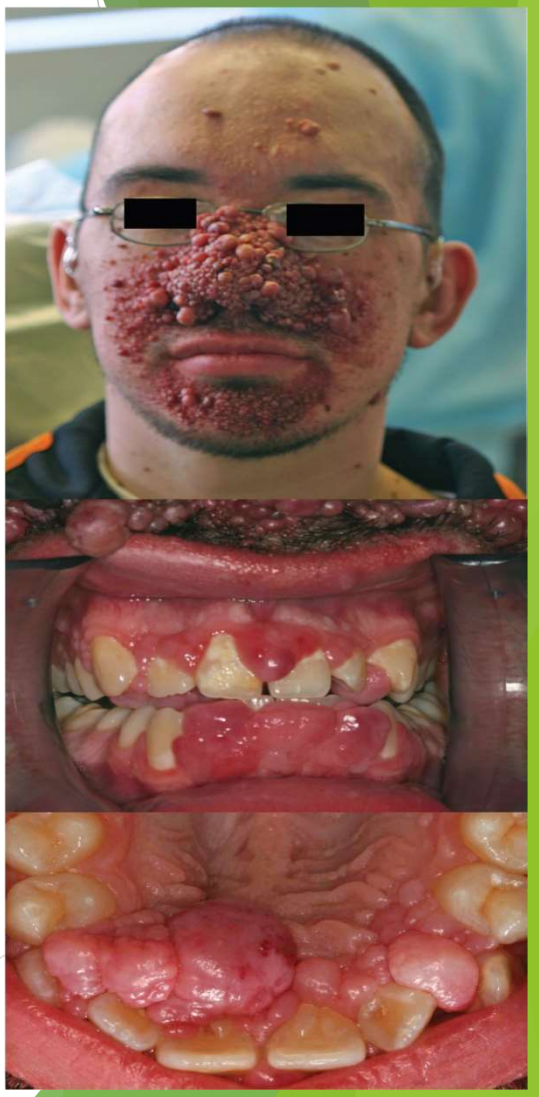
- Bundles of interlacing collagen fibers
- Large number of fibroblast, or fibrocytes and small blood vessels.
- Surface of lesion covered by a layer of stratified squamous epithelium.
- Vasodilation , oedema, inflammation present
- Areas of diffuse or focal classification or even ossification are found in some fibromas.
- **Treatment:**
- Conservative surgical excision.

2. Tuberous sclerosis

- Tuberous sclerosis is an inherited disorder caused by mutations in the tuberous sclerosis complex genes (TSC1 or TSC2)
- Characterized by seizures and mental retardation
- Associated with hamartomatous glial proliferations, and

Neuronal deformity in CNS.

- Wart-like lesions (adenoma sebaceum) in a butterfly distribution over the cheeks and forehead (fig A)
- vascular fibromas seen intraorally
- Enamel hypoplasia occurs in 40%-100% of those affected.



3.Lipoma

- Benign tumor of mature fat cells.
- Slow growing,particularly seen in subcutaneous tissues of neck.
- Very common benign tumor of adipose tissue but Rare in oral cavity with prevalence rate of only 1/5,000 adults

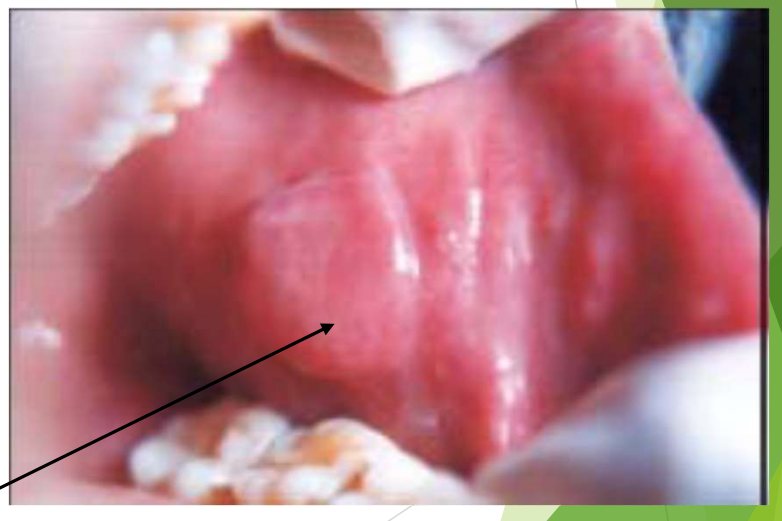
Types

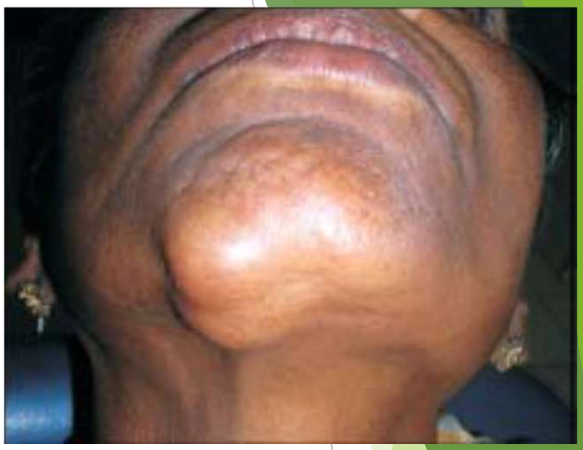
- *Encapsulated lipoma*— commonest tumor.
- *Diffuse lipoma*— '*pseudolipoma*'
  - no typical features of
- *Lipomatosis*—it has multiple lipomas.

  -It refers to the symmetrical masses of fat,
  - around the neck in middle aged man & women in Dercum's disease

Clinical Features

- *Age*—occurs age after 40 years with peak at 50 years,
- Sex: male to female ratio is 1:1.
- *Sites*—it usually occurs in upper parts of the trunk, neck and arms.
- Oral cavity,-
  - buccal mucosa and mucobuccal fold
  - Tongue
  - Gingiva
  - floor of mouth
  - Lip





- *Appearance*— solitary,painless lesion attached by either sessile or a pedunculated or submerged base.
- *The epithelium is usually thin, and the superficial blood vessels are readily visible over the surface*.
- *The lipoma is yellowish and soft to palpate*.
- *Color*—due to thinness of the overlying epithelium, yellow coloration of the fat can be seen.
- *Signs*—smooth, non-tender, soft and cheesy in consistency
- *Slip signs*—the edge of lipoma is soft, compressible and often slips away from the examining fingers
- *Clinical diagnosis*—positive slip sign, soft well defined swelling will go in favor of lipoma.

- Multiple head and neck lipomas have been observed in neurofibromatosis, Gardner syndrome, multiple familial lipomatosis, and proteus syndrome.

- **Histopathological features:**
- Predominantly composed of mature adipocytes, possibly admixed with collagenic streaks
- Often well demarcated from the surrounding connective tissue.
- A thin fibrous capsules may be seen and a distinct lobular pattern may be present.

- **Management:**
- surgical excision
- Recurrence is uncommon.

4.Peripheral Ossifying Fibroma

(Peripheral odontogenic fibroma, peripheral cementifying fibroma)

- Can occur at any age, somewhat common in children and young adults.
- Female predilection, ratio ranges from 2:1 to 3:2.
- Lesions are equally seen in maxilla and mandible.
- Cundiff, reported that 80% of lesions in both jaws occurred anterior to molar region.
- Clinical appearance- well demarcated focal mass of tissue on the gingiva, with a sessile or pedunculated base.
- Color- same as normal mucosa or slightly reddened.
- Surface- may be intact or ulcerated
- Most commonly appears to originate from an interdental papilla.

- Radiographic Appearance: No appearant underlying bone involvement visible on the radiograph.
- Rarely, superficial erosion may appears.

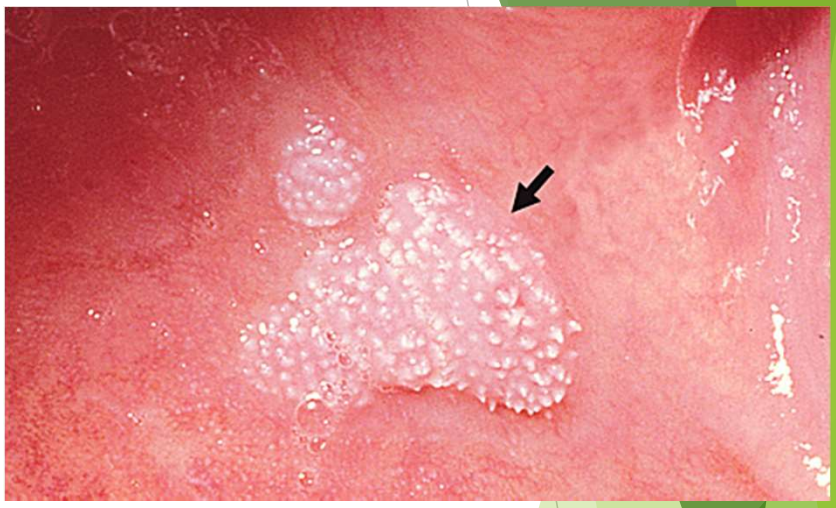
Treatment:

- Surgical excision
- Extraction of adjacent teeth
- Rarely recurre.

Verruciform Xanthoma

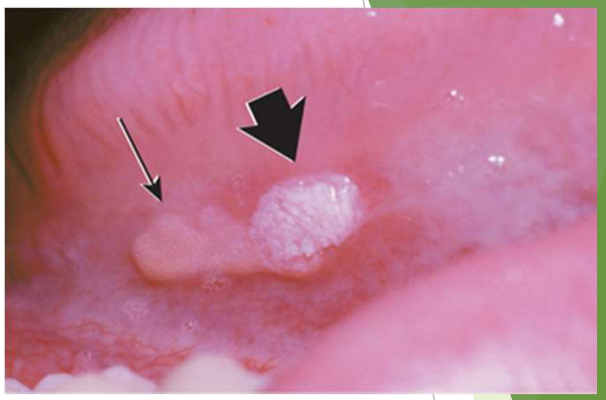
- '*Histiocytosis Y*'
- It is a papillomatous lesion of oral cavity
- Accumulation of lipid laden histiocytes below the epithelium.
- The lesion occurs as an unusual reaction to localized epithelial trauma or damage.

Clinical Features



- Age and sex
  - female predilection
  - middle age.
- Site
  - any site
  - Frequently: gingiva or alveolar ridge, buccal mucosa, palate, floor of the mouth, lip and lower mucobuccal fold.

