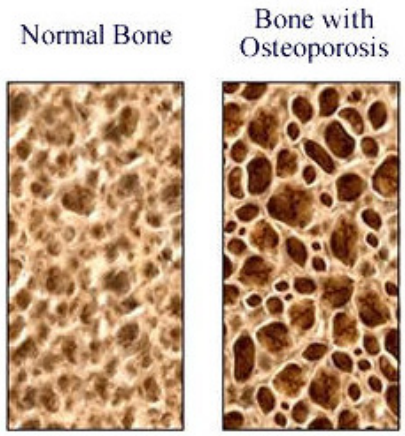
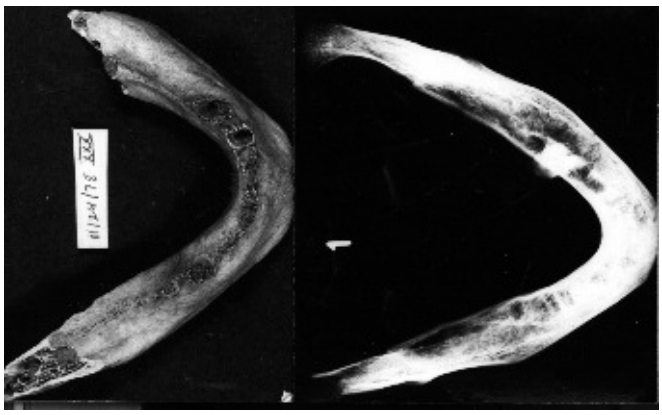
🔔 Metabolic & Endocrine disorders of bone:

∅ Osteoporosis:

- Bone apposition < bone resorption
- **Risk factors:**
  - ➢ Postmenopausal women
  - ➢ Hyperthyroidism
  - ➢ Hyperparathyroidism
  - ➢ Cushing's syndrome
- **↓ bone quantity**: thin cortex & trabeculae & ↑ marrow
- **Dental aspects**: denture, surgery, sinus

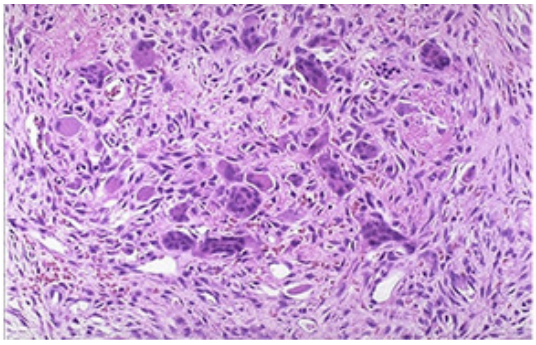




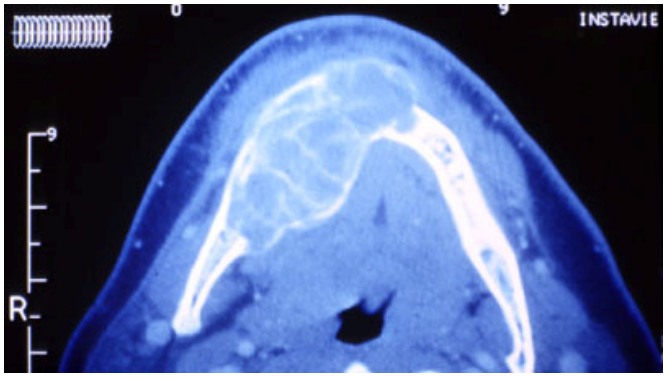
∅ Hyperparathyroidism:

∇ Primary:

- Adenoma, Ca, Hyperplasia
- Postmenopausal women
- Hypercalcaemia → metastatic calcification
- **Bone disease:**
  - ➢ ↑ Osteoclastic activity
  - ➢ Brown tumours



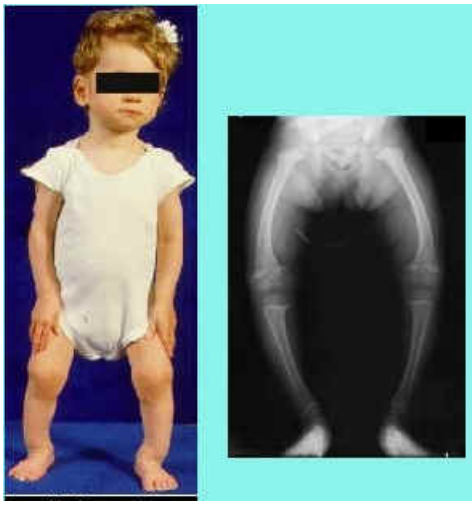
- **Rx:**
  - Osteoporosis
  - Mottled areas of radcy & thinning of cortical plates
  - **Jaws:** loss of n trabecular pattern, LD, brown tumours



- **Biochemistry:**
  - ↑ Ca, ↓ PO4, ↑ PTH, ↑ ALKP, ↑ urinary Ca & PO4

∇ Secondary:

