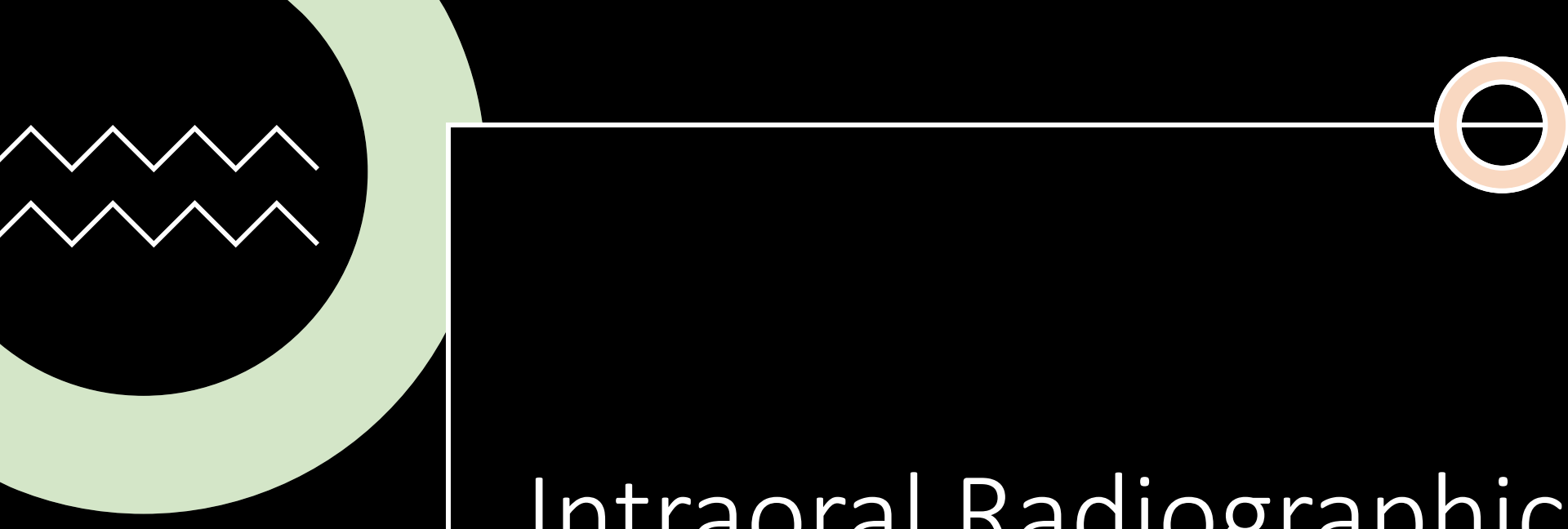




# Intraoral Radiographic Interpretation Part 2

Dr May Lam  
OMF Radiologist



You may remember from the last lecture...

# Systematic Approach

- Step 1. Teeth & Surrounding Structures
  - Count teeth
  - Tooth morphology
    - Crown – enamel, dentine, pulp chamber, etc.
    - Roots – PDL space, lamina dura, # of roots, root morphology
  - Periodontal bone
  - Other
- Step 2. Identify existing restorative therapy, endodontic therapy & orthodontic therapy
  - Assess restorative margins – presence of overhangs? Insufficient margins?
  - Presence of voids?
- Step 3. Identify & describe abnormal radiolucencies & radiopacities
  - Location
  - Size & Extent
  - Morphology & Borders
  - Effects on surrounding structures
  - Internal architecture
- Step 4. Differential diagnosis



You may remember from the last lecture...

# Systematic Approach

- Step 1. Teeth & Surrounding Structures
  - Count teeth
  - Tooth morphology
    - Crown – enamel, dentine, pulp chamber, etc.
    - Roots – PDL space, lamina dura, # of roots, root morphology
  - Periodontal bone
  - Other



You may remember from the last lecture...

# Systematic Approach

- Step 1. Teeth & Surrounding Structures
  - Count teeth
  - Tooth morphology
    - Crown – enamel, dentine, pulp chamber, etc.
    - Roots – PDL space, lamina dura, # of roots, root morphology
  - Periodontal bone
  - Other
- Step 2. Identify existing restorative therapy, endodontic therapy & orthodontic therapy
  - Assess restorative margins – presence of overhangs? Insufficient margins?
  - Presence of voids?



You may remember from the last lecture...

