Principles of Radiographic interpretation

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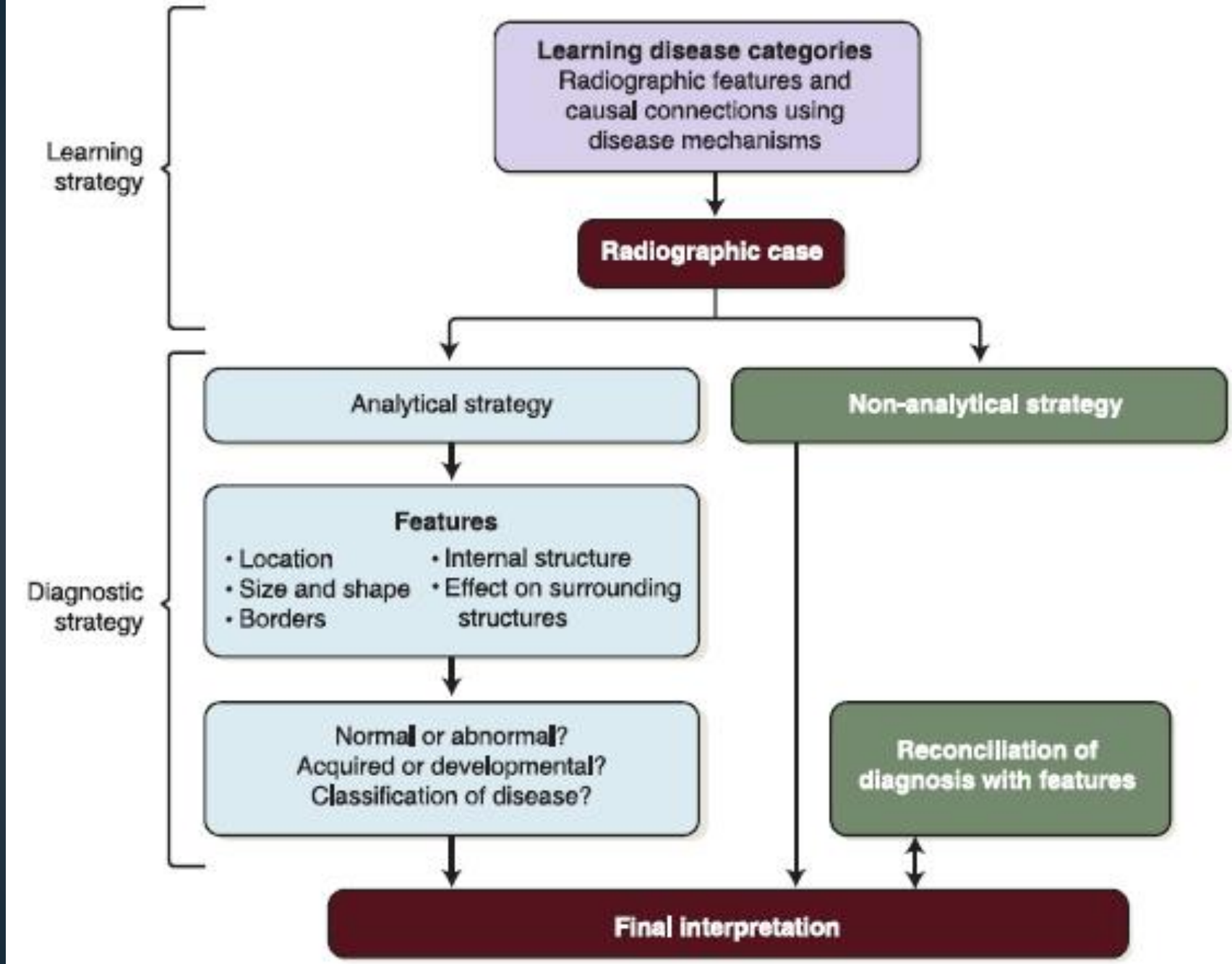
Visual search

- The ability to find and identify abnormal patterns
- Knowledge of variations of normal anatomic landmarks

Analysis of abnormal findings

- Analytic (systematic) method
- Non-analytic method


Learning strategy
Learning disease categories
Radiographic features and causal connections using disease mechanisms
Radiographic case
Diagnostic strategy
Analytical strategy
Non-analytical strategy
Features
• Location
• Size and shape
• Borders
• Internal structure
• Effect on surrounding structures
Normal or abnormal?
Acquired or developmental?
Classification of disease?
Reconciliation of diagnosis with features
Final interpretation

Systematic strategy

- Step 1: localize abnormality
  - Localized or generalized
  - Position in the jaws
  - Single or multifocal
  - Size

Step 1: localize abnormality

- Localized or generalized
  - Generalized: affects all the osseous structure of the maxillofacial region (metabolic, endocrine)
  - Localized: uni or bilateral
    - Normal anatomies: usually bilateral
    - Paget & Cherubism: bilateral

