

Bone Diseases

🏠 Inherited & developmental disorders:

📄 Osteogenesis Imperfecta:

- Excessive fragility of bone
- Defect in synthesis of type I collagen
- Inadequate formation of bone → generalized osteoporosis
- Slender and fracture tendency
- Dwarfism
- Thin skull and bulge over ears
- Thin sclera → blue
- ± deafness, joint hypermobility, heart valves defects

• 4 main types:

- **Type I:** AD, BS, ± DI
- **Type II:** AD, lethal
- **Type III:** AD or AR, progressive deformity, DI
- **Type IV:** AD, WS, ± DI

• Dental aspects:

- Dentinogenesis imperfecta
- Extractions



📄 Osteopetrosis:

- Solid dense but brittle bones
- Inactivity of osteoclasts

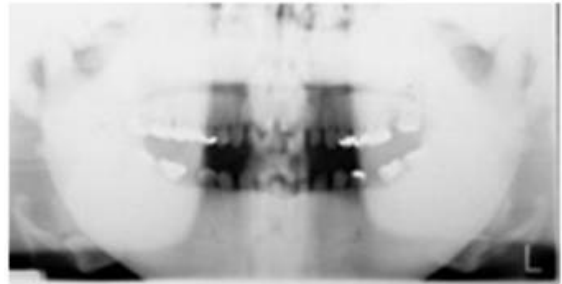
- Excessive bone formation but woven
- Fracture
- Anaemia

- **Rx:**

- Generalized ↑ in bone density
- Cortical = medullary
- Marked radio-opacity of skull base
- Greatly reduced sinuses

- **Dental aspects:**

- Invisible roots
- Unerupted teeth
- Osteomyelitis

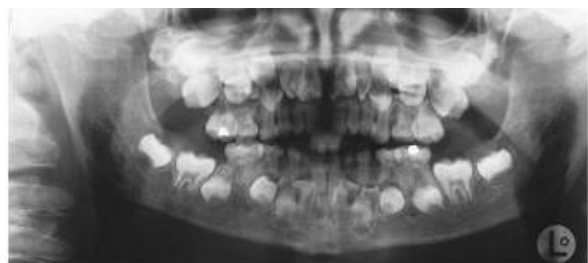
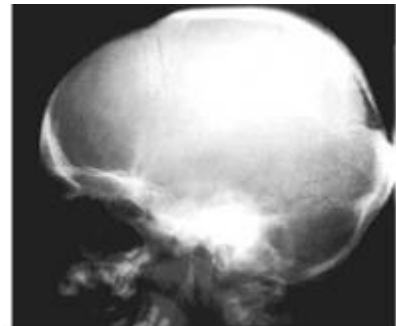


📄 **Cleidocranial dysplasia:**

- AD/Sporadic
- Face, skull & clavicles
- Frontal & occipital bossing, open fontanells & sutures
- Underdeveloped midface, depressed maxilla & nasal bridge
- Normal size mandible
- Partial or complete absence of clavicles

- **Dental aspects:**

- Retention of primary teeth
- Multiple unerupted teeth
- Multiple supernumerary teeth & dentigerous cysts
- Thin roots



📖 **Achondroplasia:**

- Most common genetic skeletal disorder
- Short-limbed dwarfs
- Cartilage proliferation in epiphyses & skull base
- Head & trunk of normal size
- Defective middle 1/3 of face
- Malocclusion



📖 **Fibro-osseous lesions:**

◆ **Definition:**

◆ **Classification:**

A. Osseous dysplasia

- **Fibrous dysplasia**
 - **Monostotic**
 - **Polyostotic**
- **Cemento-osseous dysplasia**
 - **Periapical cemental dysplasia**
 - **Focal cemento-osseous dysplasia**
 - **Florid cemento-osseous dysplasia**

B. Benign neoplasia

- **Cemento-ossifying fibroma**

🔗 **Fibrous dysplasia:**

◆ **Monostotic FD:**

- 80% of cases
- One bone
- Max > Mand



- Craniofacial FD
- Childhood, arrest in adulthood
- **Clinically:**
 - ✍ Not w-d smooth, round, painless swelling
 - ✍ Disturbs function & cases malocclusion
 - ✍ Extension
 - ✍ Mand



- **Rx:**
 - ☐ Radiolucent → radio-opaque
 - ☐ “Ground glass” or “Orange peel” pattern
 - ☐ Border
 - ☐ Displacement of roots, obscured lamina dura