# Systematic Approach

- Step 1. Teeth & Surrounding Structures
  - Count teeth
  - Tooth morphology
    - Crown – enamel, dentine, pulp chamber, etc.
    - Roots – PDL space, lamina dura, # of roots, root morphology
  - Periodontal bone
  - Other
- Step 2. Identify existing restorative therapy, endodontic therapy & orthodontic therapy
  - Assess restorative margins – presence of overhangs? Insufficient margins?
  - Presence of voids?
- Step 3. Identify & describe abnormal radiolucencies & radiopacities
  - Location
  - Size & Extent
  - Morphology & Borders
  - Effects on surrounding structures
  - Internal architecture



## BOX 17-1 Analysis of Intraosseous Lesions

### STEP 1: LOCALIZE ABNORMALITY

- Anatomic position (epicenter)
- Localized or generalized
- Unilateral or bilateral
- Single or multifocal

### STEP 2: ASSESS PERIPHERY AND SHAPE

#### Periphery

- Well defined
  - Punched-out
  - Corticated
  - Sclerotic
  - Soft tissue capsule
- Ill defined
  - Blending
  - Invasive

#### Shape

- Circular
- Scalloped
- Irregular

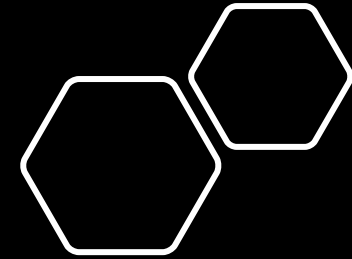
### STEP 3: ANALYZE INTERNAL STRUCTURE

- Totally radiolucent
- Totally radiopaque
- Mixed (describe pattern)

### STEP 4: ANALYZE EFFECTS OF LESION ON SURROUNDING STRUCTURES

- Teeth, lamina dura, periodontal membrane space
- Inferior alveolar nerve canal and mental foramen
- Maxillary antrum
- Surrounding bone density and trabecular pattern
- Outer cortical bone and periosteal reactions

### STEP 5: FORMULATE INTERPRETATION



Further Reading:  
White & Pharoah's Oral  
Radiology 8<sup>th</sup> Ed (Chapter 18)



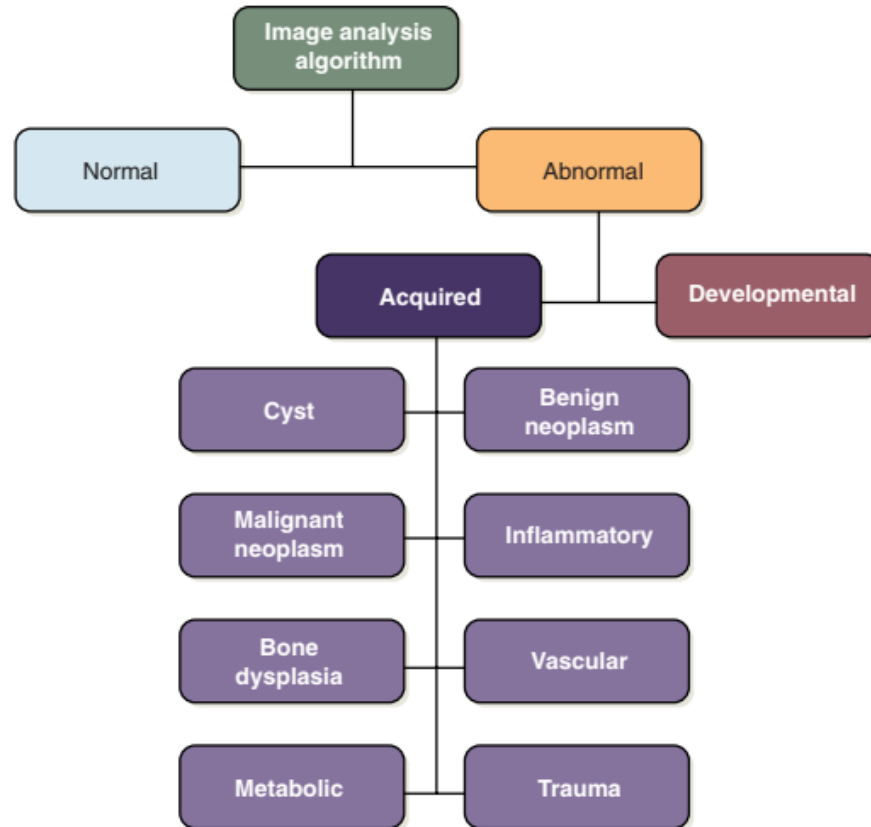
You may remember from the last lecture...

# Systematic Approach

- Step 1. Teeth & Surrounding Structures
  - Count teeth
  - Tooth morphology
    - Crown – enamel, dentine, pulp chamber, etc.
    - Roots – PDL space, lamina dura, # of roots, root morphology
  - Periodontal bone
  - Other
- Step 2. Identify existing restorative therapy, endodontic therapy & orthodontic therapy
  - Assess restorative margins – presence of overhangs? Insufficient margins?
  - Presence of voids?
- Step 3. Identify & describe abnormal radiolucencies & radiopacities
  - Location
  - Size & Extent
  - Morphology & Borders
  - Effects on surrounding structures
  - Internal architecture
- Step 4. Differential diagnosis



# Surgical Sieve



**FIGURE 17-26** Algorithm representing the diagnostic process that follows evaluation of the radiographic features of an abnormality.

## 5I 3-Scotland

Where "3-Scotland" relates to the three top killers in Scotland.