Step 1: localize abnormality

- Position in the jaws
  - Determining the epicenter (point of origin):
    - Coronal to a tooth: odontogenic epithelium
    - Above the IAN canal: odontogenic tissue
    - Below the IAN canal: non- odontogenic tissue
    - Inside the IAN canal: neuro-vascular
    - Condylar region: cartilaginous lesions
    - Within the maxillary sinus: non-odontogenic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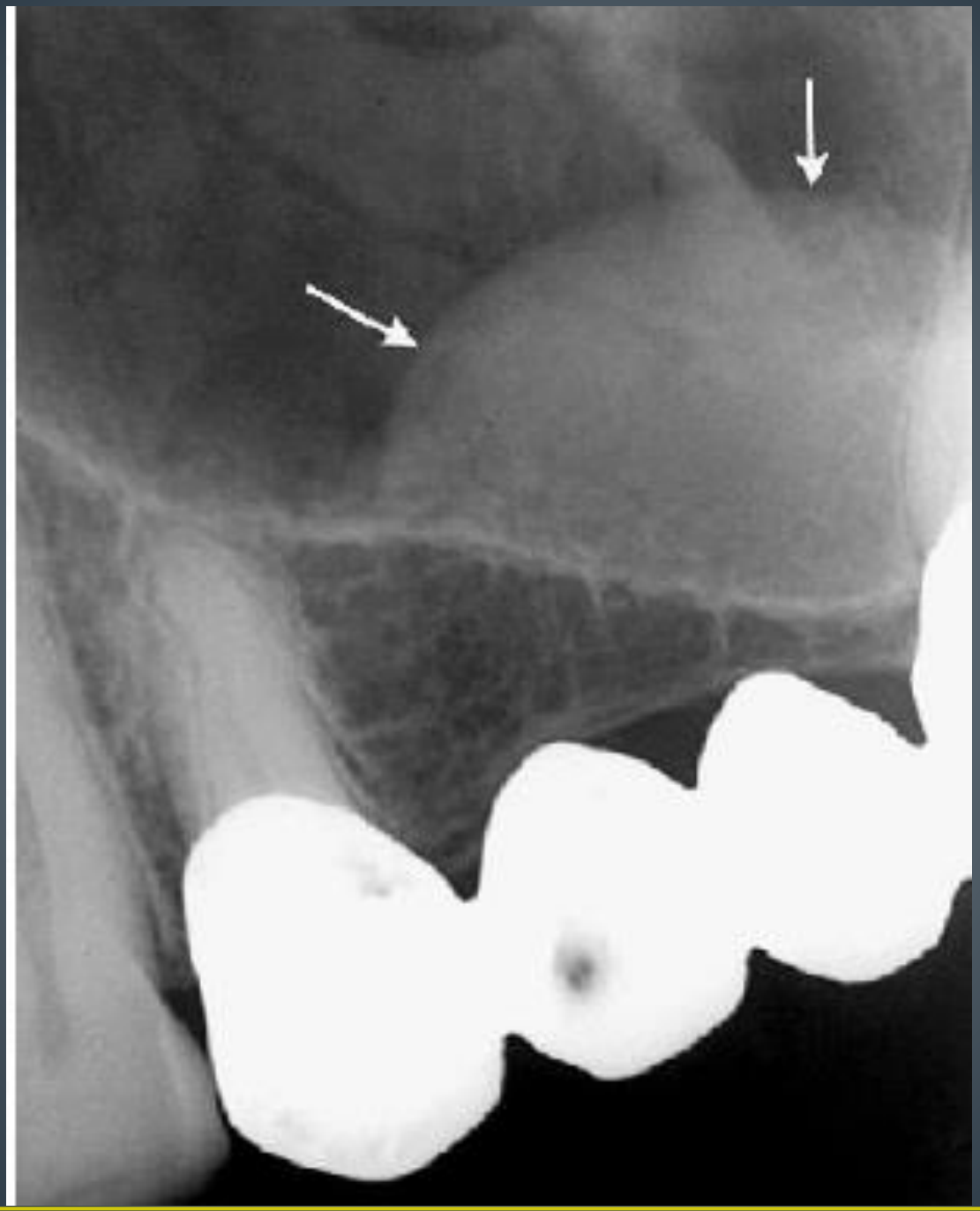

Step 1: localize abnormality

- Single or multifocal
  - Understanding the disease mechanism
  - Few lesions occur multifocal:
    - PCOD
    - OKC
    - Metastatic lesions
    - Multiple myeloma
    - Leukemia infiltrations

Step 1: localize abnormality

- Size
  - Helps in differentiating some lesions

Step 2: Assess periphery and shape

- Well defined vs. ill defined borders

Step 2: Assess periphery and shape

- Well defined borders:
  - Punched out: sharp with a very narrow zone of transition, no peripheral bone reaction, Exp: multiple myeloma
  - Corticated: thin, uniform radiopaque line of reactive bone, Exp: cysts and slow growing tumors
  - Sclerotic: thick, non-uniform reactive bone, Exp: PCOD
  - Soft tissue capsule: thin radiolucent line, related to radiopaque lesions, Exp: odontoma, cementoblastoma