- ***Verruciform appearance:***
  - The lesion appears as soft,
  - Well demarcated slightly elevated mass with white,
  - Yellowish white or red in color.



- It has got papillary or roughened appearance which

is called as verruciform appearance.

- ***Crateriform surface***—in some cases, crateriform surface have also been reported.
- *Base*—it is either sessile or has a pedunculated base.

- *Size*—it may be as small as 2 mm to as large as 1.5 cm

Diagnosis

- *Clinical diagnosis*—the lesion has got verruciform surface and it is usually solitary.
- *Laboratory diagnosis*—biopsy will show large swollen foam cells or *xanthoma* cells, which are presumably histiocytes.
- ***Management***
- *Surgical excision*—it is treated with conservative surgical excision.

Neural Tissue Origin

1. Neurofibroma And Schwannoma

- Benign tumors derived from the tissue that envelops nerves and includes Schwann cells and fibroblasts.
- Both tumors are distinct microscopically, but quit similar in their clinical presentation and behaviour.
- Tongue is the most common intraoral location.
- Occurs at any age, no sex predilection.

- **Microscopic Examination**: Fairly well-delineated but diffuse proliferation of spindle shaped schwann cells.

- **Treatment** :
- Surgical exicision
- Generally do not recur.

2.Neurofibromatosis

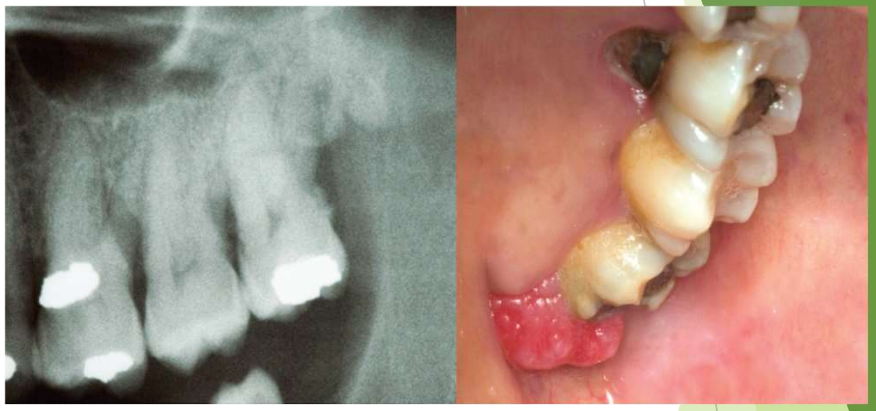
- Multiple neurofibromas occur in a genetically inherited disorder known as neuro fibromatosis 1(NF1) or von Recklinghausen's disease.
- This gene is transmitted as an autosomal trait, and the NF1 gene has been identified.
- Oral neurofibromas are common featuresof disease.
- Patients with NF1 are at increased risk of the development of malignant tumor, especially malignant peripheral nerve sheath tumor, leukemia, and rhabdomyosarcoma.

Pyogenic granuloma

- '***Granuloma pyogenicum***' **or Lobulated capillary hemangioma**
- Relatively common soft tissue tumor
- Secondary to some low grade chronic irritant
- frequently on the gingiva
- Exuberant fibrovascular proliferation of the connective tissue,

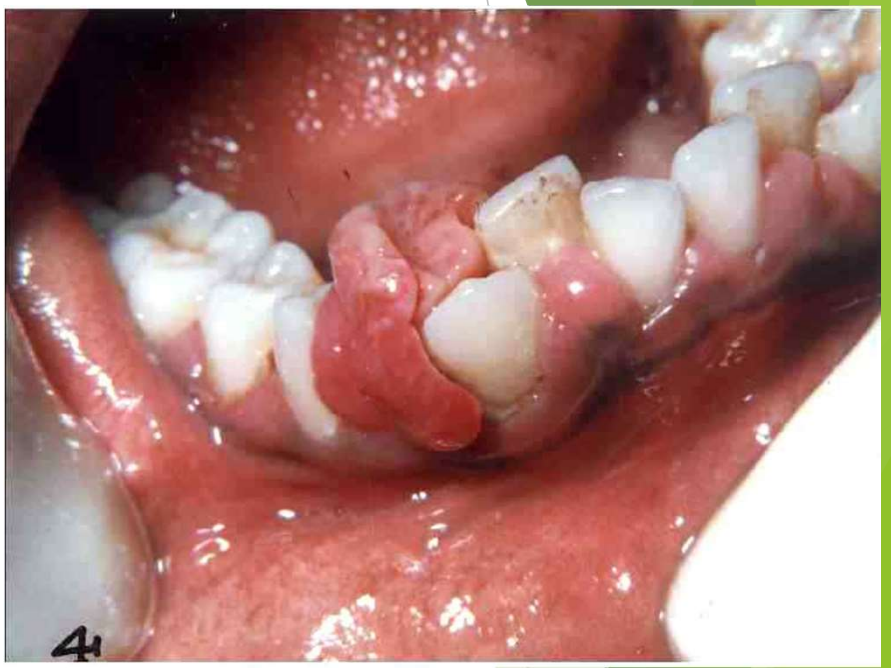
Etiology

- ***Microorganisms***— botryomycotic infection, staphylococci and streptococci.
- ***Trauma***— minor trauma to the tissue,
- ***Local irritant***—calculus.
- ***Hormonal imbalance***



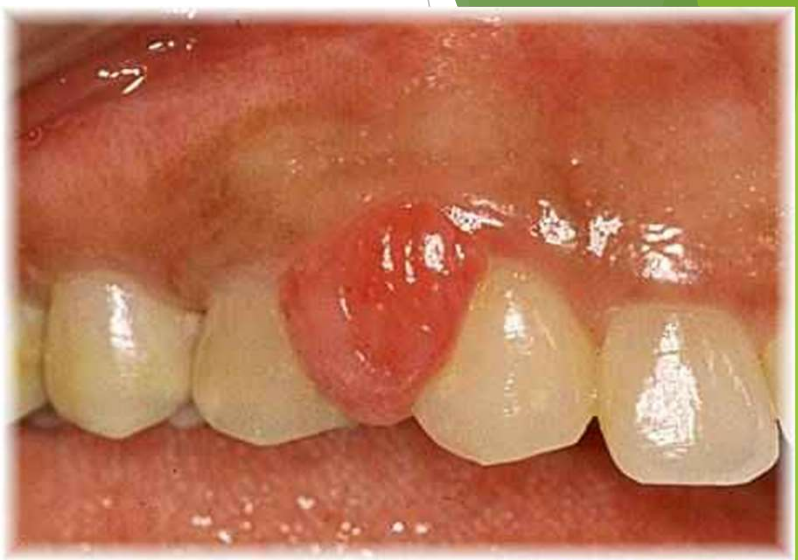
Clinical features

- *Age and sex*
  - females are affected more
  - common age of occurrence are 11 to 40 years.
- *Sites*
  - gingiva, lip, tongue, buccal mucosa, palate, vestibule and alveolar mucosa.
- *Symptoms*
  - it is an asymptomatic papular, nodular polypoid mass.

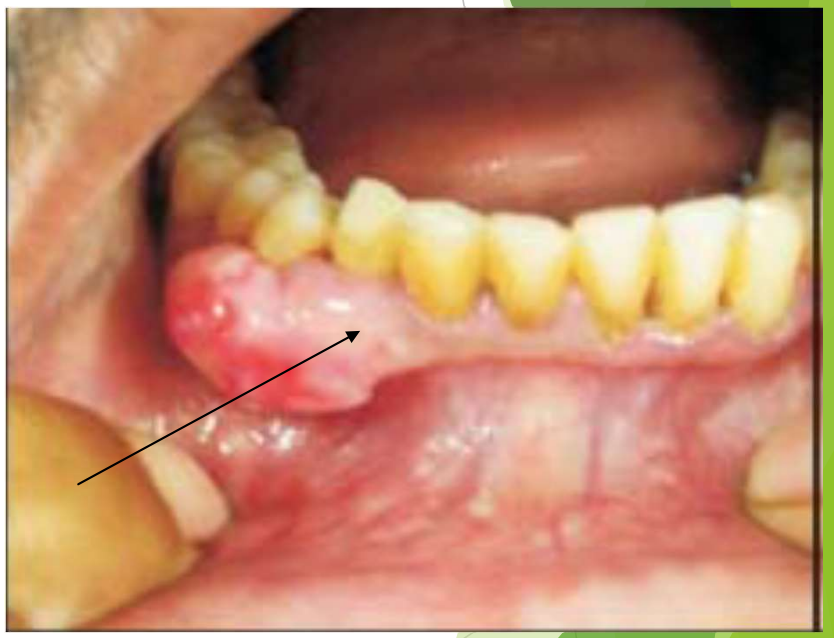


- *Appearance*
  - elevated,
  - pedunculated or sessile
  - smooth, lobulated or warty

- *Surface*- shows tendency to hemorrhage upon slightest pressure or trauma.

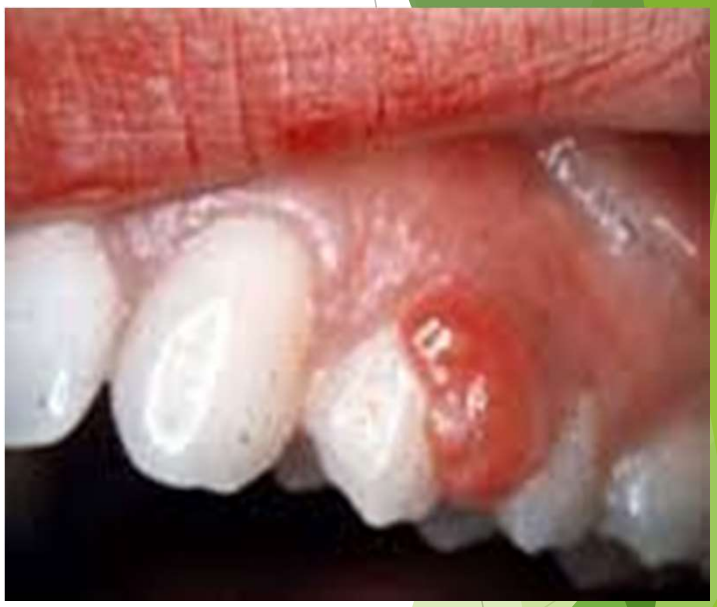


- *Pus*—sometimes, there is exudation of purulent material.
- *Color*—it is deep red to reddish purple
- Painless
- Consistency- soft, friable
- *Size*- may develop rapidly
  - 0.9 to 1.2 cm.