- I: infection
- I: inflammation
- I: immune
- I: iatrogenic
- I: idiopathic
- 1: vascular/cardiovascular
- 2: cancer
- 3: trauma

## VITAMIN C DEF

V-VASCULAR

I-INFECTIVE/INFLAMMATORY

T-TRAUMA

A-AUTOIMMUNE

M-METABOLIC

I-IATROGENIC

N-NEOPLASTIC

C-CONGENITAL

D-DEGENERATIVE

E-ENDOCRINE/ENVIRONMENT

F-FUNCTIONAL



# General Cases

---



This is a <type of radiograph>, showing the <insert tooth numbers>.

<Identify the normal anatomy>

There is:

1. Periodontal status?
2. Restorations? (Bonus: material?)
3. Caries?
4. Resorption?
5. Periapical lesions? (not applicable for BW)
6. Other findings?



This is a <type of radiograph>, showing the <insert tooth numbers>.

<Identify the normal anatomy>

There is:

1. Periodontal status?
2. Restorations? (Bonus: material?)
3. Caries?
4. Resorption?
5. Periapical lesions? (not applicable for BW)
6. Other findings?



This is a <type of radiograph>, showing the <insert tooth numbers>.  
<Identify the normal anatomy>.

There is:

1. Periodontal status?
2. Restorations? (Bonus: material?)
3. Caries?
4. Resorption?
5. Periapical lesions? (not applicable for BW)
6. Other findings?



This is a <type of radiograph>, showing the <insert tooth numbers>.  
<Identify the normal anatomy>.

There is:

1. Periodontal status?
2. Restorations? (Bonus: material?)
3. Caries?
4. Resorption?
5. Periapical lesions? (not applicable for BW)
6. Other findings?



This is a <type of radiograph>, showing the <insert tooth numbers>.  
<Identify the normal anatomy>.

There is:

1. Periodontal status?
2. Restorations? (Bonus: material?)
3. Caries?
4. Resorption?
5. Periapical lesions? (not applicable for BW)
6. Other findings?

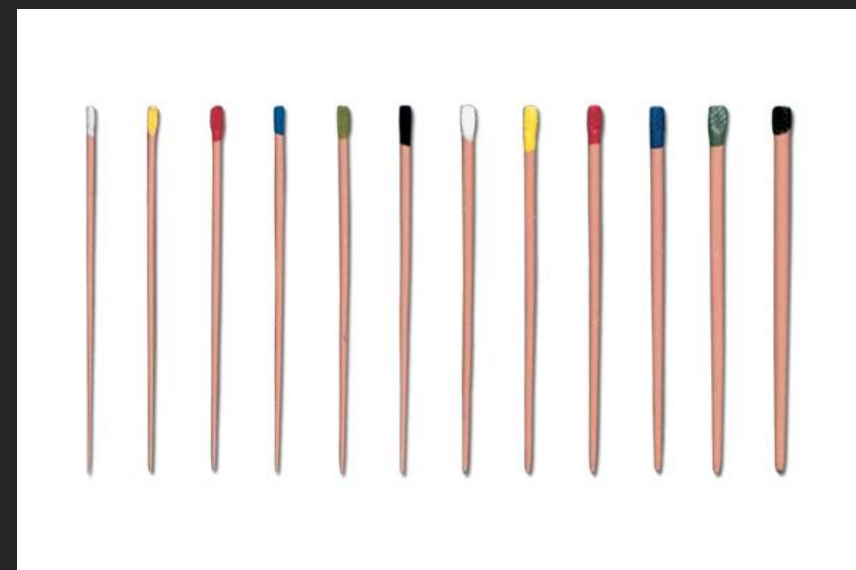


This is a <type of radiograph>, showing the <insert tooth numbers>.  
<Identify the normal anatomy>.