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B


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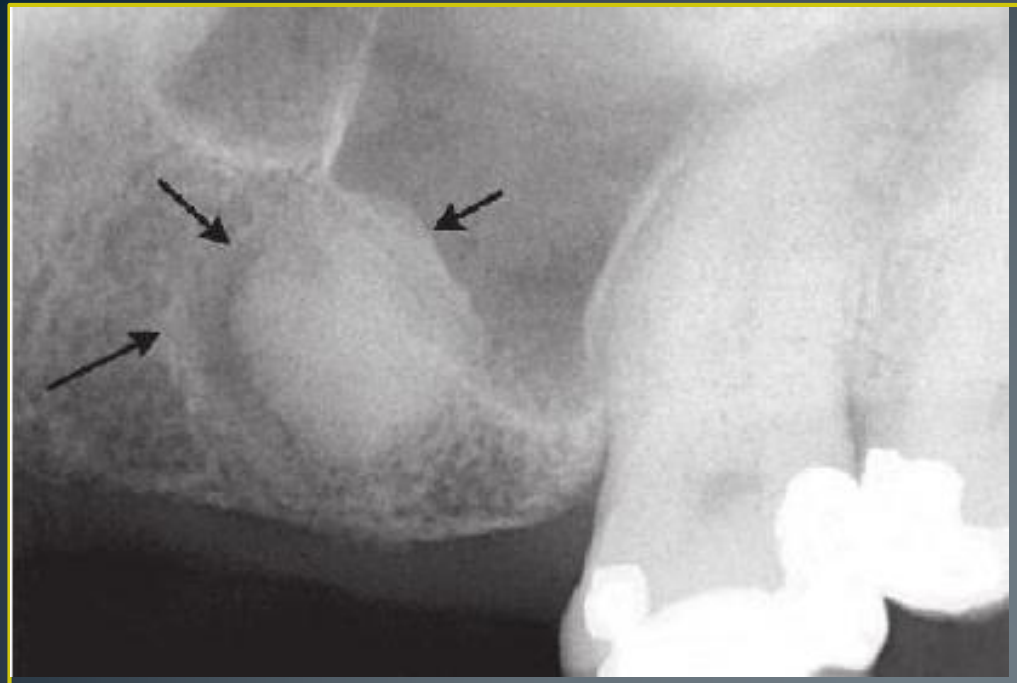
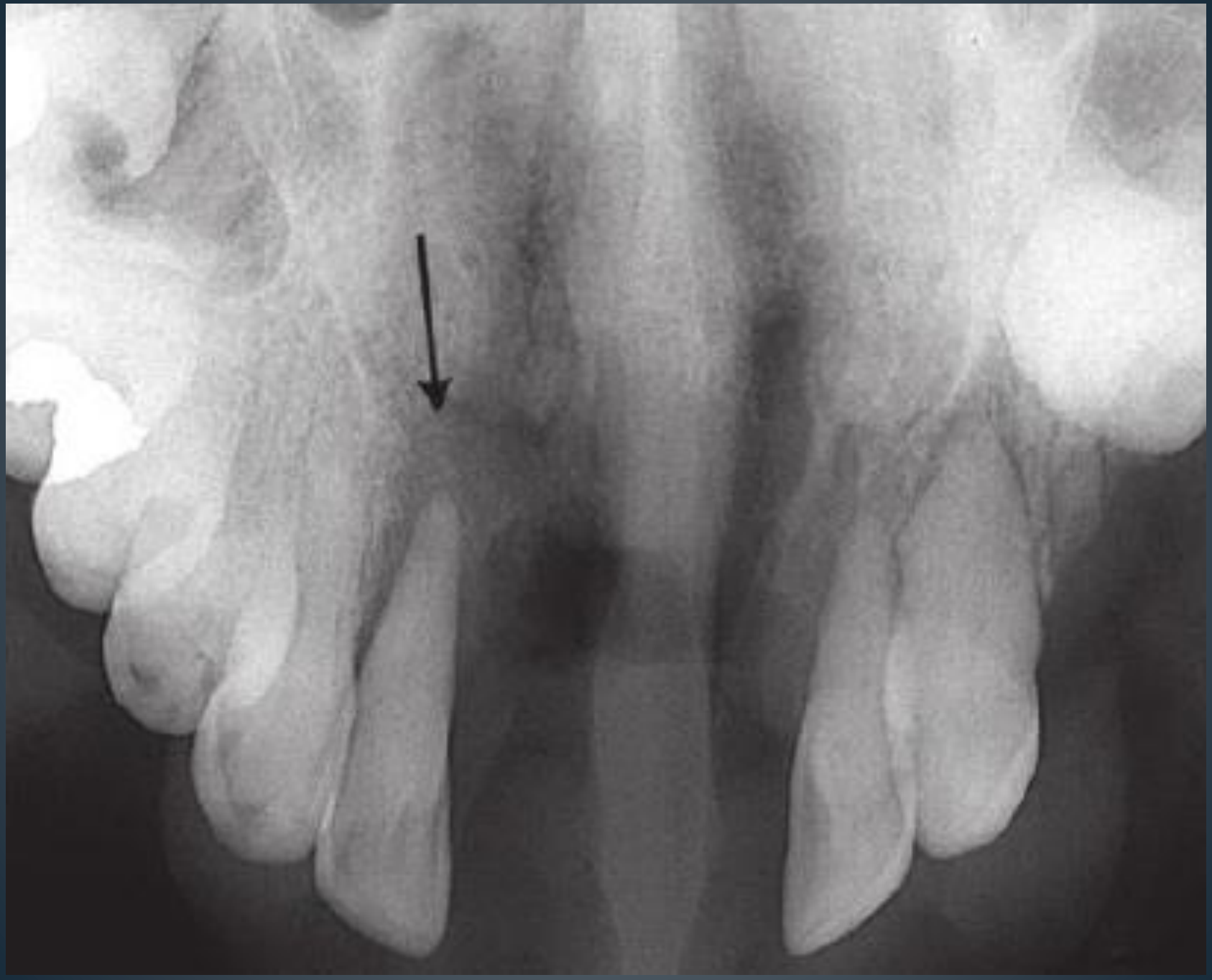


Step 2: Assess periphery and shape

- ill defined borders:
  - Blending: wide zone of transition between normal and abnormal trabecula, Exp: condensing osteitis, Fibrous dysplasia
  - Invasive: area of radiolucency representing bone destruction, permeative, finger like or bay type extensions, Exp: malignant lesions