- Identical lesions with the same histologic structure occur in association with the florid gingivitis and periodontitis

- referred to as **pregnancy epulis or**
- **pregnancy tumor**



Histology

- Proliferating endothelial tissue
- Rich vascular network with minimal collagenous support.
- Neutrophils, as well as chronic inflammatory cells, are consistently present throughout the edematous stroma, with microabscess formation.

Histologically, differentiation from a hemangioma is important.

Diagnosis

- **Clinical diagnosis** —reddish purple lesion, soft in consistency can be pyogenic granuloma.

- **Laboratory diagnosis**
  - Biopsy shows granulation tissue
  - Overlying epithelium, if present, is generally thin and atrophic, but may be hyperplastic.

Differential diagnosis

- **Small benign and malignant mesenchymal tumor**
- **Exophytic capillary hemangioma with ulceration—**most blanch on pressure
- **Peripheral giant cell granuloma**—lesion is more bluish, as compared to pyogenic granuloma which is red to pink. There is also radiological evidence of superficial cuffing of the alveolar bone.
- **Peripheral fibroma with calcifications** —Radiograph shows small radiopaque foci within the shadow of growth.

Management

- Surgical excision—surgical excision is done
- Removal of irritant—elimination of the causative agent should be done
- Strong tendency to recur after simple excision if the associated irritant is not removed

Vascular Tissue Origin

1.Hemangiomas

- Hemangiomas of head and neck are the true neoplasm and appears a few weeks after birth and grow rapidly.
- Characterized by endothelial cell hyperplasia.
- The peak incidence of central hemangiomas of the jaws is in second decade of life.
- Affects as many as 12% infants in whites, but rarely occurs in darker skinned individuals.
- 3 times more common in female than in males.
- Sites- mandible, maxilla, nasal bones
- Intraosseous lesions affects mandible more often than maxilla, with ratio 2:1.
- Intramuscular hemangiomas- most commonly seen in masseter, compromising 5% of all intramuscular hemangiomas.

2. Lymphangioma

- Benign hamartomatous hyperplasia of lymphatic vessels.

- **Classification of lymphangioma:**
- Suggested by Watson and McCarthy based upon their study in 41 cases.

1. Simple lymphangioma
2. Cavernous lymphangioma
3. Cellular or hypertrophic lymphangioma
4. Diffuse systemic lymphangioma
5. Cystic lymphangioma or hygroma

Clinical features

- Majority of cases are present at birth. 95% of tumors arise before the age of 10 years.
- The most common extra oral and intra oral sites are the neck and tongue respectively.
- Appearance- slow growing and painless soft tissue mass
- Frequently present without clear anatomic outline, can be more extensive than anticipated.
- Large lymphangiomas may become life threatening if they compromise the airway or vital blood vessels.

Differential Diagnosis

- Infantile hemangioma or other vascular malformations
- Congenital hypothyroidism
- Mongolism
- Amyloidosis
- Neurofibromatosis
- Various storage disease (i.e. Hurler's syndrome and glycogen storage disease)
- Primary muscular hypertrophy of tongue.

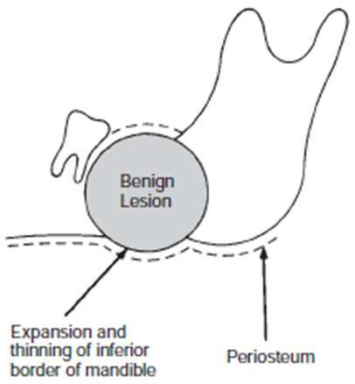
Treatment:

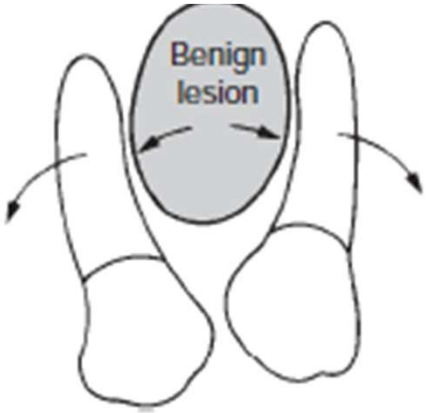
- Surgical excision treatment of choice
- Recurrence commonly reported

Benign odontogenic tumors

EFFECTS ON SURROUNDING STRUCTURES

- Exerts pressure on neighbouring structures
- resulting in the displacement of teeth or bony cortices.
- bodily displacement of nearby teeth
- The movement of teeth adjacent to benign tumors is slow because these lesions grow slowly.





Terminology

unilocular radiolucency:

- uni: means one and
- lucular means lobes

Multilocular radiolucency

---multiple adjacent, frequently coalescing & overlapping pathologic compartments in bone.

---True multilocular lesion contains two or more pathologic chambers partially separated by septa of bone.

1.Ameloblastoma

- Adamantioma, adenoameloblastoma
- Aggressive tumor that appears to be arising from remnants of dental lamina or dental organs.
- It represents 1% of all oral tumors and 11% of odontogenic tumors.
- It is the most common epithelial tumor producing minimal inductive changes. And second most common odontogenic neoplasm.

Definition

It has been described by Robinson as:

- Ameloblastoma is a benign tumor that is ‘usually unicentric, Non-functional, Intermittent in growth, Anatomically benign and Clinically persistent.

❖ Pathogenesis

A tunmor may derived from:

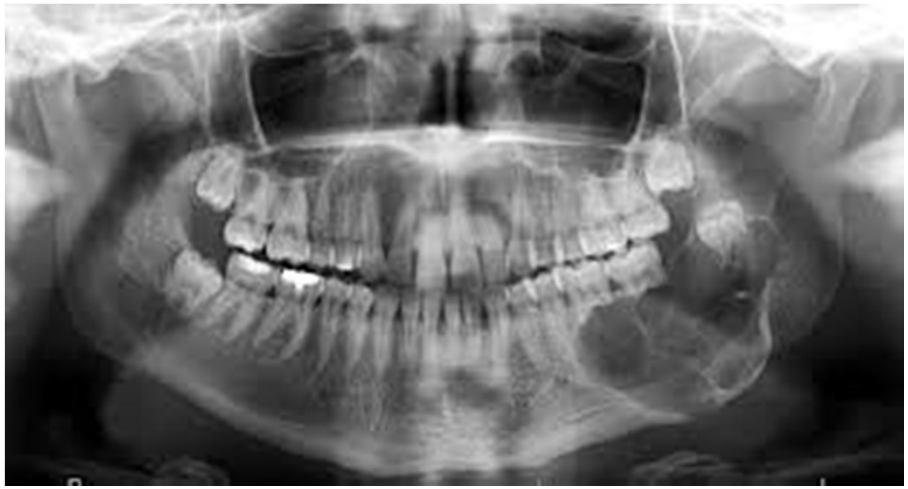
- Cell rests of enamel organ, either Reduced enamel epithelium
- Remnants of dental lamina or remnants of Hertwing’s sheath, Cell rests of Malassez.
- Epithelium of odontogenic cysts, particularly dentigerous cyst & odontomas
- Disturbances of developing enamel organ
- Basal cells of surface epithelium
- Heterotrophic epithelium in other body parts like: pituitary

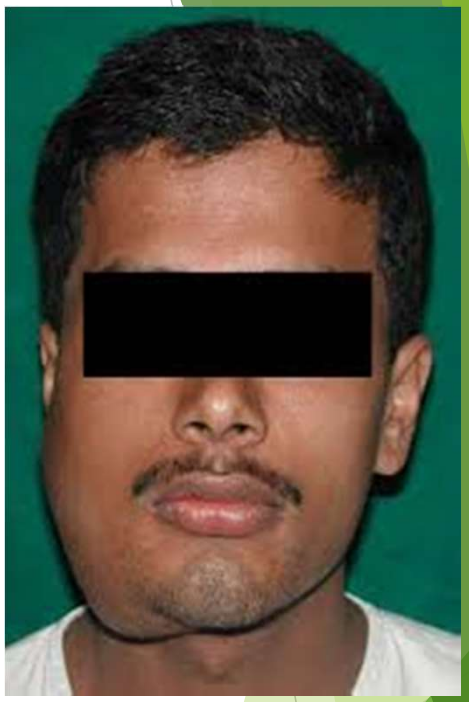
Textbook Of Pathology Shafers

Clinical features

- *Incidence*— 1% of all oral tumors and 11% of all odontogenic tumors.
- *Sex:* no significant sex predilection
- *Age—Wide age range of occurrence 10 year – 90 years.*
- most patients are between 20 to 60 years of age with mean age of discovery in the range of 33-39 years.
- *Site—occurs in all areas of jaw but* mandible is the most commonly affected area(more than 80%)
- Within the mandible, the molar angle -ramus area involved 3 times commonly than the premolar and anterior region combined.

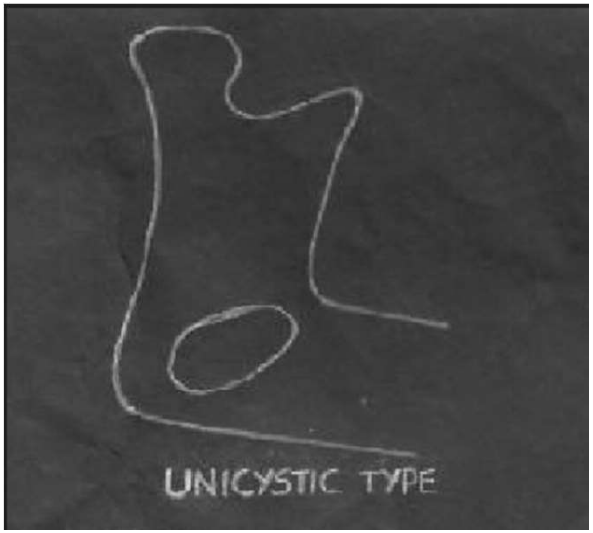
- Symptoms-
  - gradually increasing facial asymmetry.
  - Teeth in involved region are displaced and become mobile
  - Pain and paresthesia may occur
  - **Eggshell cracking:** Surrounding bone may become thin.