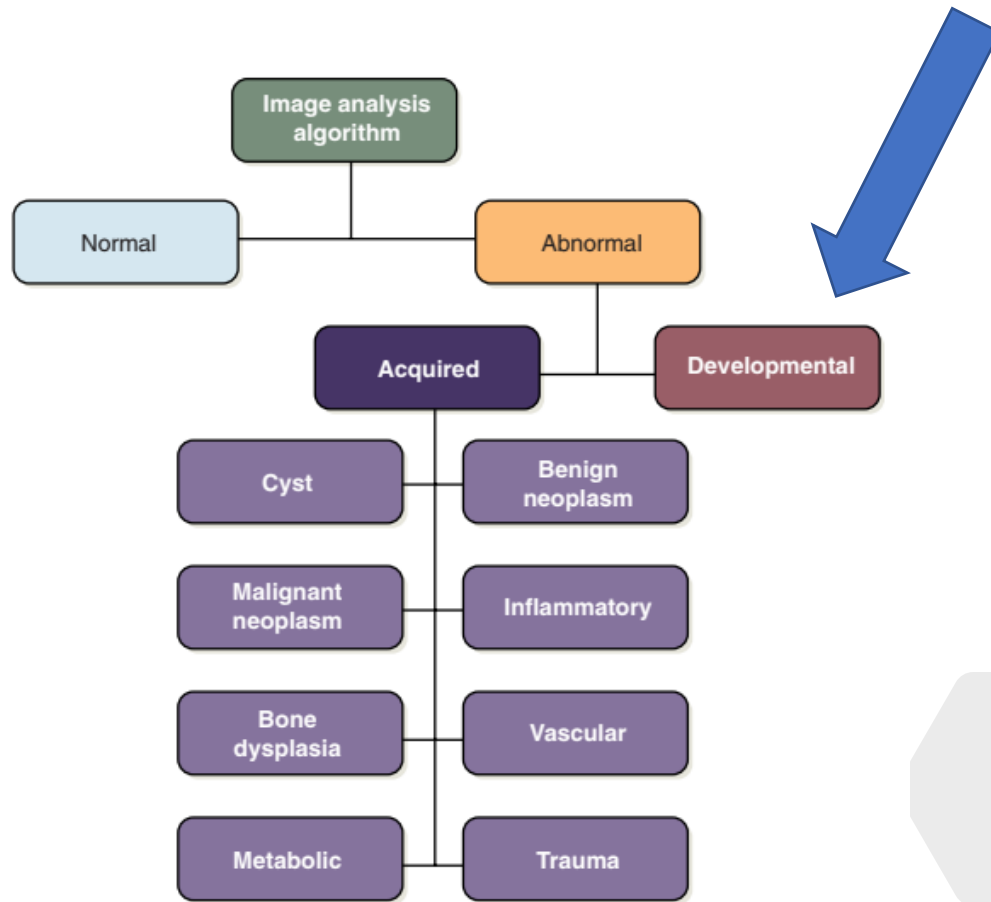
There is:

1. Periodontal status?
2. Restorations? (Bonus: material?)
3. Caries?
4. Resorption?
5. Periapical lesions? (not applicable for BW)
6. Other findings?

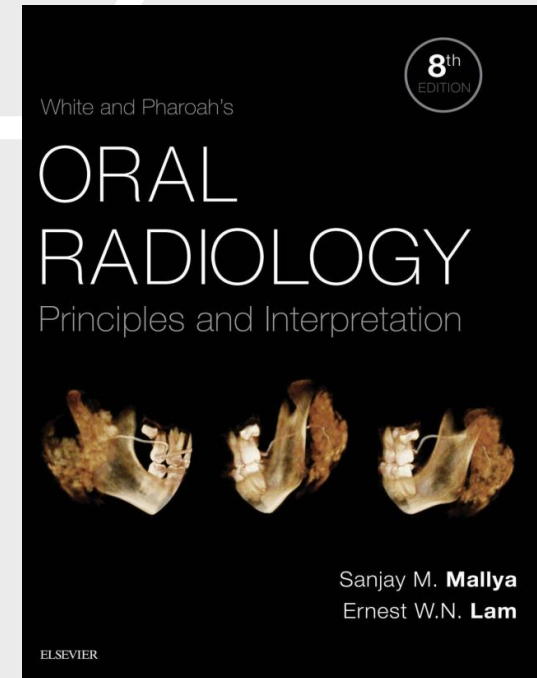








**FIGURE 17-26** Algorithm representing the diagnostic process that follows evaluation of the radiographic features of an abnormality.

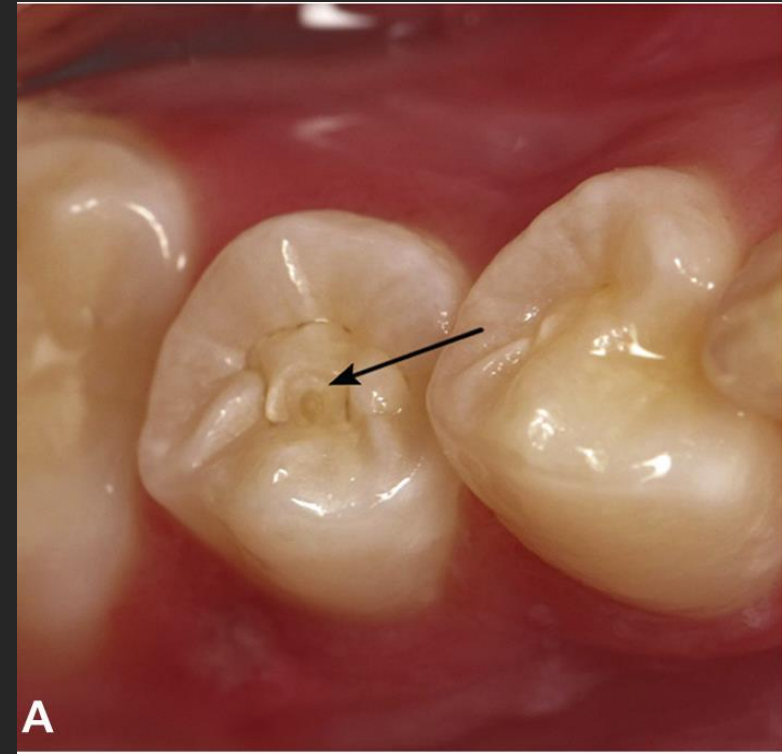


Further Reading:

White & Pharoah's Oral Radiology 8<sup>th</sup> Ed  
(Chapter 21)







[https://jada.ada.org/article/S0002-8177\(20\)30032-5/fulltext](https://jada.ada.org/article/S0002-8177(20)30032-5/fulltext)



## BOX 17-1 Analysis of Intraosseous Lesions

### STEP 1: LOCALIZE ABNORMALITY

- Anatomic position (epicenter)
- Localized or generalized
- Unilateral or bilateral
- Single or multifocal

### STEP 2: ASSESS PERIPHERY AND SHAPE

#### Periphery

- Well defined
  - Punched-out
  - Corticated
  - Sclerotic
  - Soft tissue capsule
- Ill defined
  - Blending
  - Invasive

#### Shape

- Circular
- Scalloped
- Irregular

### STEP 3: ANALYZE INTERNAL STRUCTURE

- Totally radiolucent
- Totally radiopaque
- Mixed (describe pattern)

### STEP 4: ANALYZE EFFECTS OF LESION ON SURROUNDING STRUCTURES

- Teeth, lamina dura, periodontal membrane space
- Inferior alveolar nerve canal and mental foramen
- Maxillary antrum
- Surrounding bone density and trabecular pattern
- Outer cortical bone and periosteal reactions

### STEP 5: FORMULATE INTERPRETATION





## BOX 17-1 Analysis of Intraosseous Lesions

### STEP 1: LOCALIZE ABNORMALITY

- Anatomic position (epicenter)
- Localized or generalized
- Unilateral or bilateral
- Single or multifocal

### STEP 2: ASSESS PERIPHERY AND SHAPE

#### Periphery

- Well defined
  - Punched-out
  - Corticated
  - Sclerotic
  - Soft tissue capsule
- Ill defined
  - Blending
  - Invasive