Step 2: Assess periphery and shape

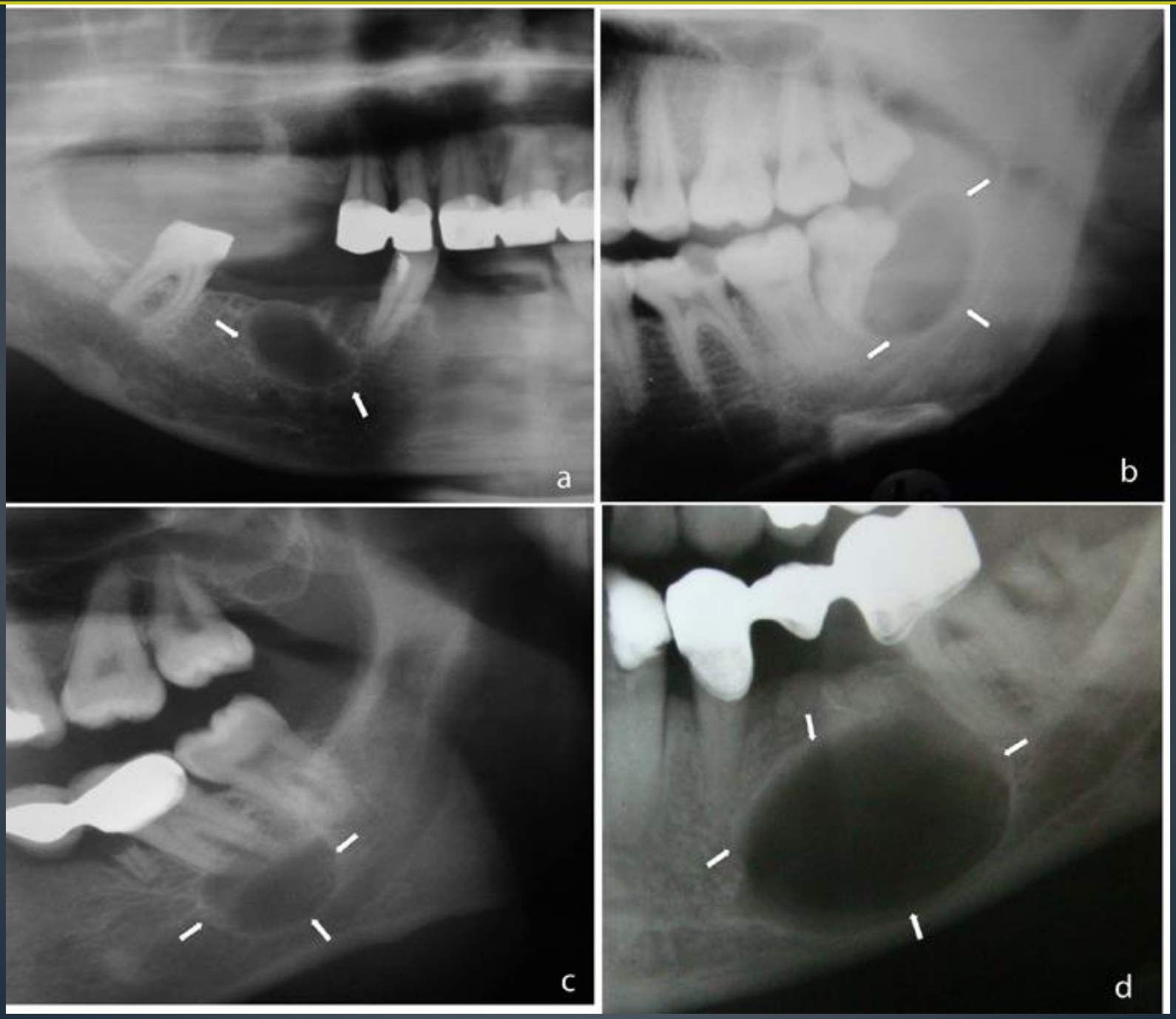
- Shape:
  - Circular, scalloped, …

Step 3: Analyze internal structure

- Totally radiolucent (cysts)
- unilocular

- Totally radiopaque (osteoma)

- Mixed radiolucent and radiopaque:
  - Abnormal trabecular pattern
  - Dystrophic calcification
  - Amorphous bone
  - Tooth structure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Step 4: Analyze effects on surrounding structures

- **Teeth, lamina dura, PDL:** directional tooth displacement, resorption, uniform or irregular widening of PDL
- **Surrounding bone reaction:** sclerotic reaction
- **IAN canal and mental foramen:** widening with or without cortex preservation
- **Outer cortical bone and periosteal reaction:** expansion, destruction, periosteal new bone formation