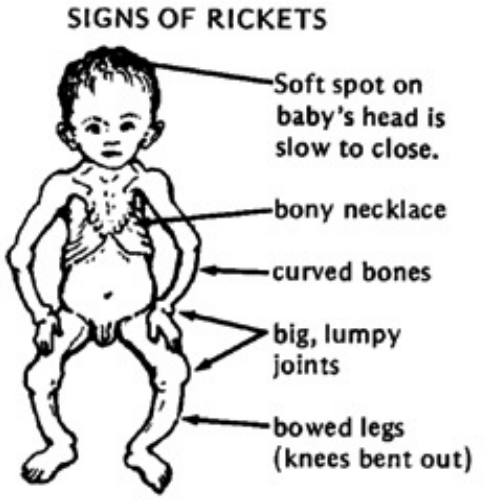
- RF → low Ca
- Rickets & Osteomalacia:



∅ Rickets & Osteomalacia:

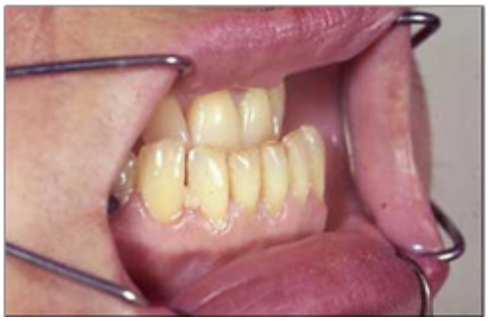
- ↓ Vit D or resistance to its action
- RF, malabsorption of Ca
- Failure of mineralization of Osteoid & cartilage
- Weak bones, bending
- **Biochemistry:** n/↓ ca, ↓ PO4, ↑ ALKP

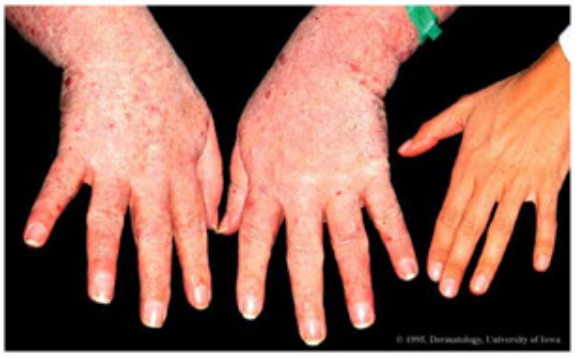
- **Dental aspects:**
  - E hypoplasia
  - Dentine hypocalcification
  - Delayed eruption
  - Condyle

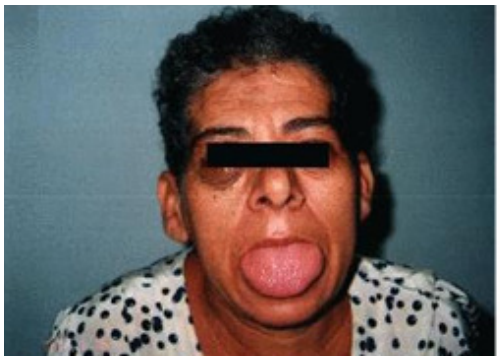


∅ Acromegaly:

- Prognathism
- Macroglossia
- Lips & nose
- Hands & feet



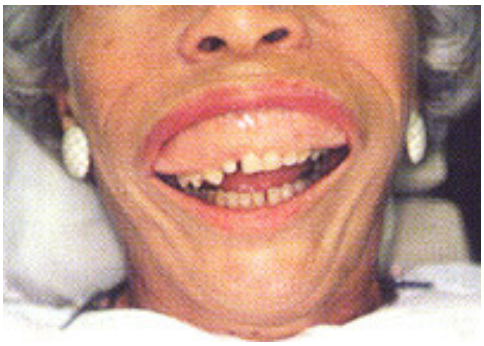




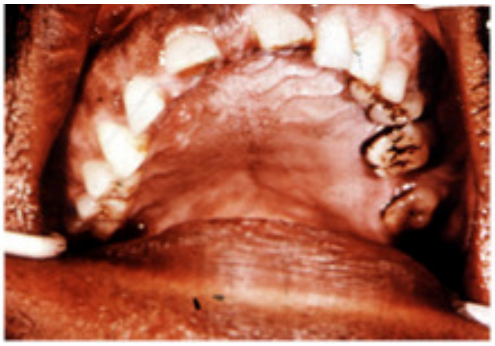
🔔 Paget's disease:

- Uncoordinated ↑ in Osteoclastic & osteoblastic activity of bone Cs
- Primary dysfunction of osteoclasts
- Viral inclusions
- **Abs:** measles & RCV
- **Aetiology:** slow viral infection + genetic factors

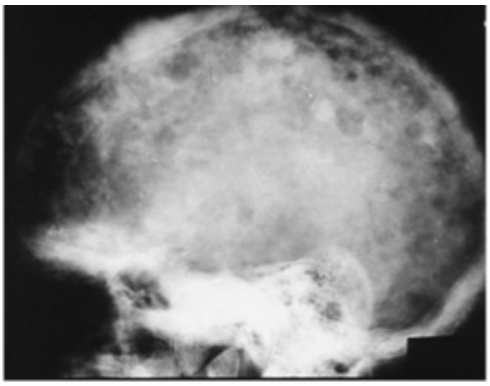
- **Three phases:** osteolytic, mixed & osteoblastic
- **Clinically:**