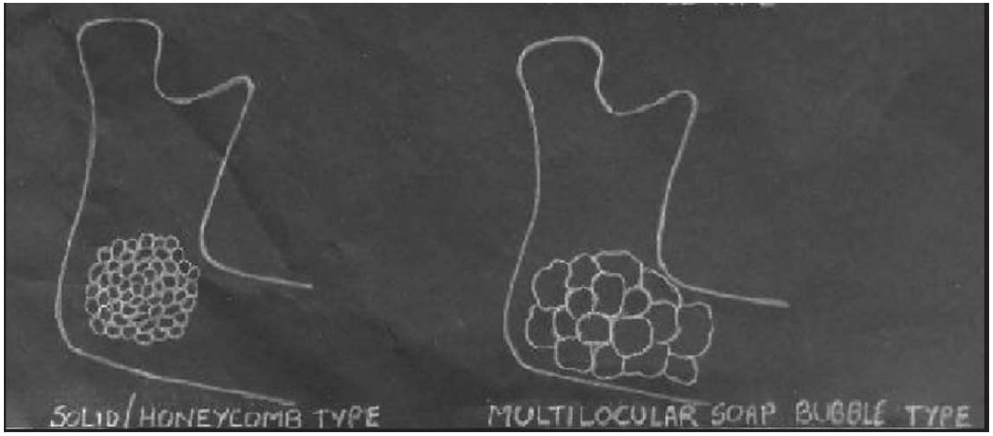




Variants of Ameloblastoma

- 1. Follicular (simple) amelobalstoma:
- Many small discrete islands most commonly encountered variants . Composed of Many small discrete islands of cuboidal or columnar cells.
- These cells strongly resembles ameloblasts or preameloblasts .
- 2. Plexiform Ameloblastoma:
- Ameloblast like tumor cells arranged in irregular masses or as a network of interconnecting strands of cells.
- 3. Acanthomatous Ameloblastoma:
- Cells occupying the position of stellate reticulum undergoes squamous mataplasia.
- 4. Granular cell ameloblastoma
- 5. basal cell type of ameloblastoma
- 6. Desmoplastic ameloblastoma



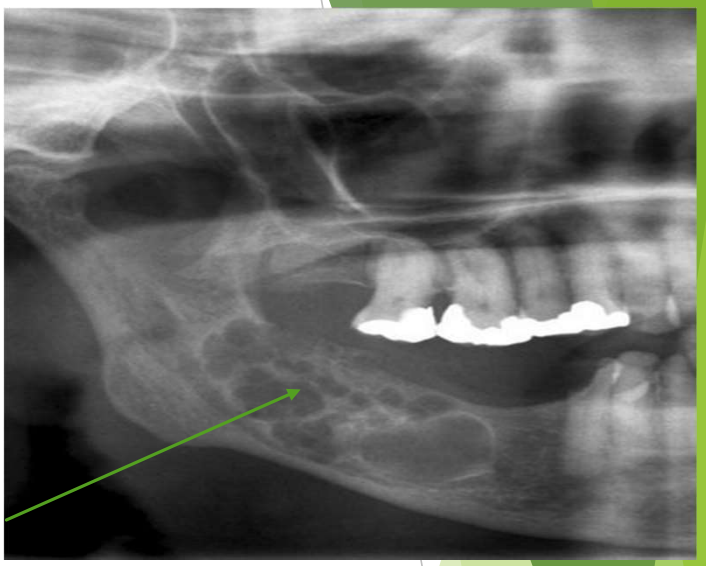


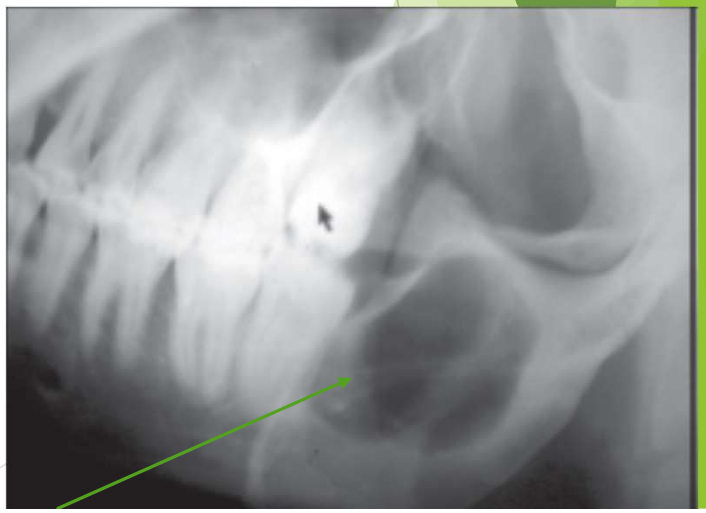
- ***Unicystic type***: This appears as a unilocular radiolucency resembling a cyst.
- ***Honeycomb or solid pattern*:** beehive pattern. These are tumors, seen surrounded by hexagonal or polygonal thick-walled bony cortices, giving rise to a honeycomb appearance.
- ***Soap-bubble pattern***: This lesion is seen as a multi locular radiolucency with large compartments of varying sizes, multi-cystic '**bunch of grapes**' appearance.

More C, Tailor M, Patel HJ, Asrani M, Thakkar K, Adalja C. Radiographic analysis of ameloblastoma: A retrospective study. Indian J Dent Res 2012;23:698

Radiographic Features

- Multilocular cyst like lesion of jaw
- compartmented appearance like
  - **Honey comb**
  - **Soap bubble appearance**
- Unicystic: mural ameloblastoma
- radiological appearance is like unicystic variety
- Periphery: smooth, well defined, well corticated
- Thinning of cortical plates

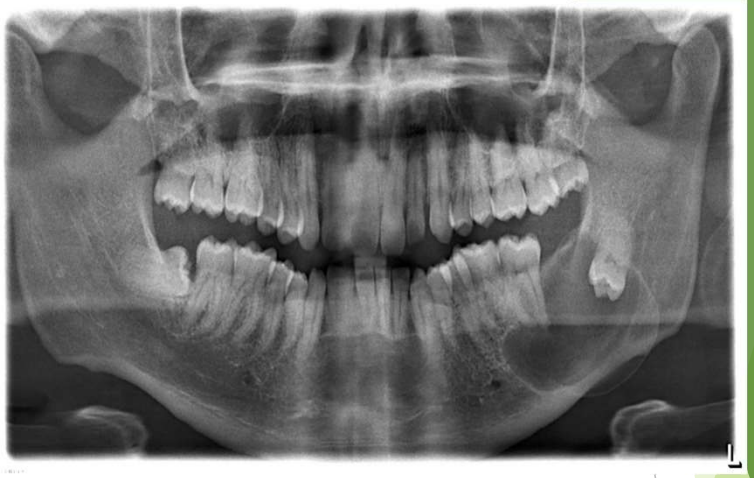


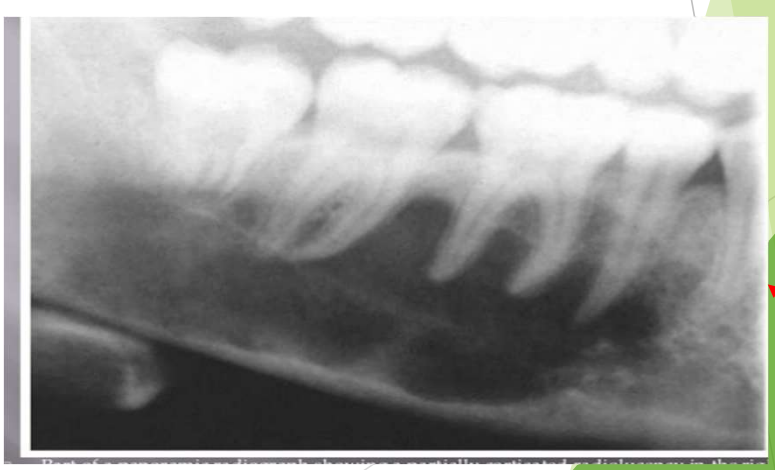


Differential diagnosis

- Dentigerous cyst

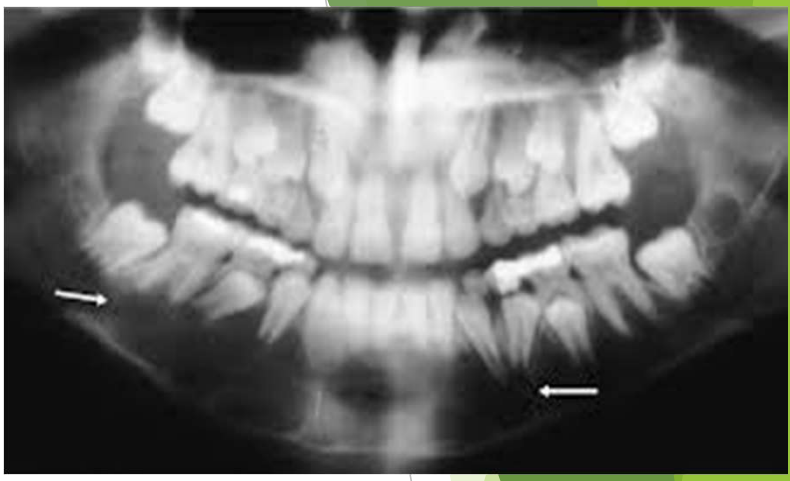
- Aneursmal bone cyst:
  - Fewer septa
  - Less bony expansion
  - mandible with scalloping of cortices



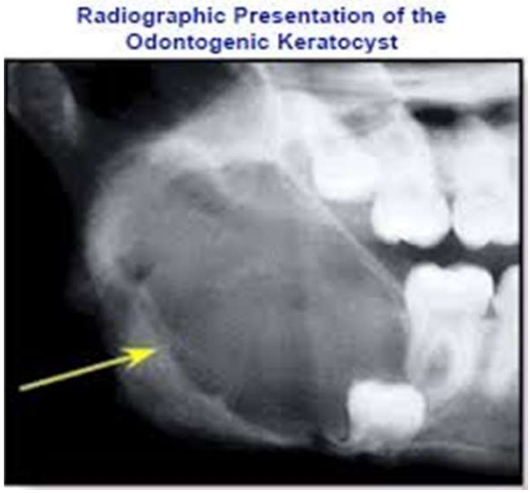


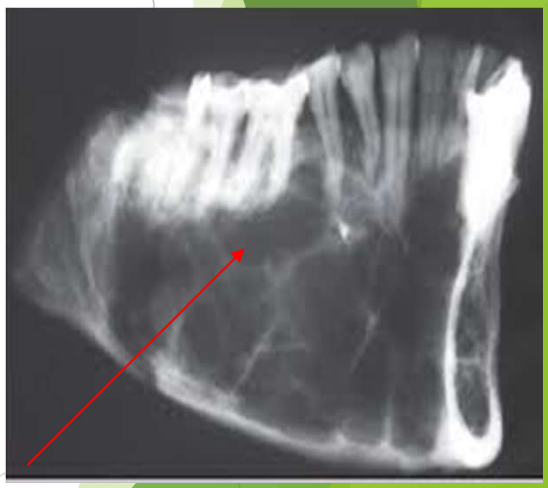
Oral & maxillofacial diagnostic imaging; Koen