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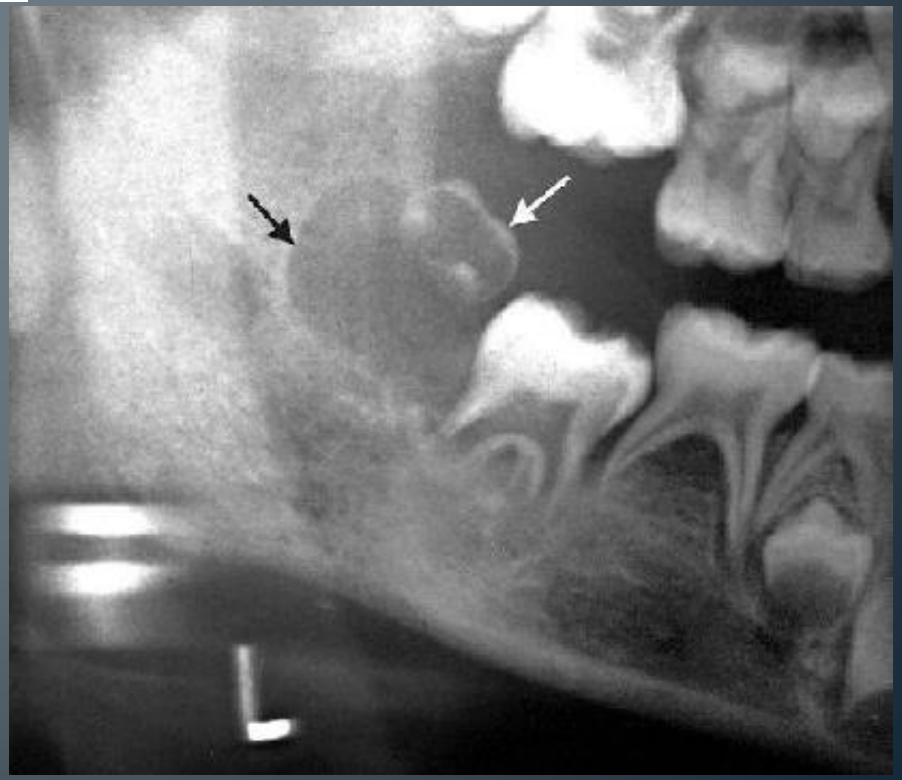