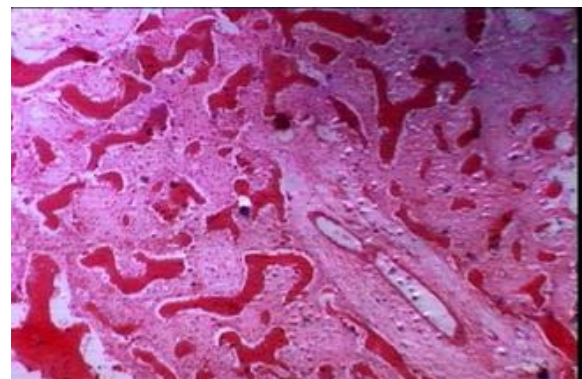
◆ **Polyostotic FD:**

- Expansion in multiple bones
- Segmental or one side
- F>M
- **Albright syndrome:** FD + café-au-lait spots + endocrine defects

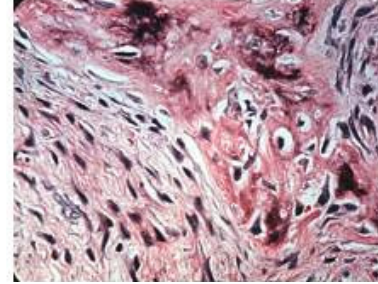


🏠 **Hist:**

- **Initially:** cellular CT replacing normal bone
- **Gradually:** deposition irregular, delicate woven bone = Chinese characters
- Spherical calcification
- Osteoblasts
- Osteoclasts-like giant Cs
- Border



- **Late stage:** ↓ in FCT and change of woven to lamellar bone



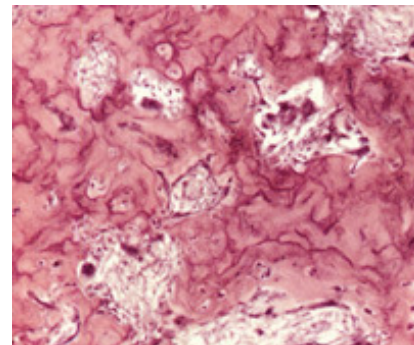
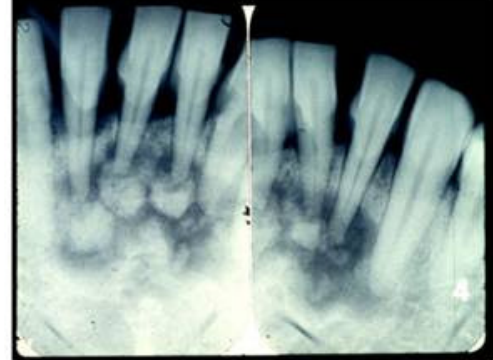
📖 **Blood chemistry:** ± ↑ in ALP in PFD

📖 **Aetiology:**

- ?, developmental
- MFD ≠ → PFD
- Fibrosarcoma
- Cosmetic surgery

💧 **Periapical cemental dysplasia:**

- Definition:
- Middle-age F, African-Americans
- Below apices of mandibular incisors
- Vital
- **Dx:** incidental
- **Rx:**
 - W-d radcy below apices separated by normal PL
 - Increasing radio-opacity
 - Thin radiolucent margin
- **Hist:**
 - Cellular CT & then gradual calcification



💧 **Florid cemento-osseous dysplasia**

- Extensive PCD
- **Clinically:**
 - Same group of pts
 - Asymptomatic unless infected