- **Central giant cell granuloma:** anterior to first molar
  - Wispy less well defined septa
  - Less corticated border



- **Keratocystic odontogenic tumor:**
  - Less expansion
  - Less frequent root resorption
- **Odontogenic myxoma:**
  - finer straighter loculation/septa
  - Without root resorption





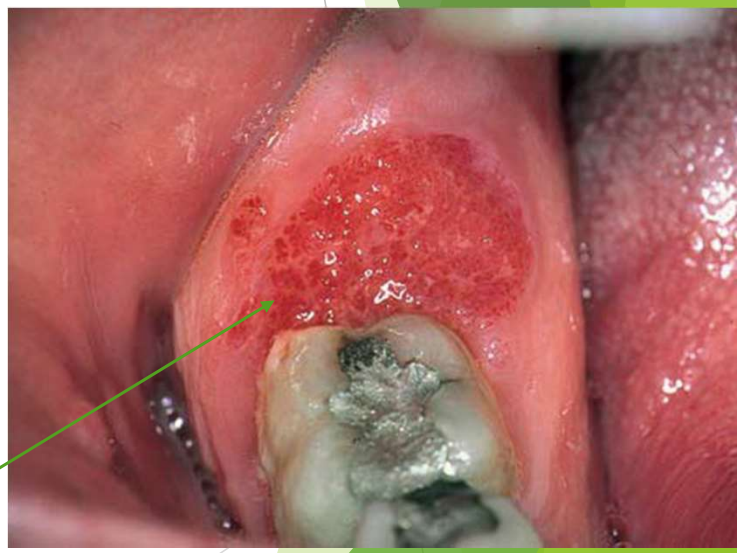
Oral & maxillofacial diagnostic imaging; Koenig

Treatment

- Complete removal of neoplasm
- Radical and conservative surgical excision, curettage, chemical and electrocautery, radiation therapy, or a combination of radiation and surgery
- Shows highest incidence of recurrence.

Peripheral Ameloblastoma

- ‘Extraosseous ameloblastoma’.
- Tumor which occurs in the soft tissue outside and overlying the alveolar bone.
- It originates from either the surface epithelium or the remnants of dental lamina.



Radiological Features

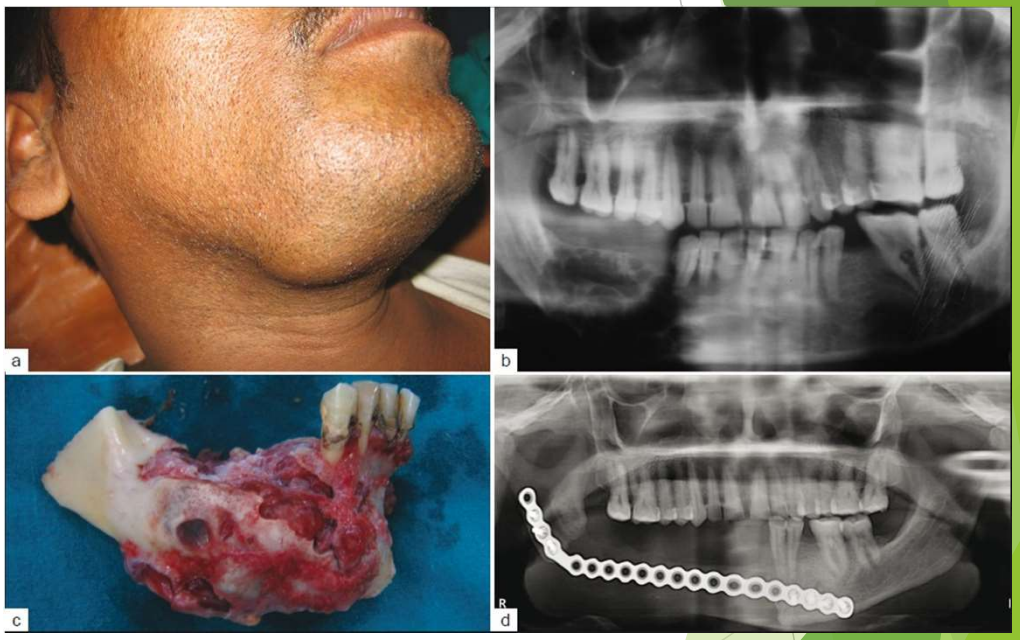
- Bone erosion—sometimes underlying bone may exhibit resorption in the form of saucer shaped depression

Pituitary Ameloblastoma

- '*Craniopharyngioma*' or '*rathke's pouch tumor*'.
- *Origin*— it occurs in anterior lobe, which is of ectodermal origin.
  - Squamous epithelial cells, ameloblastoma-like tumor develops.
- *Age*—it is most common in childhood and adolescents before the age of 25 years.

Management

- Surgical excision
- Larger lesions: jaw resection
- Maxilla treated more aggressively: adjacent to vital structures
- Radiotherapy: in case of inoperable tumor



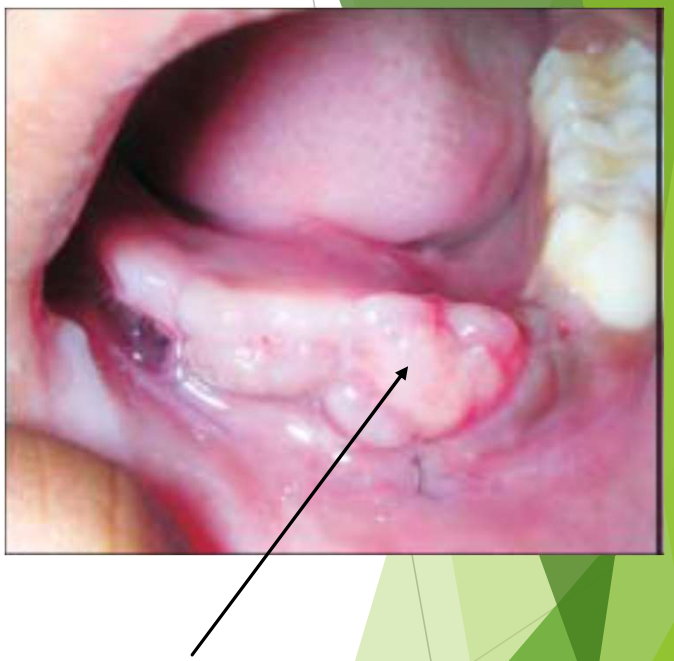
White & Pharoah Oral Radiology

2.Calcifying Epithelial Odontogenic Tumor

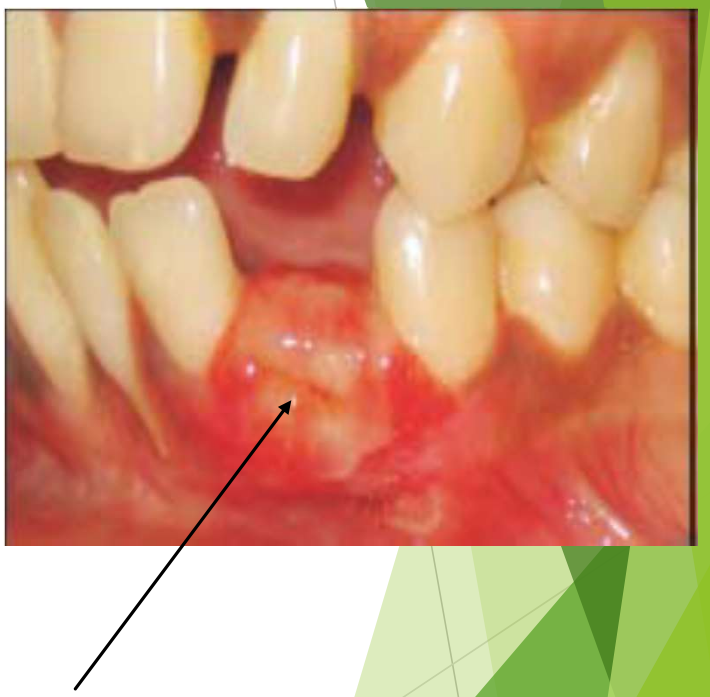
- '***Pindborg's tumor***' or '***calcifying ameloblastoma***'.
- Arises from stratum intermedium of enamel organ
- They are located within the bone and produce mineralized substance like amyloid.
- 1% of all odontogenic tumors.

Clinical Features

- *Age and sex—*
  - More common in men
  - Age range of 8 to 92 years with a mean age of 42 years
- *Site—*
  - Mandible is more commonly affected, ratio of 2:1
  - Developed in premolar-molar area
  - **52% Associated with unerupted or impacted teeth**

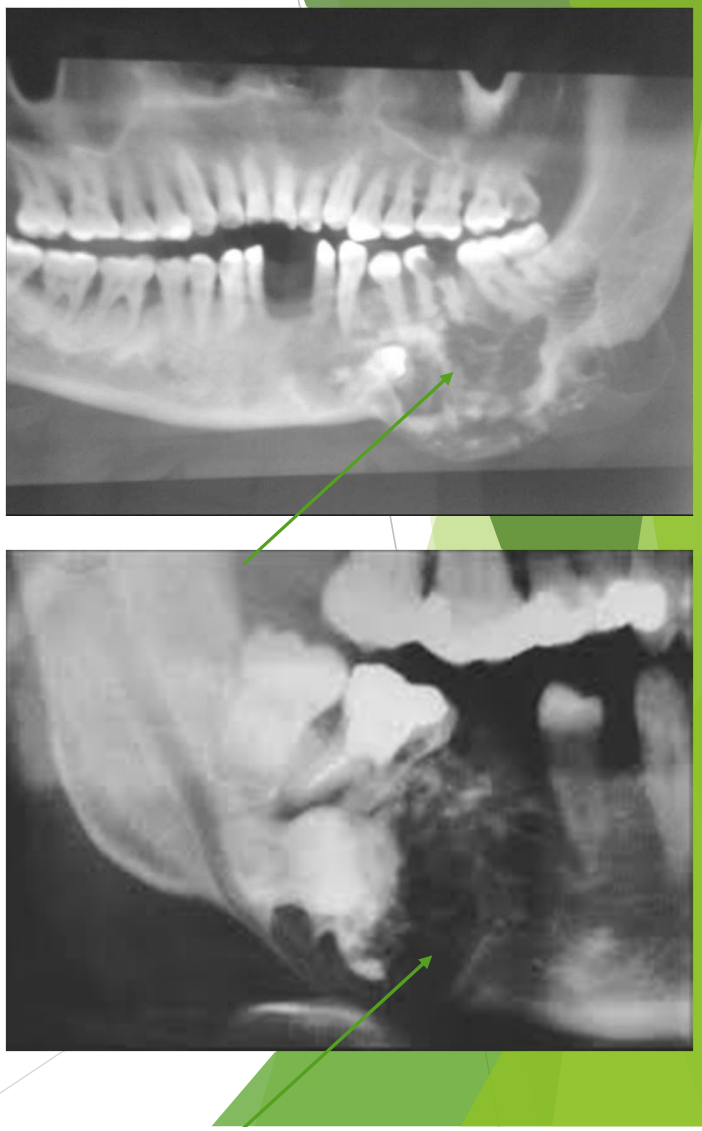


- *Symptoms*— asymptomatic painless swelling.
  - rarely, mild paresthesia
- *Signs*—cortical expansion
- Palpation- hard tumor with well defined or diffuse border.
- It is locally invasive with a high recurrence rate.