#### Shape

- Circular
- Scalloped
- Irregular

### STEP 3: ANALYZE INTERNAL STRUCTURE

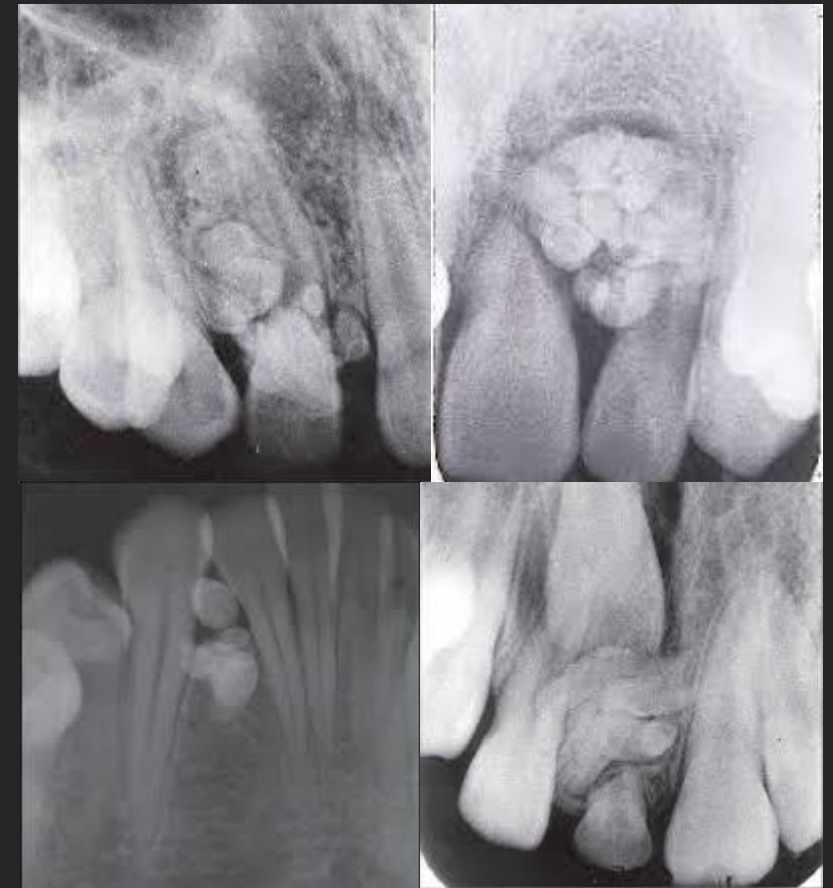
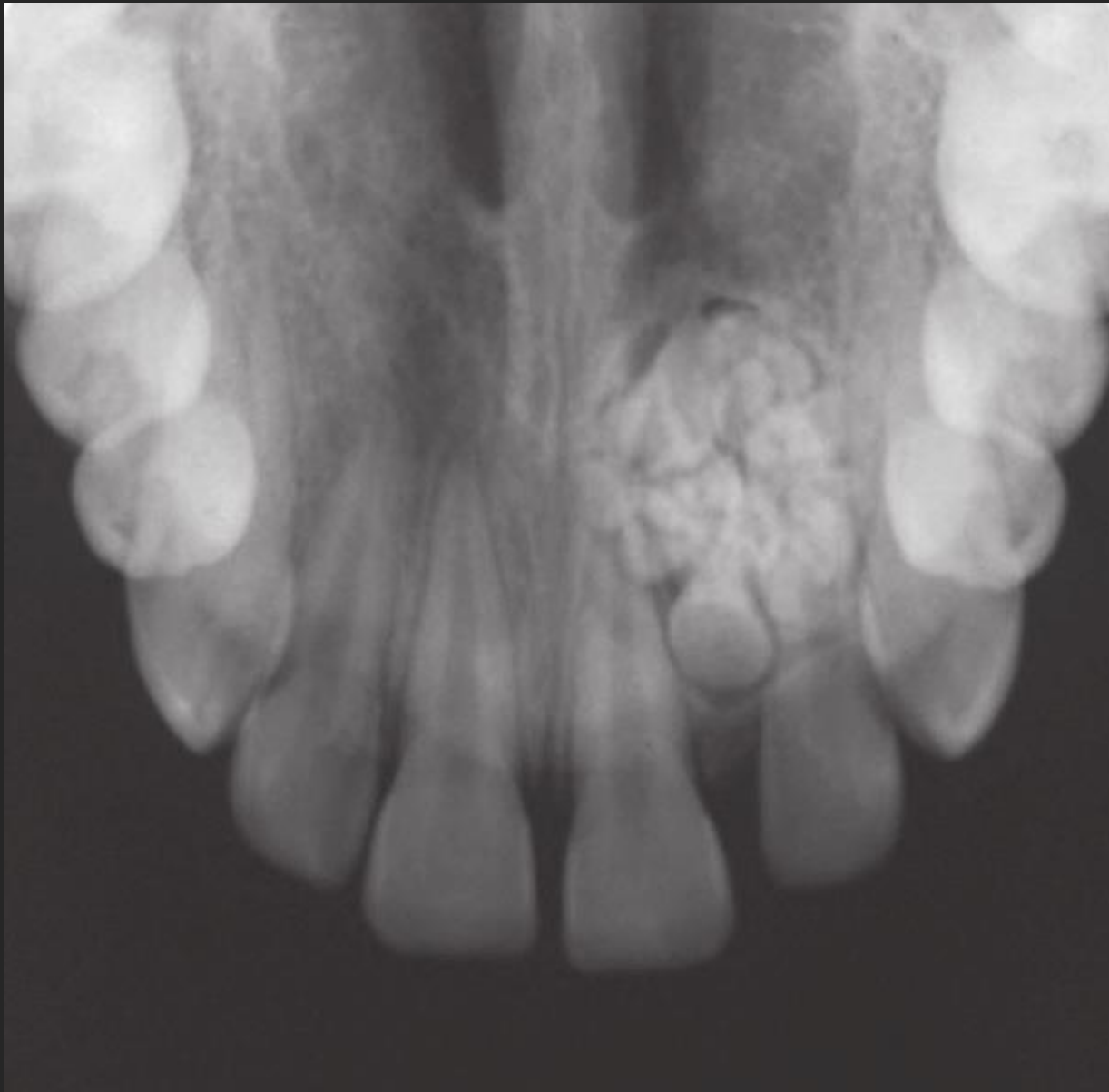
- Totally radiolucent
- Totally radiopaque
- Mixed (describe pattern)

### STEP 4: ANALYZE EFFECTS OF LESION ON SURROUNDING STRUCTURES

- Teeth, lamina dura, periodontal membrane space
- Inferior alveolar nerve canal and mental foramen
- Maxillary antrum
- Surrounding bone density and trabecular pattern
- Outer cortical bone and periosteal reactions

### STEP 5: FORMULATE INTERPRETATION





Further Reading:  
DOI: [10.17096/jiufd.52886](https://doi.org/10.17096/jiufd.52886)





# Resorption

Further Reading:

Heithersay GS. Management of Tooth Resorption. Aust Dent J. 2007; 52:105-121

<https://doi.org/10.1111/j.1834-7819.2007.tb00519.x>





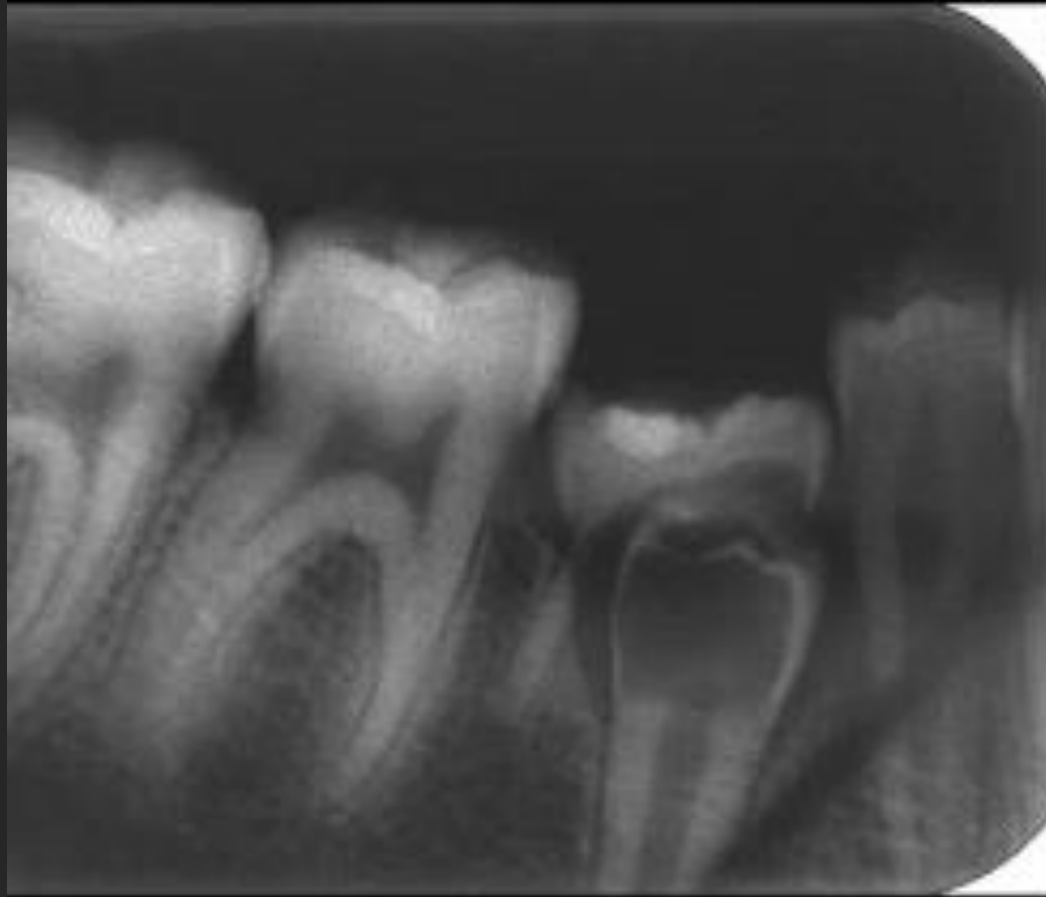
Heithersay, 2007





Heithersay, 2007





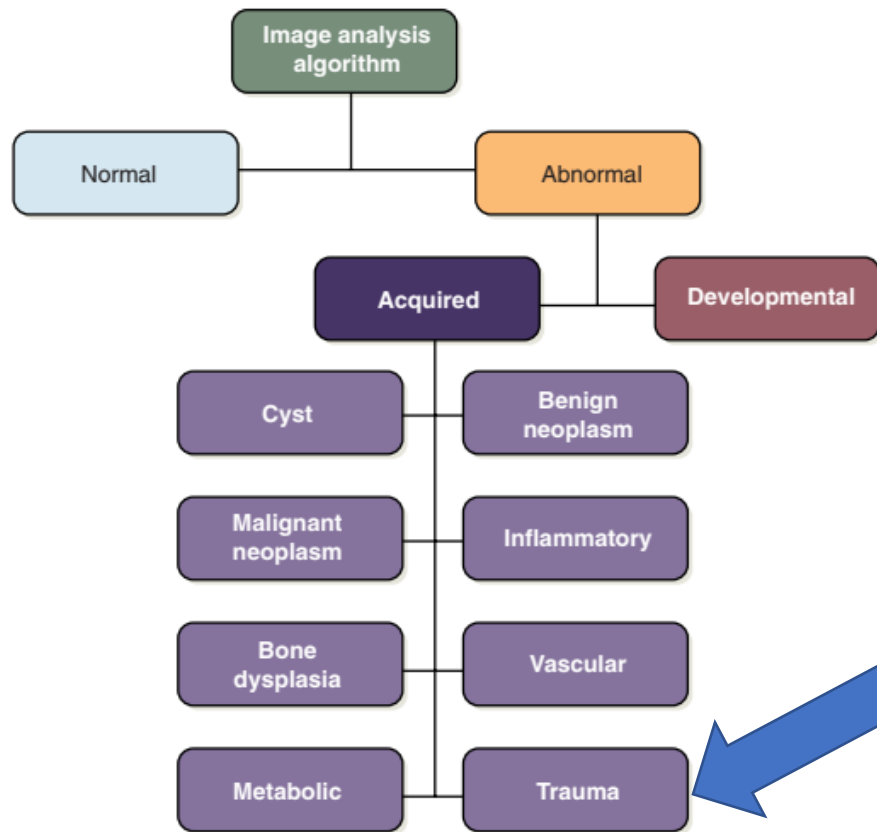
Kjaer et al. 2020

Further Reading:

<https://doi.org/10.1016/j.jds.2020.02.001>

<https://www.aapd.org/globalassets/media/publications/archives/seow-22-05.pdf>





**FIGURE 17-26** Algorithm representing the diagnostic process that follows evaluation of the radiographic features of an abnormality.