➤ Expansion

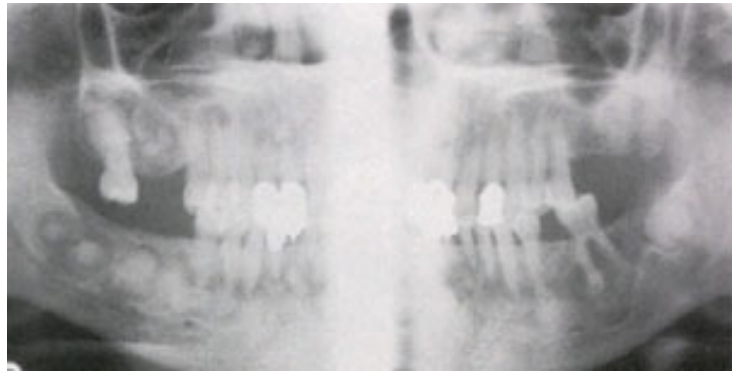
• **Rx:**

➤ Radio-opaque, irregular masses

➤ Frequently symmetrical

➤ May involve 4 quadrants

• **Hist:** = PCD



◆ **Cemento-ossifying fibroma:**

• **Clinically:**

➤ Similar to FD histologically

➤ Mand molar & premolar region

➤ Slowly growing, painless swelling

➤ 20-40ys

• **Rx:**

➤ W-D radcy

➤ Gradual calcification

➤ Radiolucent rim

• **Hist:**

➤ Cellular FCT

➤ Trabeculae of bone & numerous cementicles

➤ Outer zone of FCT

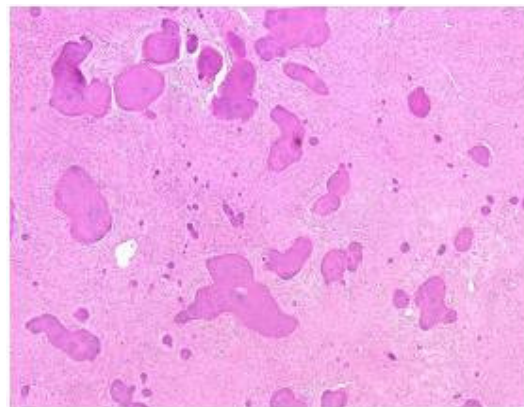
• **Juvenile ossifying fibroma:**

➤ Faster growing

➤ < 15 ys

➤ Richly cellular & mitotically active FCT w trabeculae of woven bone

➤ ↑ LRR

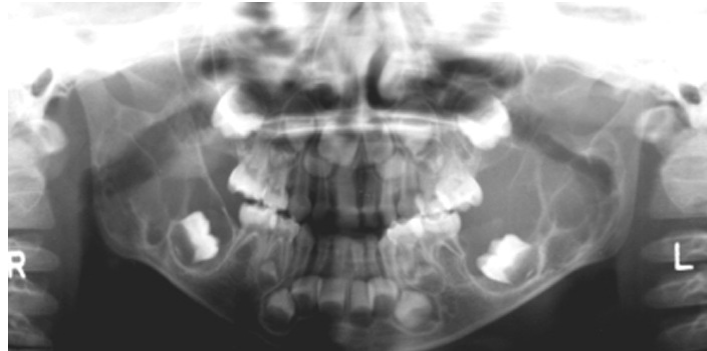


◆ Cherubism:

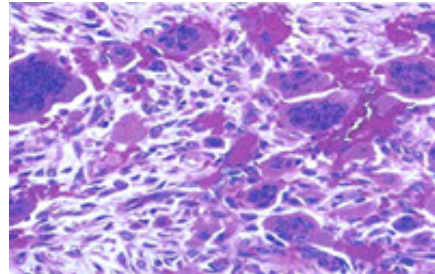
- Hereditary form (AD)
- **Clinically:**
 - Only jaws
 - Mand, posterior, bilateral & symmetrical
 - Max tuberosity
 - Swelling (2-4y) → rapid growth till 7y → static till **puberty** → regress
 - Teeth



- **Rx:**
 - Multilocular radcy w expansion
 - Radio-opaque structures
 - Ground glass



- **Hist:**
 - Giant cell lesion
 - ↑ ALKP
 - Metaplastic bone



◎ Inflammatory diseases of bone:

▢ Osteitis, osteomyelitis, periostitis

🔔 Alveolar osteitis (Dry socket):

- Most frequent painful complication of extraction
- Follows 1-3% of all extractions
- Esp. impacted Mand 3rd molars
- **Aetiology:**
 - Failure of clot formation or clot loss
 - Excessive trauma