Radiographic Features

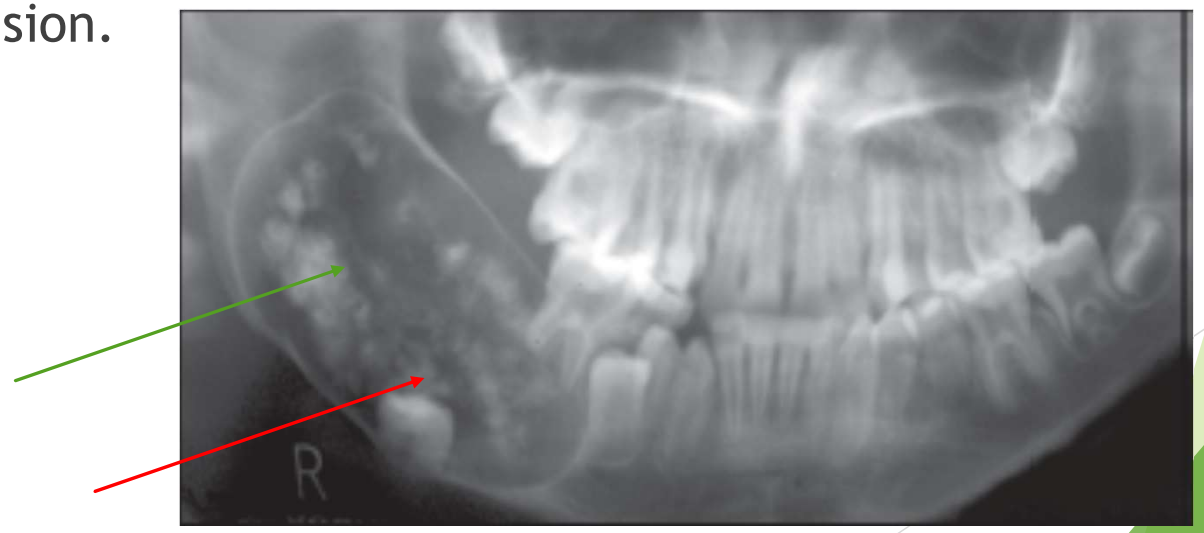
- ***Radiodensity*** —it may be totally radiolucent to mostly radiopaque area around the crown of unerupted teeth.
- Mineralization of amorphous proteinaceous material
- **Periphery:** well defined cyst like cortex



Internal structure:

- ***Driven snow appearance—***
  - unilocular or a multilocular cystic lesion with numerous scattered radiopaque foci of varying sizes and density
- ***Effect on surrounding structure:*** *D*isplace the developing tooth or prevent its eruption.

Expanded cortical plate can be visualized in buccal, lingual and vertical dimension.



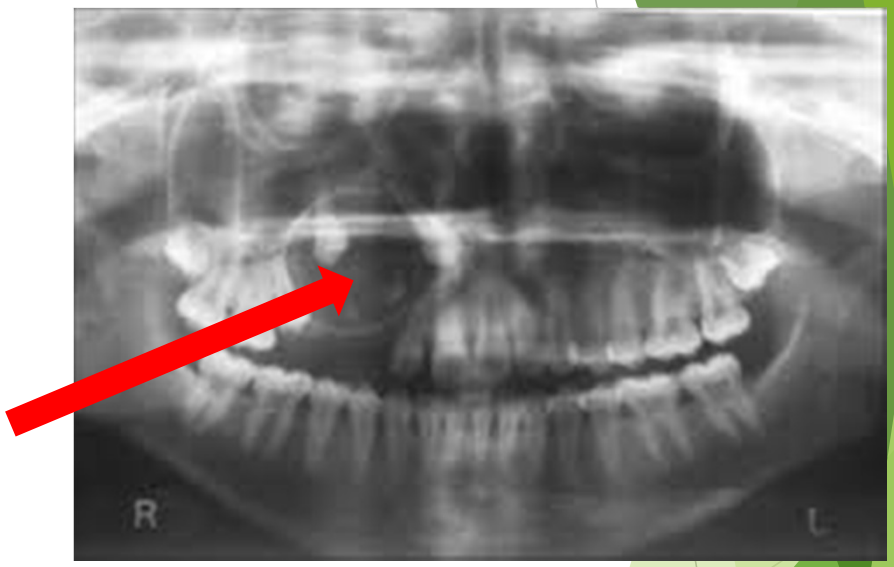
Diagnosis

- *Clinical diagnosis*—not specific
- *Radiological diagnosis*
  - typical **driven snow appearance** is seen
- *Laboratory diagnosis*

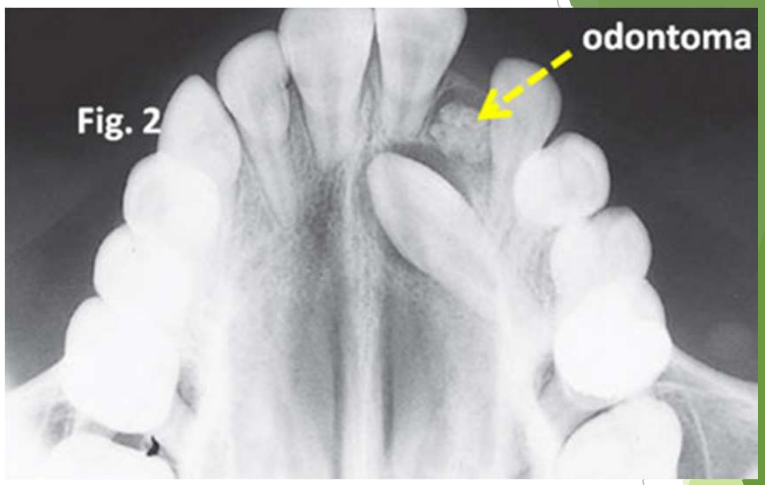
biopsy shows polyhedral epithelial cells packed in large sheets. There is presence of calcification in large amounts and often in the form of 'Liesegang rings'.

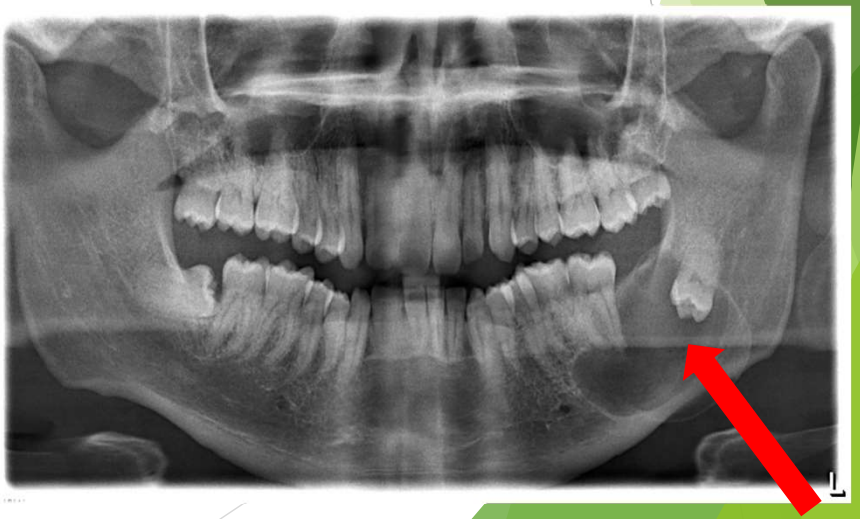
Differential Diagnosis

- **Adenomatoid odontogenic tumor**—
  - it is more common in anterior maxilla
  - More common in females



- **Partially calcified odontoma**
  - it appears within the capsule
- **CCOT: (calcifying cystic odontogenic timor)**
  - anterior to first molar
  - Peaks in second decade
- **Dentigerous cyst:**
  - Pericironal radiolucency
  - Early lesion may be indistingushable





Management

- *Conservative surgical excision*
  - it has limited invasive potential therefore local excision with limited margins is indicated. Simple enucleation can be done.

Keratocystic Odontogenic Tumor

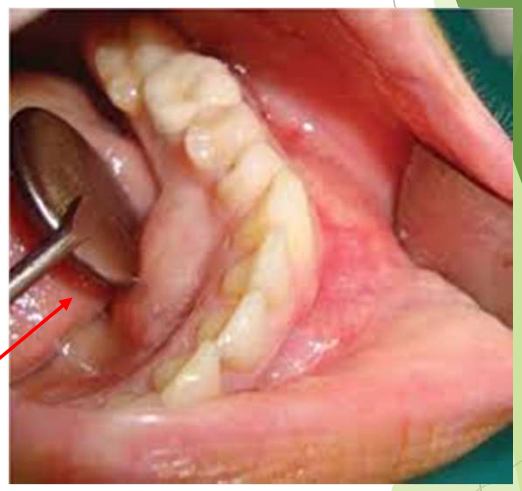
- Odontogenic keratocyst (OKC)

- WHO reclassified: Keratocystic Odontogenic Tumor (KOT)
  - Locally destructive
  - High recurrence rate
  - Proliferation & budding of epithelium in underlying connective tissue “Daughter cyst”
  - Genetic: PTCH (patched) tumor suppressor gene