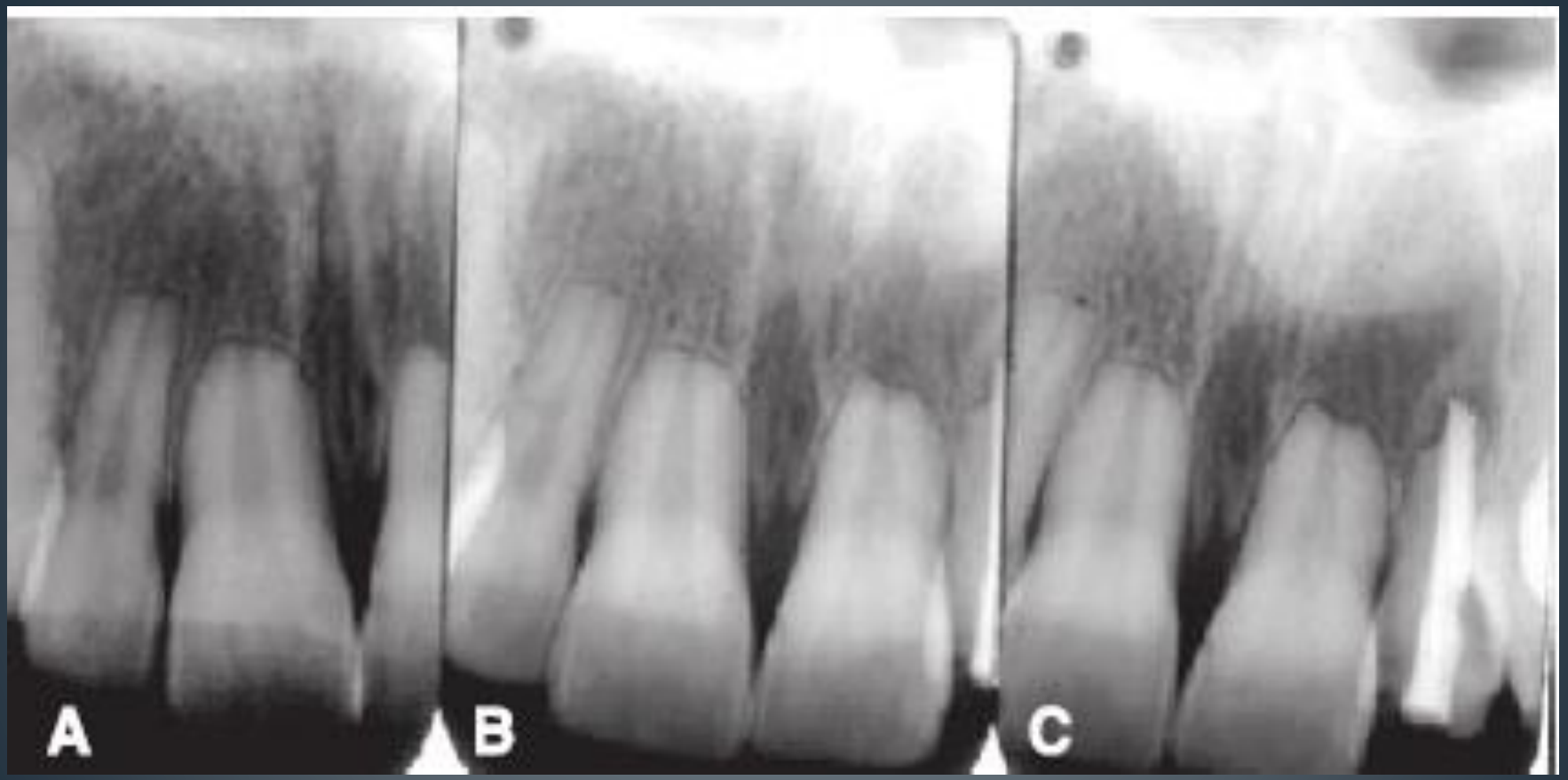
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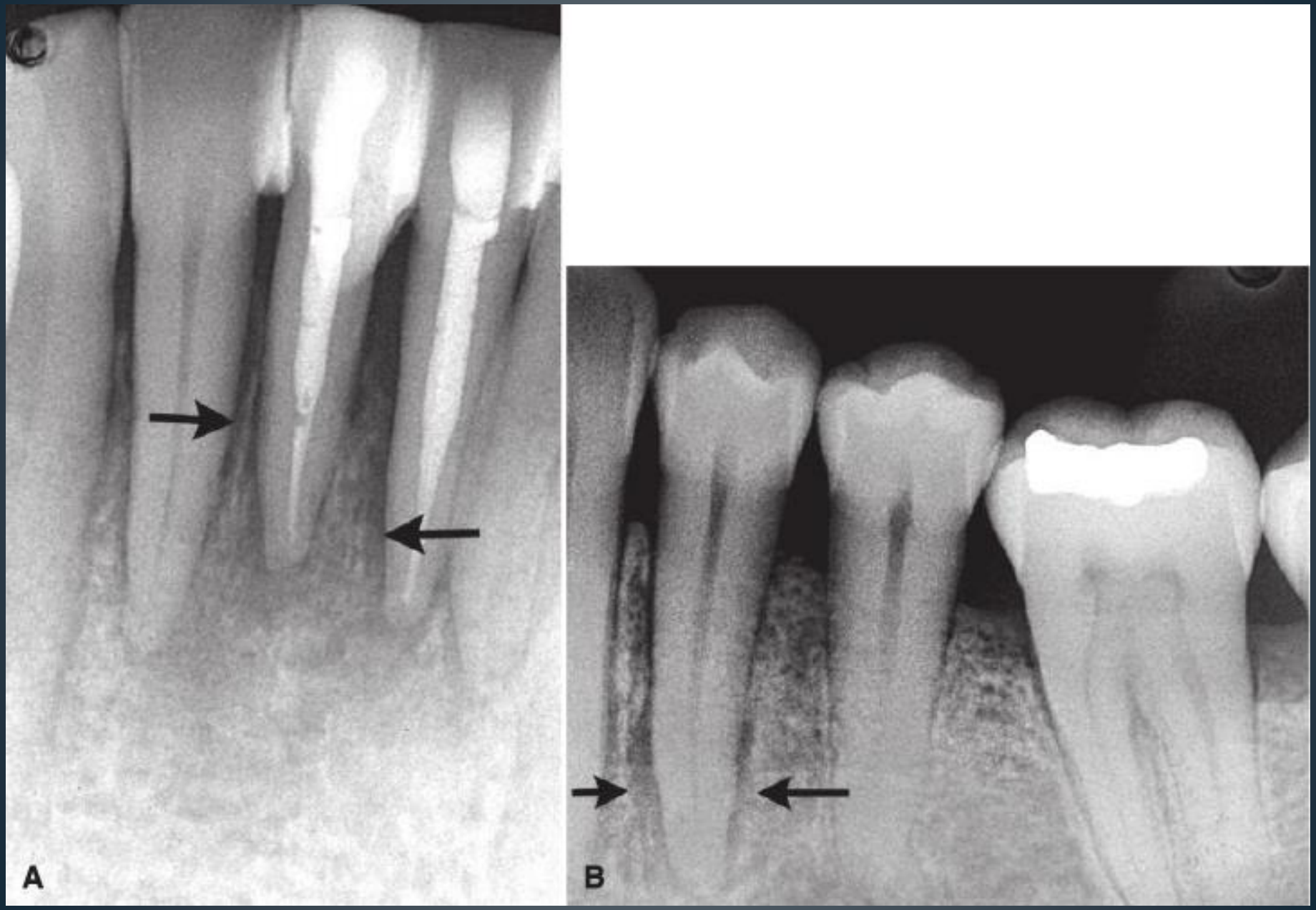
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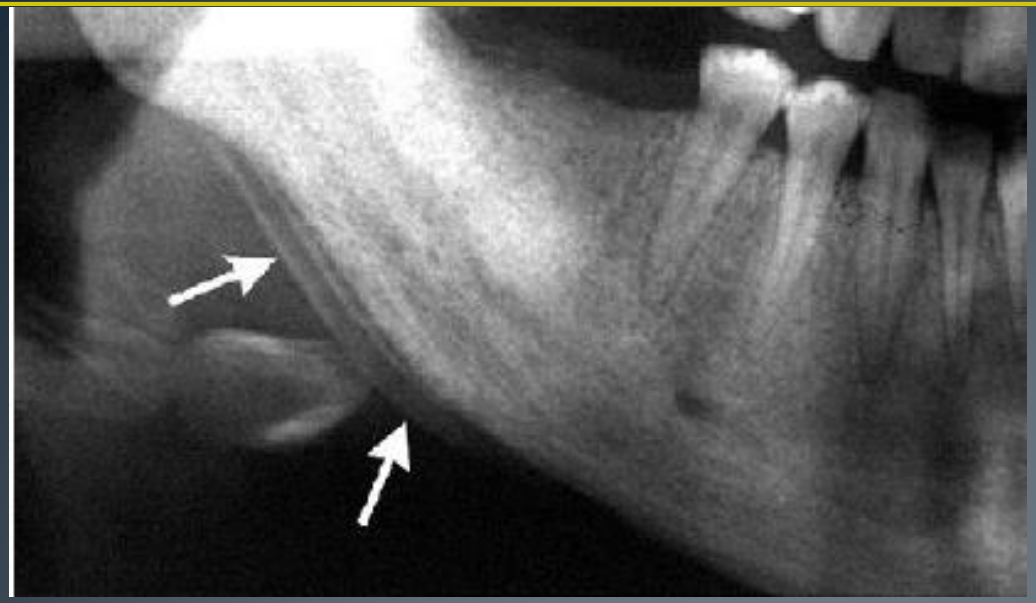