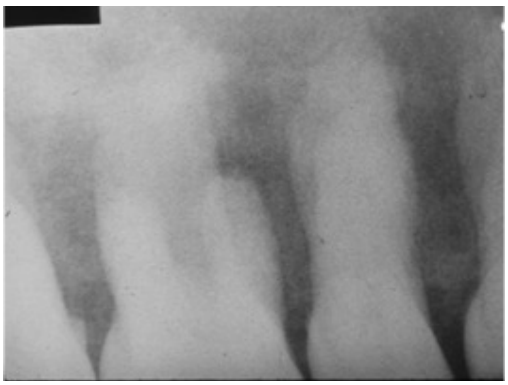
  - M>F, > 40y
  - Geographical variation
  - Monostotic or polyostotic
  - Axial skeleton then skull & femur
  - Max > Mand



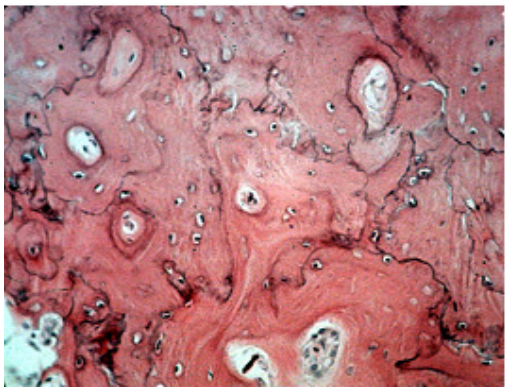
  - Deformity of spine & legs
  - Fracture
  - Enlargement of skull & facial bones
  - Bone pain & joint disease
  - Skull base; cranial nerves & spinal cord
  - Symmetrical & gross enlargement of alveolar process, flat palate
  - Spaces between teeth, malocclusion, incompetent lips
  - Hypercementosis & ankylosis, root resorption
  - Haemorrhage
  - Infection



- **Rx:**
  - Diffuse radcy
  - Patchy Osteosclerosis "**cotton wool**" appearance
  - Thick cortical plates of skull
  - Enlarged maxilla & mandible
  - Loss of LD, hypercementosis & ankylosis

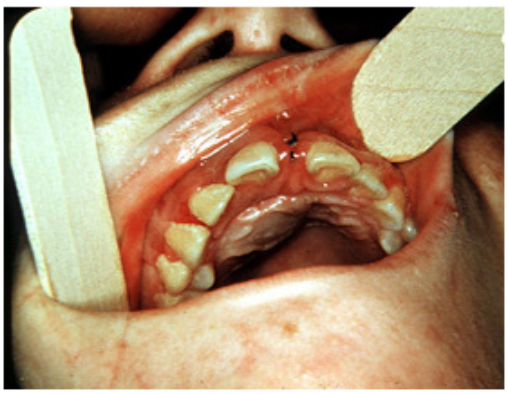


- **Hist:**
  - Rapid bone resorption & replacement
  - **Initially:** ↑ Osteoclastic activity → vascular fibrous marrow
  - **Then:** Osteoclastic & osteoblastic activity, mosaic pattern
  - **Finally:** Osteoblasts predominate → dense lamellar bone
  - **Jaws:** masses of cementum-like tissue, cementum (mosaic)



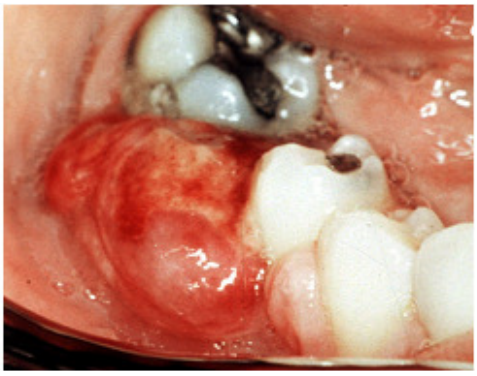
- **Biochemistry:**
  - ↑ALKP:
  - Normal Ca & PO4
- **Complications:**
  - ↑ A-V shunt→ ↑-output HF
  - Osteosarcoma

🔔 Central Giant cell granuloma:

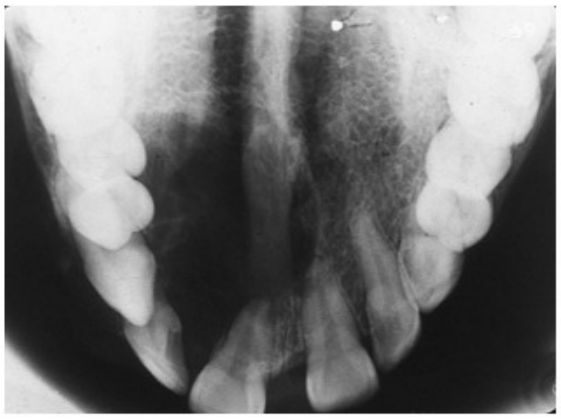


- Giant cell lesions
- Less aggressive & destructive than in other bones
- **Clinically:**
  - Less common than PGCG
  - Majority: 10-30 ys, F>M