➤ Limited bld supply: radiotherapy

➤ LA, OCP

➤ Osteosclerosis disease

• **Clinically:**

➤ Deep-seated, severe throbbing pain

➤ Starts a few days after extraction → ≥ 1-2 wks

➤ Red, tender mucosa

➤ Socket: no clot, whitish dead bone

• **Healing:**

🔔 **Focal sclerosing (condensing) osteitis:**

• Bony reaction to low-grade periapical inflammation

• **Clinically:**

➤ Lower 6

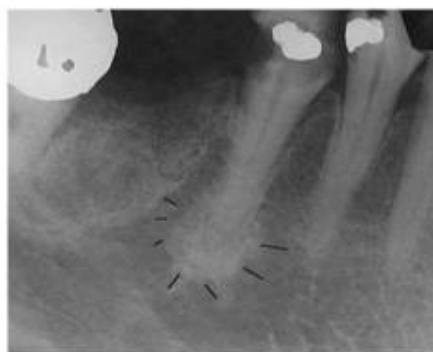
➤ < 20y

➤ Asymptomatic

• **Rx:**

➤ Radio-opaque area below apex

• **Hist:** ↑ number & thickness of bone trabeculae, lymphocytes, fibrous marrow



🔔 **Osteomyelitis:**

• Uncommon

• **Predisposing factors:**

1. **Local:** fracture, Rxd, Osteosclerosis disease

2. **Systemic:** acute leukemia, DM, alcohol, nutrition, anaemia, immunity

⊗ **Suppurative osteomyelitis:**

• Acute vs. chronic

- Source of infection

- Polymicrobial

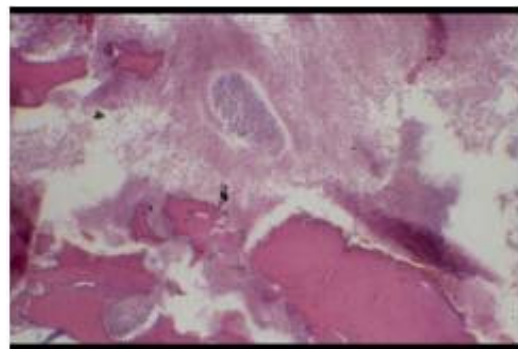
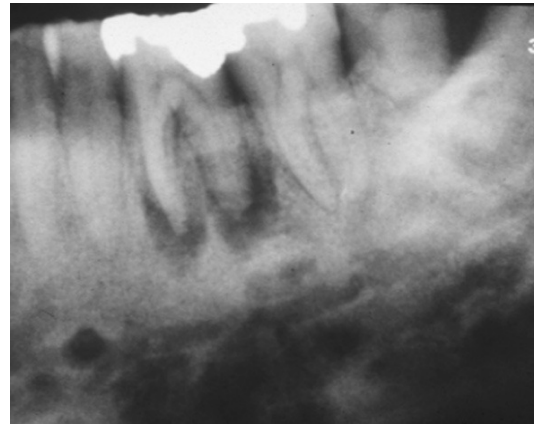
- **Clinically:**

- Mandible
- Severe, throbbing, deep-seated pain
- Swelling (oedema)
- Red, swollen & tender gingiva, pus from gingival margin
- Tender, loose teeth
- Trismus & dysphagia
- Enlarged tender LNs
- Anaesthesia or paraesthesia

- **Rx:** moth-eaten (10-14 days)

- **Hist:**

- Acute inflammation, necrosis & suppuration
- Extending in the marrow spaces
- Sequestra
- Sinus
- Periosteum



⊗ **Sclerosing osteomyelitis:**

- Superimposition of infection on cemento-osseous dysplasia

⊗ **Chronic osteomyelitis w productive periostitis (Garre's osteomyelitis):**

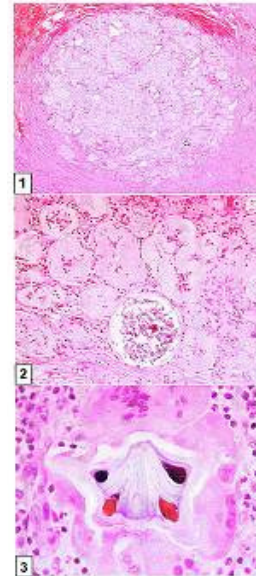
- Uncommon
- Response to low-grade infection
- Reactive subperiosteal new bone formation

- **Clinically:**

- Lower 6
- Young adults
- Mild pain
- Non-tender, hard swelling along lateral border or lateral aspect
- **Rx:** occlusal → “Onion skin”
- **Hist:** irregular bony trabeculae with scattered CICI in fibrous marrow

⊗ **Chronic periostitis associated w hyaline bodies:**

- “Pulse granuloma” or “Vegetable granuloma”
- Vegetable material via socket, flap, RC, breach in mucosa
- **Hist:**
 - Thickening of periosteum
 - Hyaline ring-shaped bodies
 - FB giant Cs



⊗ **Osteoradionecrosis:**

- Radiation
- Mandible
- Endarteritis obliterans → non-vital bone
- Infection → extensive osteomyelitis