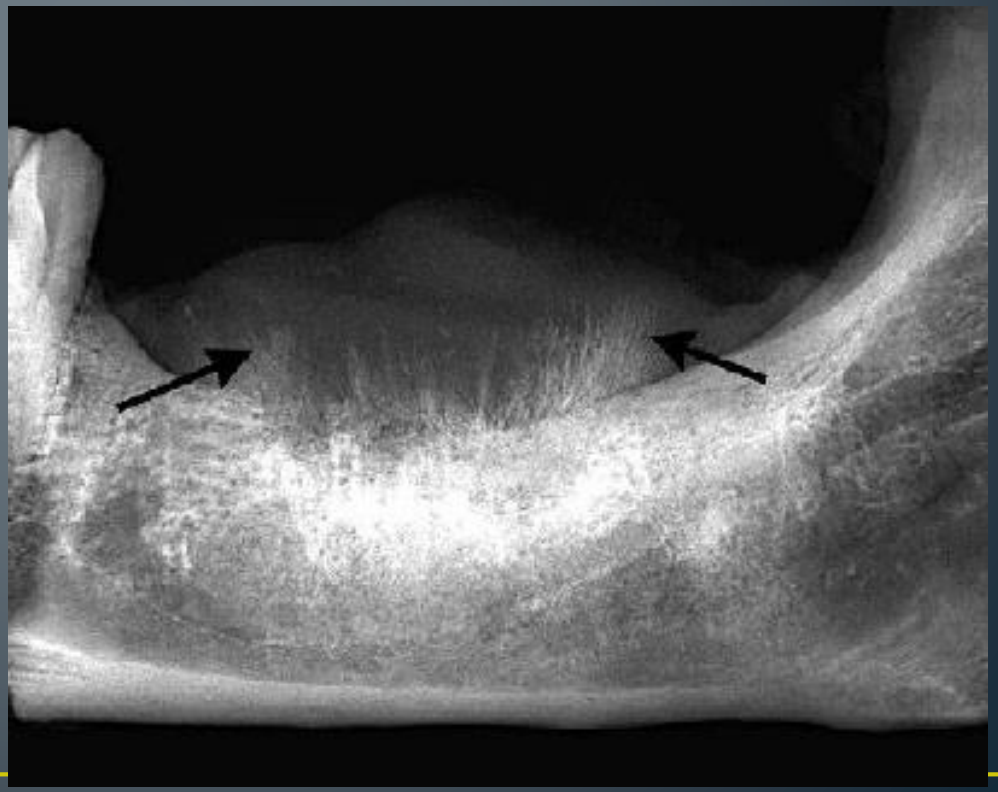

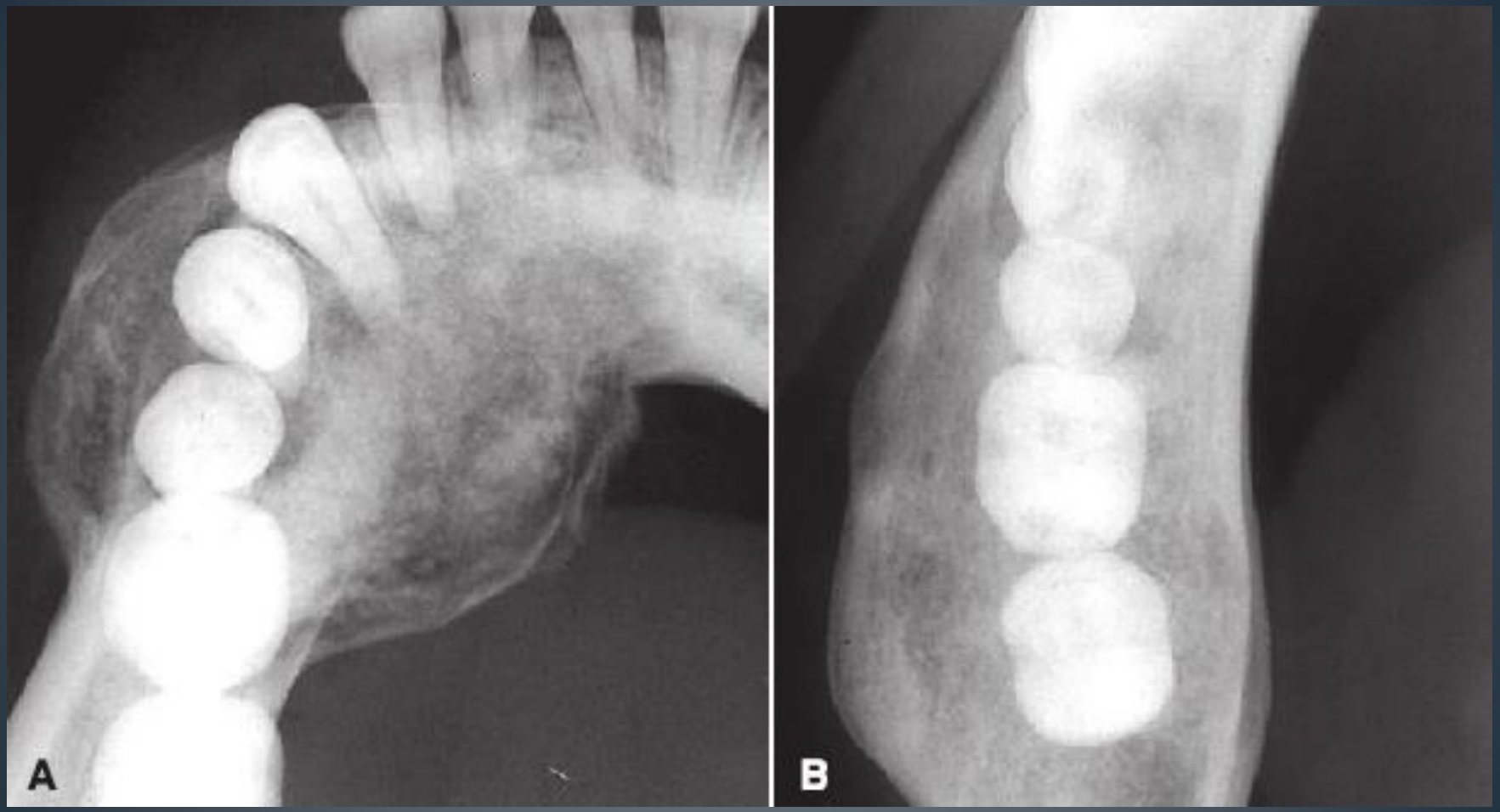
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