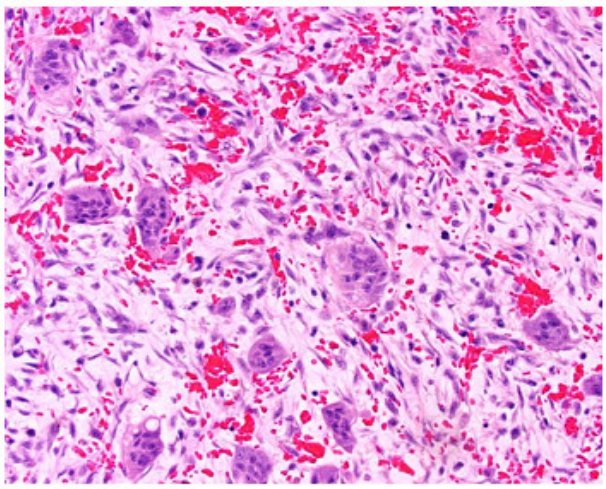
- Mand > Max, Anterior
- 75% in Mand & crossing midline
- Expansion
- ± Perforation & root resorption



- **Rx:**
  - Cyst-like radcy w expansion
  - "Soap-bubble" appearance
  - Displacement & occasional resorption of roots

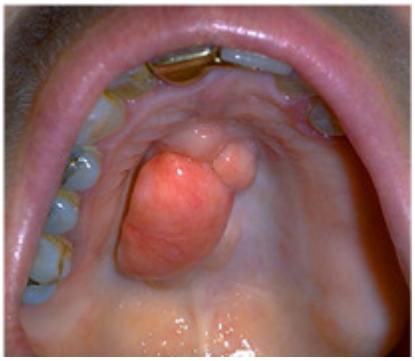


- **Hist:**
  - Giant Cs, mononuclear Cs, FV stroma
  - Hemosiderin, extravasated RBCs
  - Strands of collagen w Osteoid or bone
  - Aggressive lesions
- **Aetiology?**

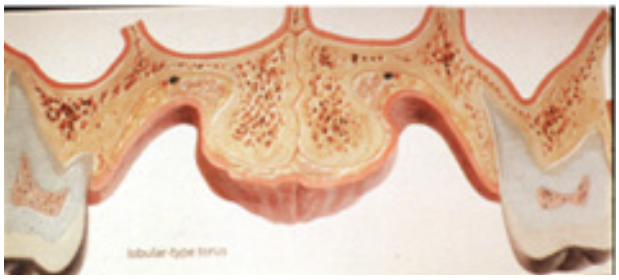


Torus/exostosis:

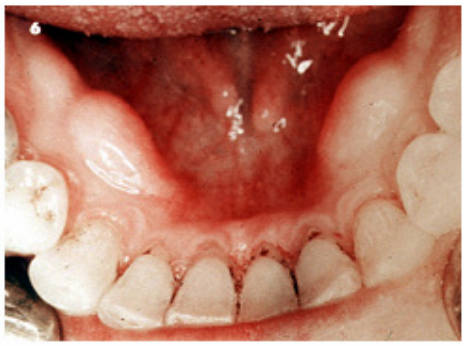
- Nodular, non-neoplastic growth of bone
- Developmental, some AD
- **Torus palatinus:**
  - Develops after puberty in susceptible pts
  - Grows slowly over enter life



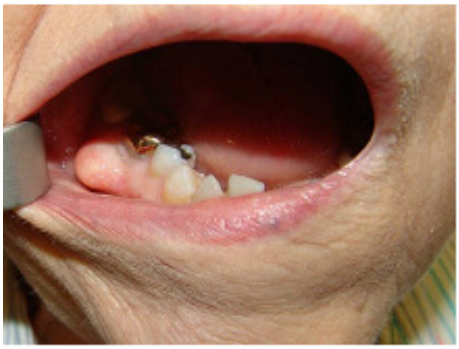
- Rounded, symmetrical, can become large & pedunculated
- Thin mucosa
- **Denture, speech, O.H**



- **Torus mandibularis:**
  - Less common
  - Lingual to premolar
  - Frequently bilateral
  - Usually multiple-lobed
  - Tongue movement, denture, O.H



- **Hist:** cortical bone ± cancellous bone
- Buccal alveolus of Max in molar region



✉ Bone tumours:

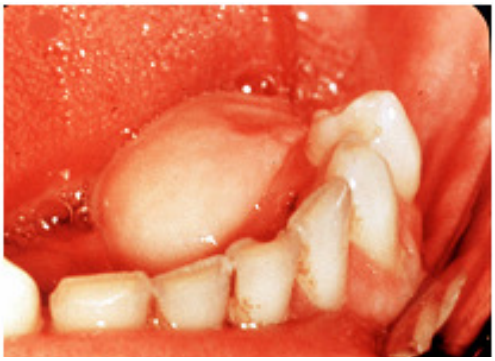
- **Classification:**

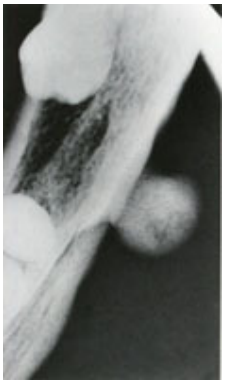
- **Bone-forming tumours:**
  - **Benign:** osteoma & osteoblastoma
  - **Malignant:** osteosarcoma
- **Cartilage forming tumours:**
  - **Benign:** chondroma
  - **Malignant:** chondrosarcoma
- **Marrow tumours:** myeloma
- **Fibrous tumours:**
  - **Benign:** cemento-ossifying fibroma