Clinical features

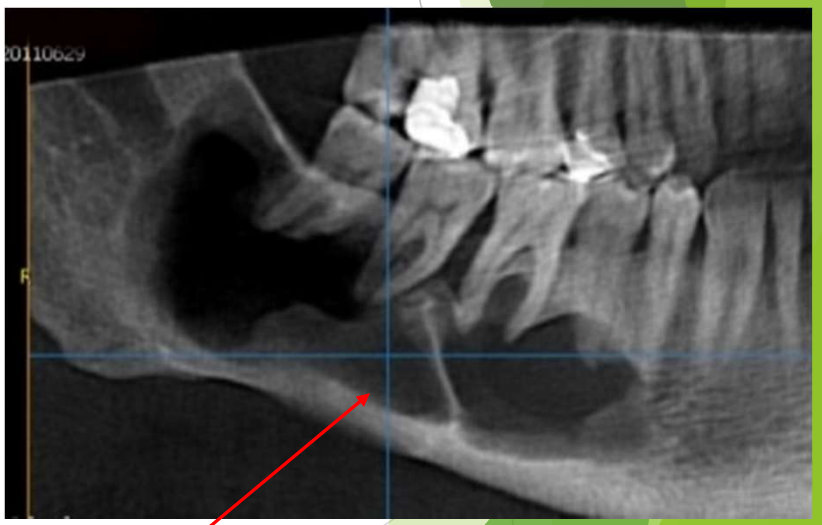
- Age:
  - any age
  - peak incidence second & third decade
- Sex: male predilection
- Mandible more commonly affected
  - Mandible: third molar – ramus area
  - Maxilla: third molar area

- Pain
- Soft tissue swelling
- Expansion of bone
- Paraesthesia of lips

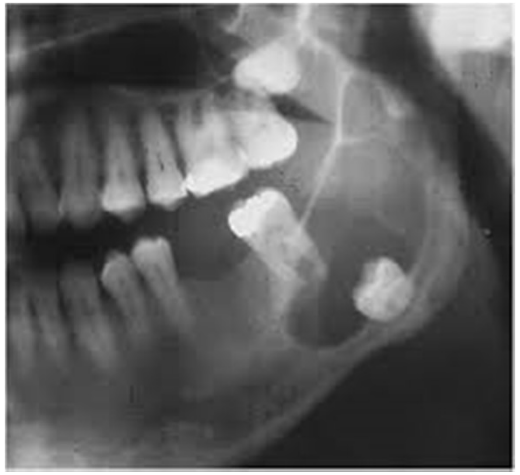


Radiographic features

- Unilocular
- Multilocular cyst
- Internal structure: radiolucent
- Periphery:
  - Well defined peripheral rim
  - Scalloped border
  - Corticated border

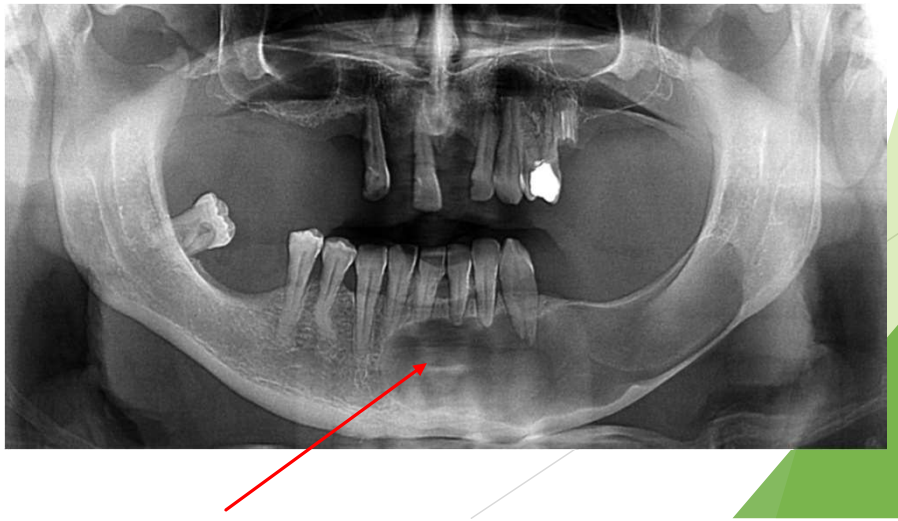


- Effect on surrounding structure:
  - May mimic dentigerous cyst around crown of impacted tooth
  - Resorption of adjacent roots
  - Maxillary & mandibular buccal expansion



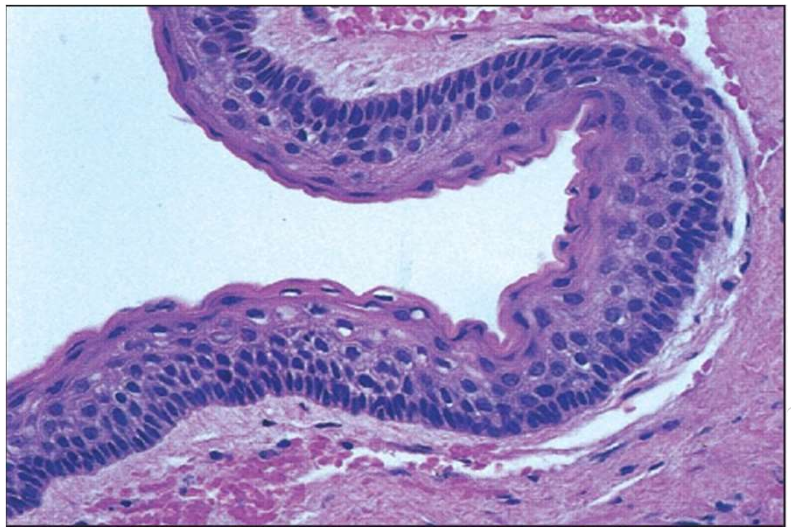
- *Displacement of inferior alveolar canal*—downward displacement of the inferior alveolar canal and resorption of the lower cortical plate of the mandible

- *Teeth*—as the keratocyst enlarges it may produce deflection of unerupted teeth



Histology

- corrugated or wrinkled parakeratin surface.
- Prominent palisaded polarized basal cell layer '*picket fence*' or '*tombstone*' appearance.
- Connective tissue shows daughter cysts or small satellite cysts
- **FNAC: thick cheesy aspirate**



Management

- Surgical excison
- Marsupalization followed by excision

- Frequent recurrence, regular follow up for 5 yr, radiographs each year

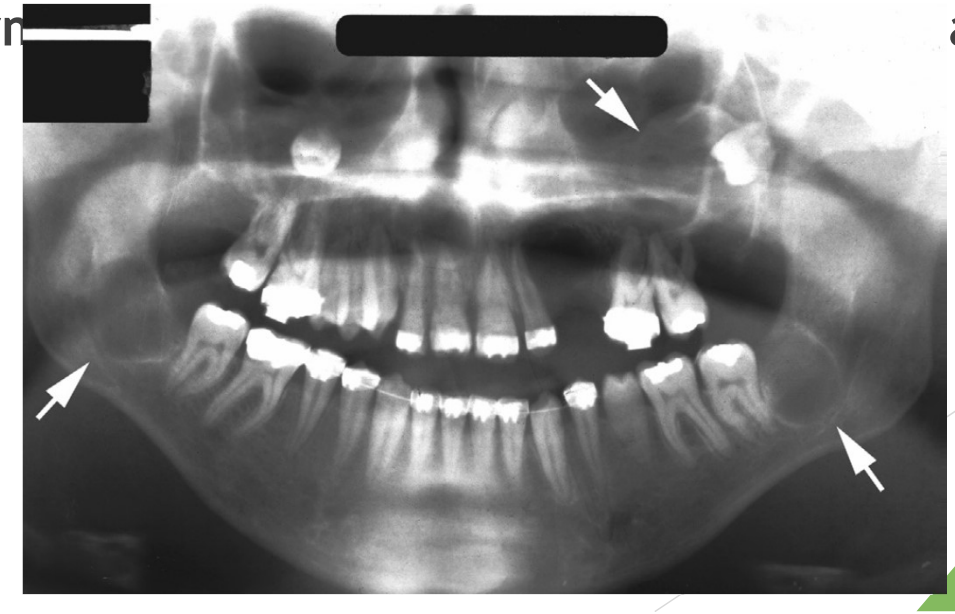
High Recurrence rate

- Thin friable wall
- Satellite cysts
- Perforation of cortical bone at ramus may complicate complete removal
- Nature of lesion: remnants of dental lamina--- new cyst formation

Neviod basal cell carcinoma syndrome

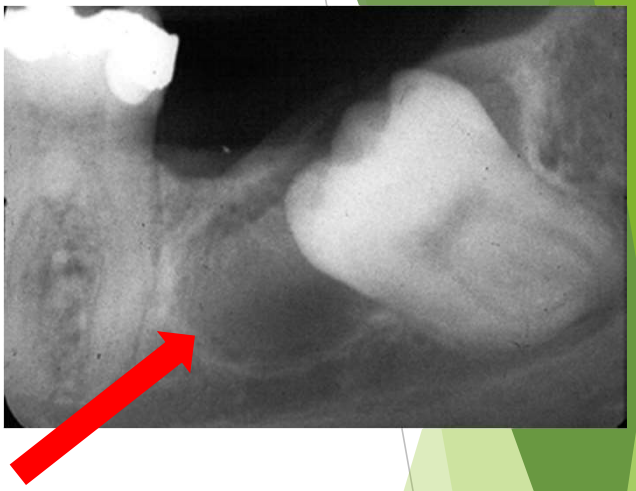
- Gorlin & Goltz syndrome
- Autosomal dominant

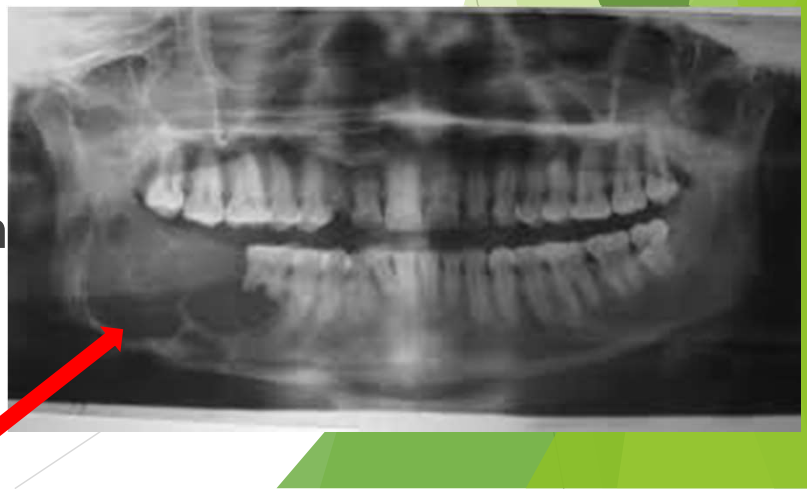
- **Cutaneous abnormalities:** basal cell carcinoma, dermal cyst & tumors, palmer pitting palmer & palmer keratosis
- **Dental & osseous deformoties:** OKC, mandibular prognathism, bifid ribs, vertebral abnormalities
- **Opthalmologic abnormality:** hypertelorism congenital blindness
- **Neurological abnormalities:** dural calcification, mental retardation
- **Sexual abnorm** [redacted] an rumors