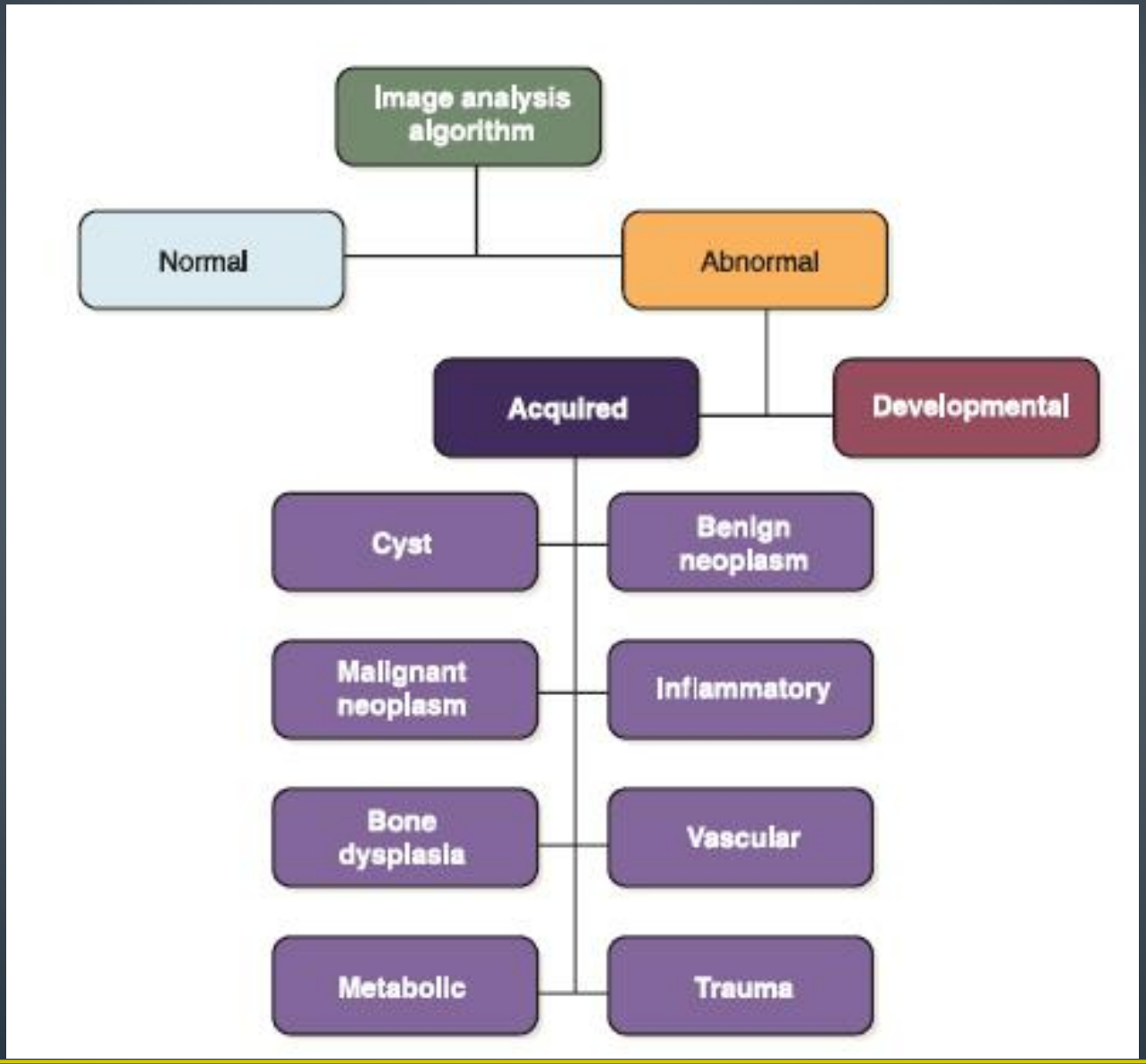
Step 5: Formulate interpretation



با سپاس از توجه شما