- **Tumour-like lesions in bone:** Langerhans cell histiocytosis, haemangioma
- **Metastatic tumours**

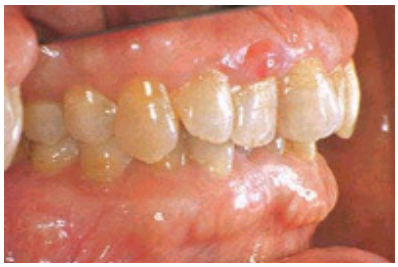
⌦ Osteoma:

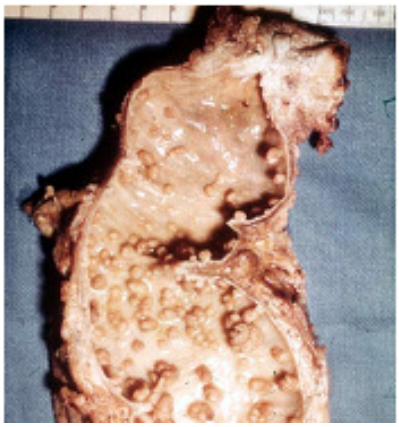
- Benign & slow growing
- Mand> Max
- Single or multiple
- Superficial or intraosseous

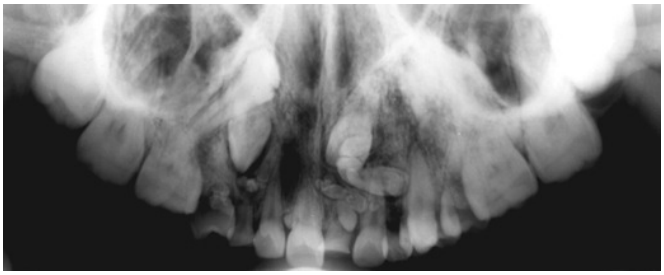




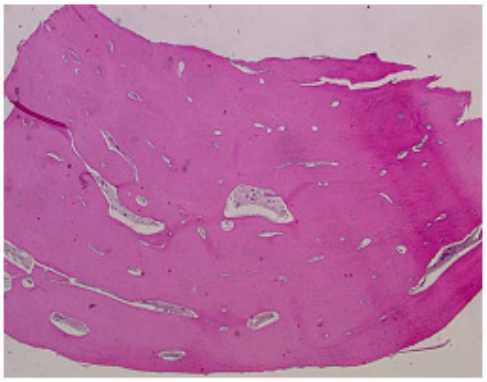
- **Gardner Syndrome:**
  - ➢ AD
  - ➢ Intestinal polyps
  - ➢ Unerupted normal & supernumerary teeth
  - ➢ Fibromas of skin
  - ➢ Epidermal/sebaceous cysts

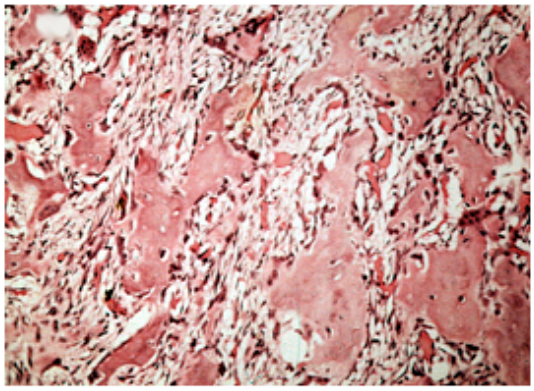






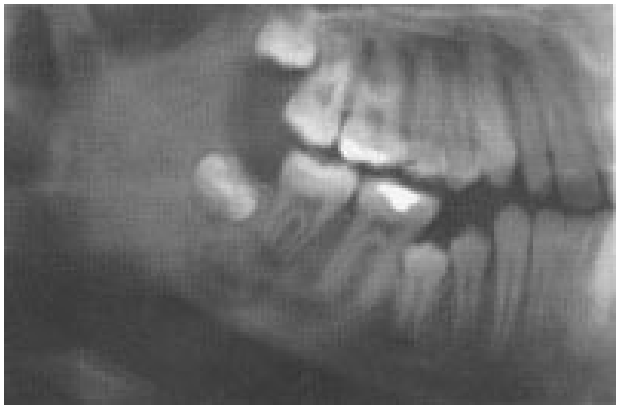
- **Hist:**
  - ➢ Compact vs. cancellous





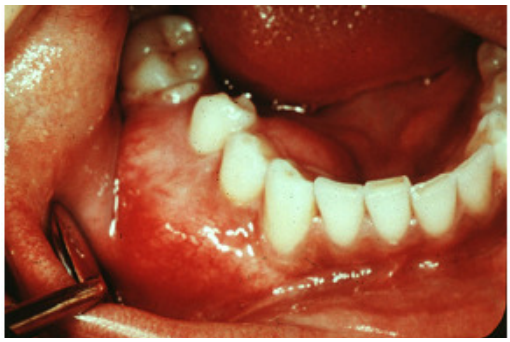
⌦ Osteoblastoma:

- Rare
- Swelling & pain
- Rx: rounded, w-d w central radcy or speckling
- **Hist:** osteoblasts, MNGC, Osteoid & FV stroma