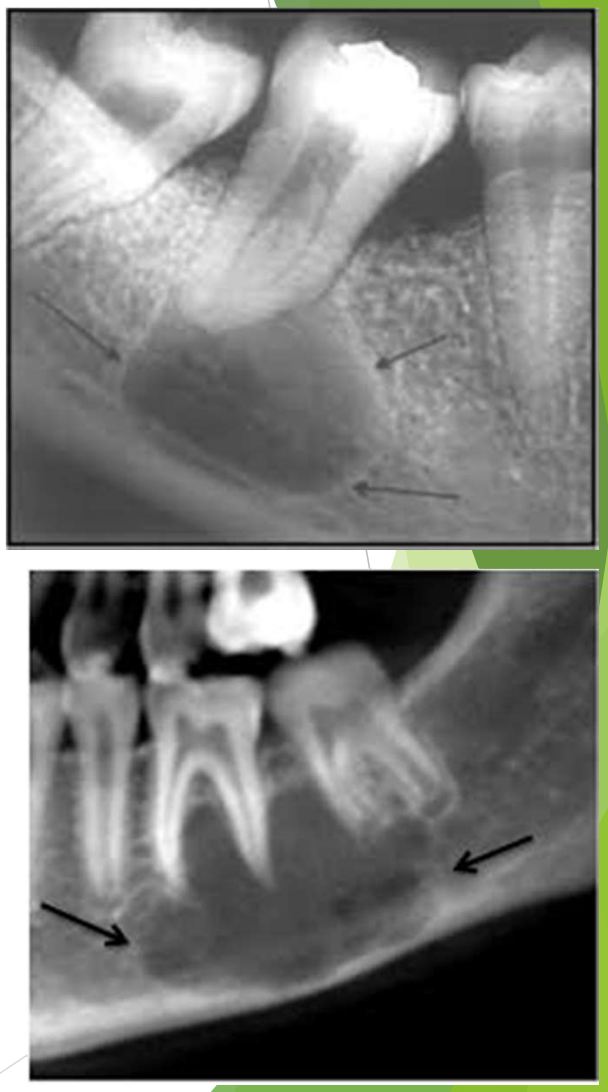
Differential diagnosis

- **Dentigerous cyst:**
  - Always around impacted tooth
- **Ameloblastoma:**
  - Multilocular thick septa
  - Greater expansion
  - More likely to resorb & displace teeth





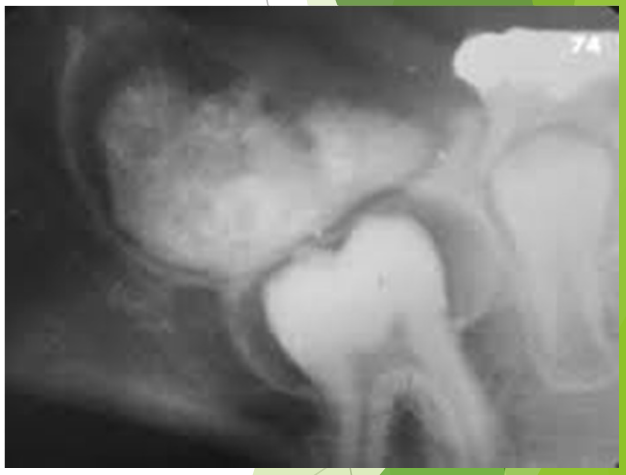
- **Radicular cyst**
  - Associated around tooth apex
  - Unilocular cyst
- **Simple bone cyst**
  - Minimal expansion & scalloping
  - Less corticated periphery
  - Does not resorb or displace teeth



Odontoma

- Hamartoma of odontogenic origin
- Epithelial and mesenchymal cells exhibit complete differentiation
- Enamel, dentin are laid down in abnormal position

- **Composite odontome**: more than one type of tissue

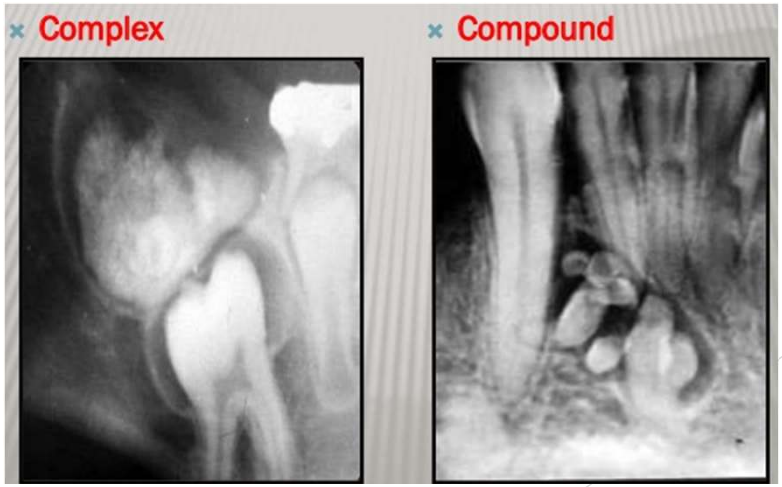


Types

- **Compound composite odontome**: superficial anatomic resemblance to normal teeth

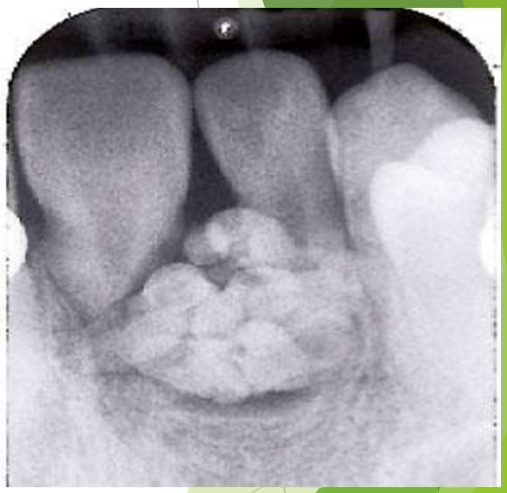
  (more common)

- **Complex composite odontome**: calcified tissue are irregular mass bearing no similarity to normal teeth



Etiology

- Trauma
- Local infection
- Genetic: inherited, post natal mutation in gene

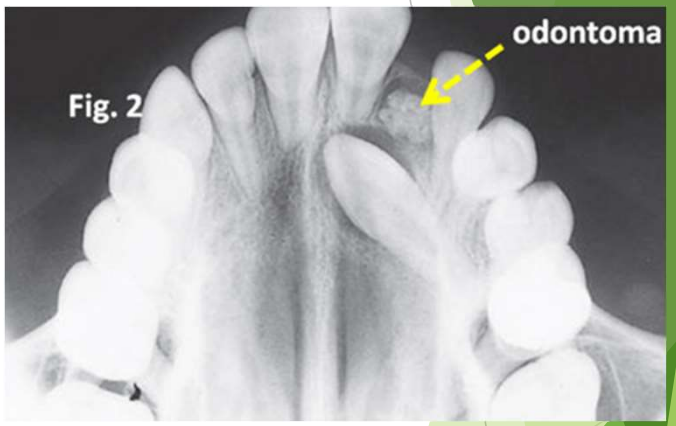


Clinical features

- Age: any age
- Incidental findings
- Slight male predilection

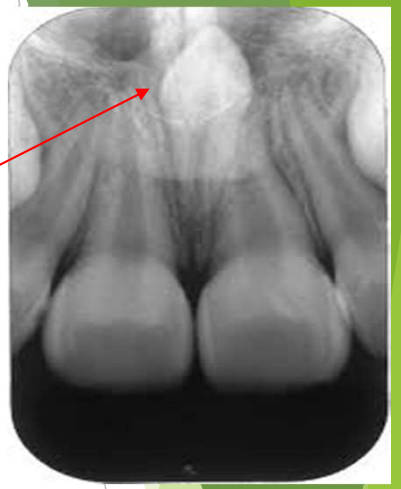
Radiographic features

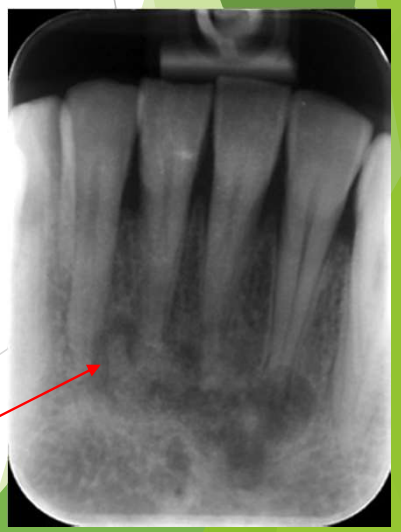
- **Periphery:**
  - well defined border
  - Cortical border
  - Immediately inside a lucent rim
- **Internal structure:** radiopaque
- **Effect on other structure:**
  - prevent eruption of teeth
  - Impaction
  - Malposition
  - Diastema
  - Devitalization of adjacent teeth



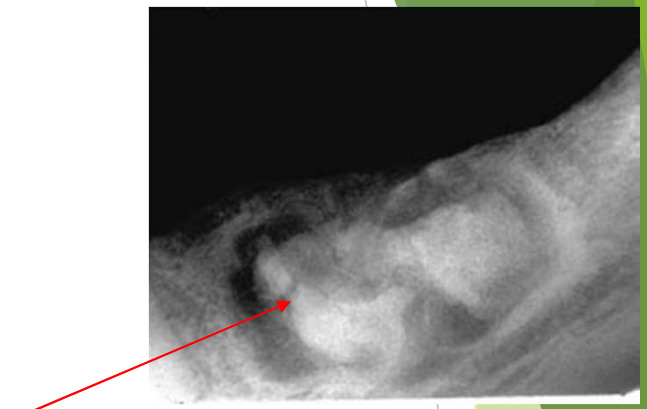
Differential diagnosis

- **Supernumerary tooth**: single well formed
- **Periapical cemental dysplasia:**
  - Late stage resembles complex odontome
  - Usually multiple
  - Centered around root apices
  - Irregular sclerotic border





- Cemetossifying fibroma
  - Less dense
  - Not associated with unerupted teeth
  - Not self limiting



- Osteoma
  - Less dense radiopacity
  - With no low density rim
- Sclerosing osteitis
  - With non vital tooth apex
  - Widened periodontal ligament