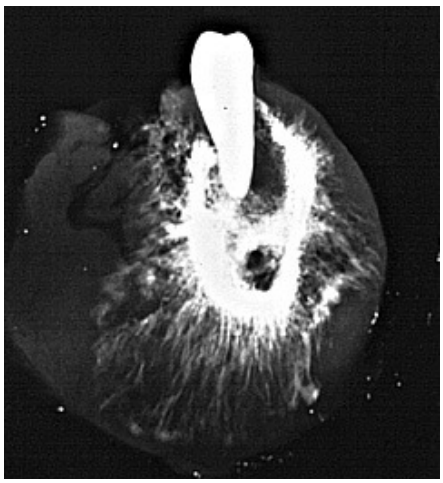


⌦ Osteosarcoma:

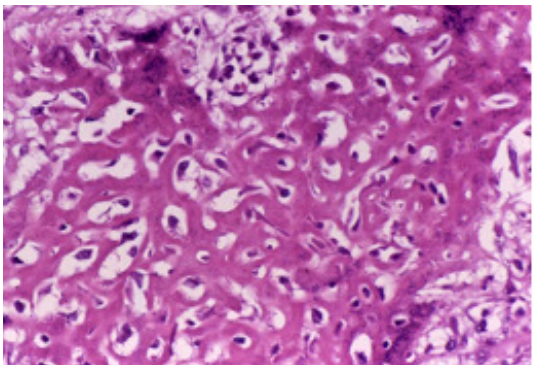
- Most common bone sarcoma
- Long bones, 7% H & N
- Mand > Max, 10 ys later
  - ➢ Bony-hard swelling
  - ➢ W or without pain
  - ➢ Loosening of teeth, paraesthesia
  - ➢ Trismus
  - ➢ Nasal obstruction & eye symptoms



- **Rx:**
  - ➢ Variable
  - ➢ **Osteolytic tumours:** irregular radcy
  - ➢ **Sclerotic type:** irregular radio-opacity
  - ➢ **"Sun-ray"** appearance
  - ➢ PL

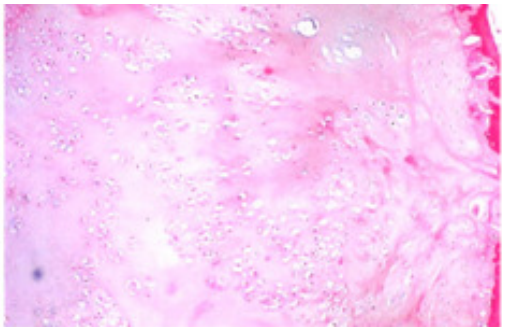


- **Hist:**
  - ➢ Osteoid
  - ➢ Fibroblastic type, chondroblastic type
- **Prognosis:** osteoblastic, less metastasis in jaws



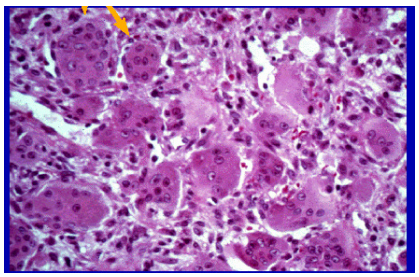
⌦ Chondroma & Chondrosarcoma:

- Ant Max & post Mand, symphysis, condyle, coronoid



- **Hist:**
  - ➢ Chondroma: mature cartilages
  - ➢ Chondrosarcoma:
  - ➢ Calcifications
- **Clinically:** malignant → pain, loosening of teeth

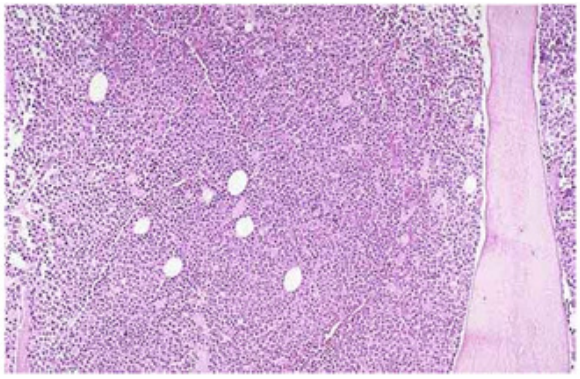
⌦ Giant-cell tumour:



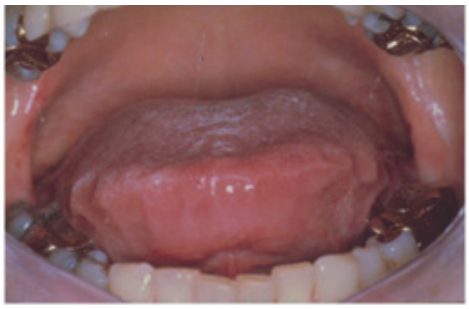
- Ends of long bones
- Aggressive & locally invasive W ↑ LRR ± metastasis
- **Hist** = CGCG
  - ➢ Uniform distribution of giant Cs
  - ➢ No Osteoid or bone
- Older age group

⌦ Myeloma:

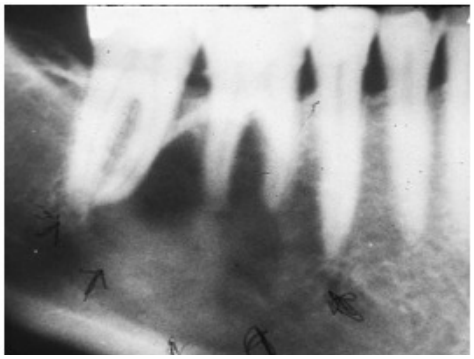
- Differentiated B lymphocytes or plasma Cs win bone marrow
- **Solitary plasmacytoma**
- Jaw or oral soft tissues
- 50-70 yrs
- Large amounts of a single homogenous type of Igs
- **Bence-Jones proteins**
- Multiple foci of bone destruction, bone pain, anaemia, thrombocytopenia
- Infection
- Hypercalcaemia
- Proteinurea
- Bones w red marrow
- **Jaw lesions:** Mand > Max, S&S

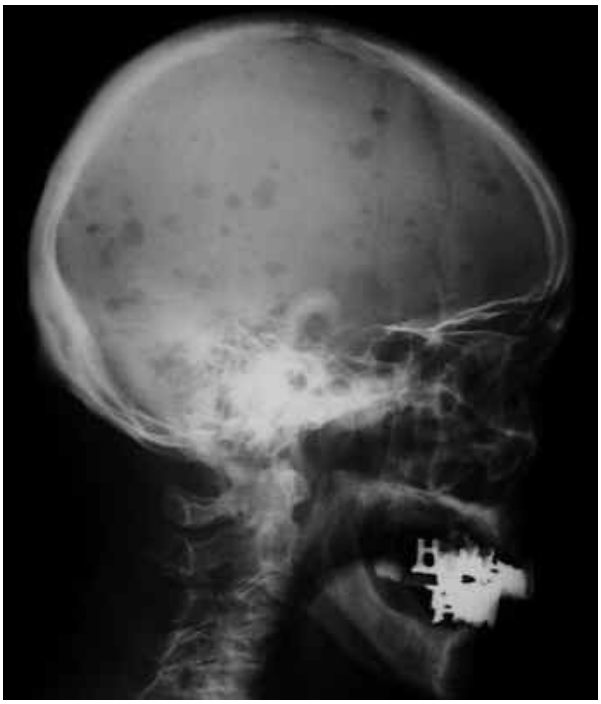


- Macroglossia

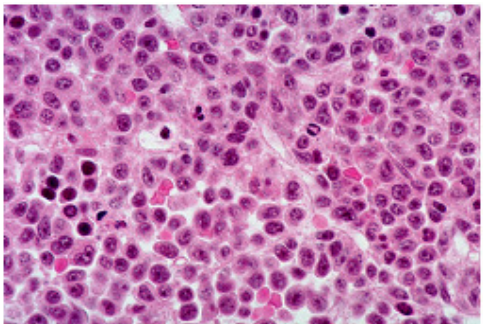


- **Rx:** w-d, round/oval punched-out radices





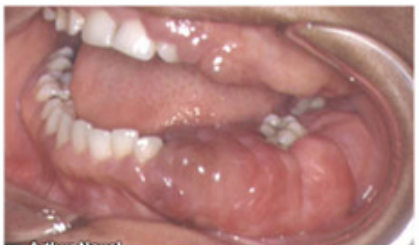
- **Hist:** sheets of plasma Cs, Immunohistochemistry



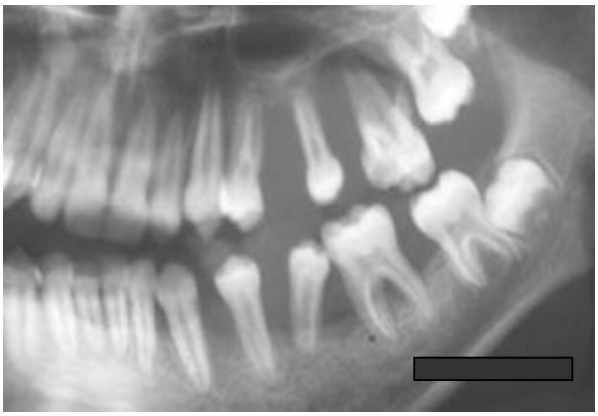
⌦ Langerhans cell histiocytosis:

- Langerhans cells
- **3 forms:**

1. Unifocal eosinophilic granuloma (Chronic focal LCH):



- ➢ < 20 yrs, M > F
- ➢ Cranium, jaws, ribs & long bones, Mand>Max
- ➢ **Jaws:** localized bone destruction w swelling & often pain
- ➢ **Rx: "floating in air"**
- ➢ Spontaneous regression, curettage, excision or Rxd
- ➢ → Multifocal lesion



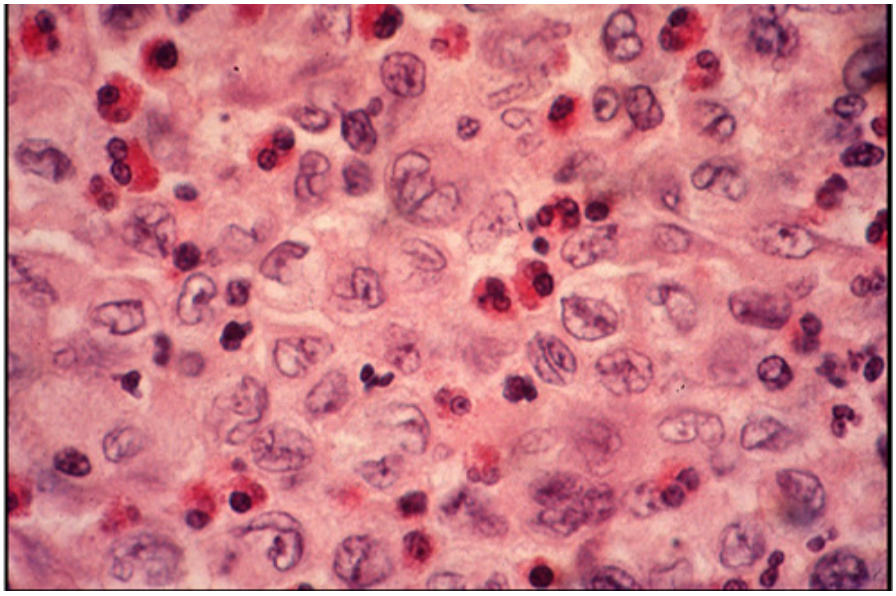
2. Multifocal eosinophilic granuloma (chronic disseminated LCH):

- ➢ Several bones & often other organs
- ➢ Skull
- ➢ Jaws
- ➢ ± Liver, spleen, LNs
- ➢ **Hand-Schuller-Christian syndrome**

3. Progressive (acute) disseminated histiocytosis:

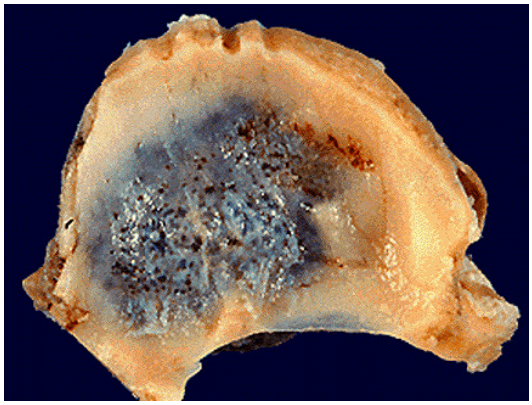
- **Letterer-Siwe disease**
- Aggressive

- Infants & young children
- Disseminated→ skin, viscera, bones
- **Clinically:** fever, malaise, ↑LNs, ↑ liver & spleen, pancytopenia
- **Rx:**
  - ➢ Osteolytic lesions
  - ➢ **Jaws:** diffuse bone destruction, floating, loosening of teeth
- **Hist:**
  - ➢ Histiocytes w pale, lobulated nuclei & eosinophilic cytoplasm
  - ➢ Eosinophils, neutrophils, lymphocytes
  - ➢ He, necrosis, fibrosis, giant Cs

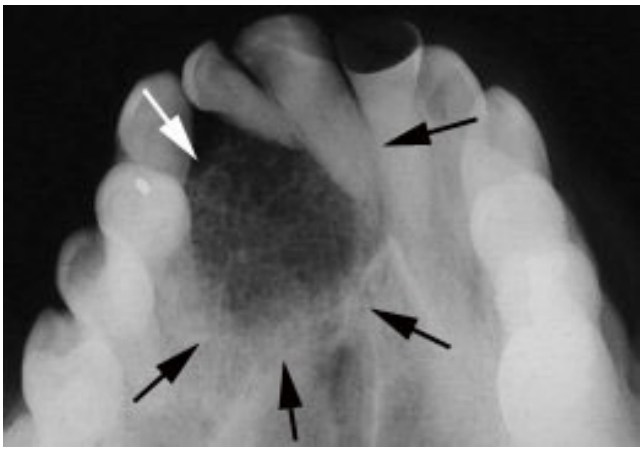


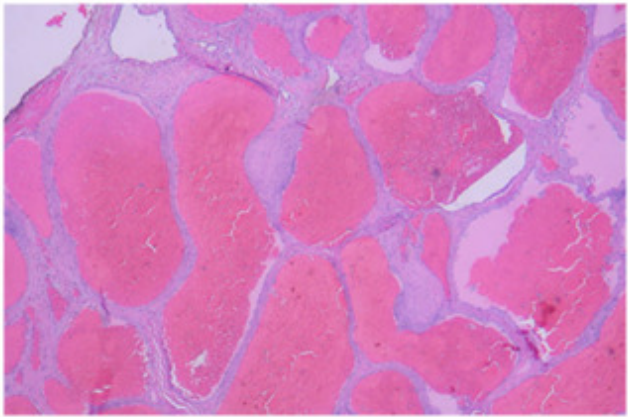
⌦ Haemangioma of bone:

- **Mand>Max**
- **Clinically:**
  - ➢ Progressive painless swelling
  - ➢ Pulsatile
  - ➢ Loosening, bleeding
  - ➢ Hge



- **Rx:** osteolytic defect, multilocular
- **Hist:** usually cavernous





⌦ Metastatic tumours:

- ➢ Breast, bronchus & kidney
- ➢ Bone & soft tissue
- ➢ Mand>Max
- ➢ S & S
- ➢ Osteoblastic tumours