Further Reading:  
2020 IADT Guidelines for the Evaluation and  
Management of Traumatic Dental Injuries  
<https://www.iadt-dentaltrauma.org/for-professionals.html>



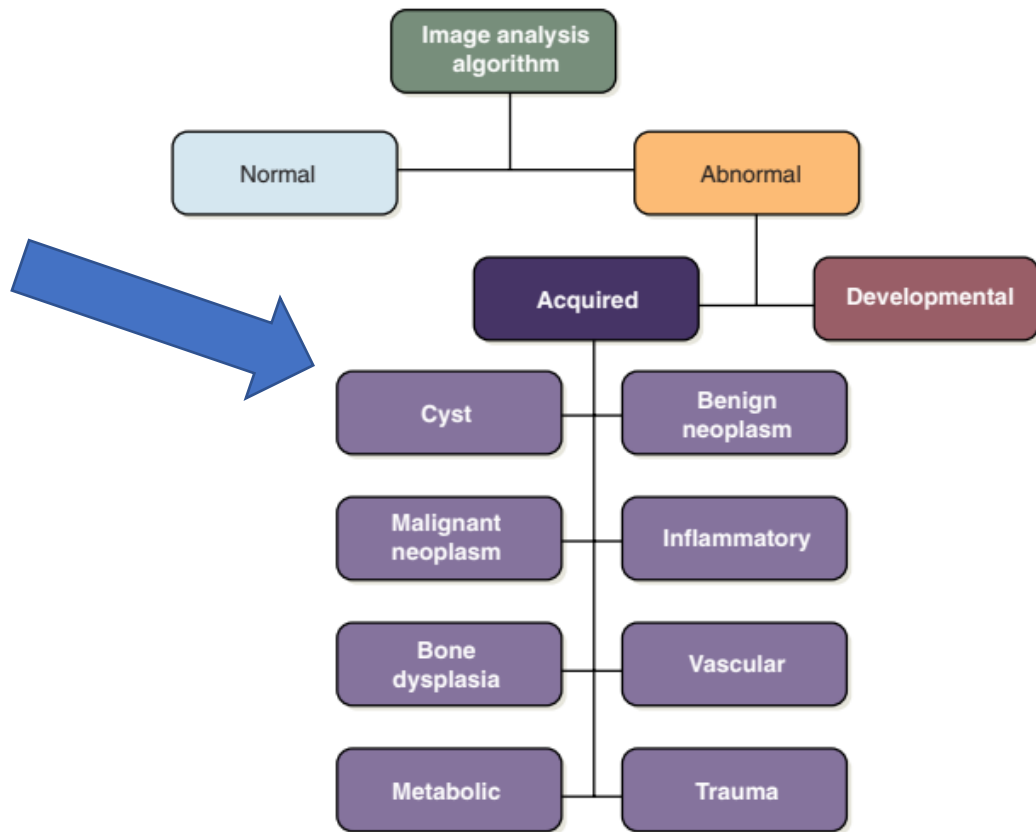




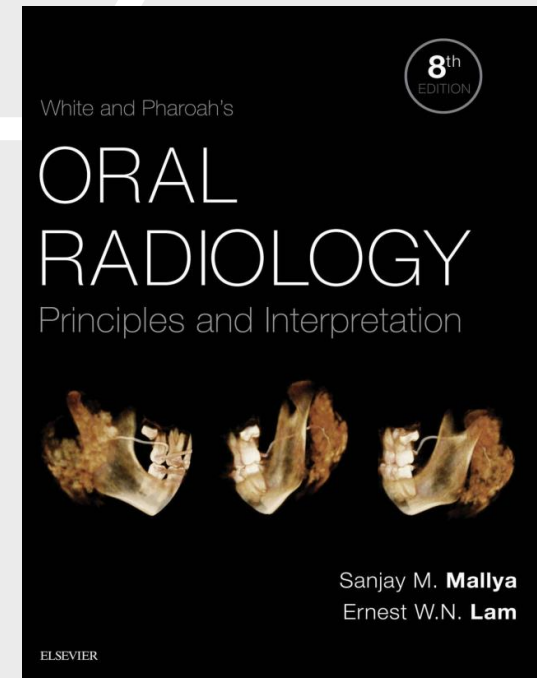
Von Arx & Bosshardt, 2016







**FIGURE 17-26** Algorithm representing the diagnostic process that follows evaluation of the radiographic features of an abnormality.



Further Reading:

White & Pharoah's Oral Radiology 8<sup>th</sup> Ed  
(Chapter 23)





Further Reading:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3886068/>

<http://dx.doi.org/10.1016/j.path.2016.10.006>

## BOX 17-1 Analysis of Intraosseous Lesions

### STEP 1: LOCALIZE ABNORMALITY

- Anatomic position (**epicenter**)
- Localized or generalized
- Unilateral or bilateral
- **Single** or multifocal

### STEP 2: ASSESS PERIPHERY AND SHAPE

#### Periphery

- **Well defined**
  - Punched-out
  - **Corticated**
  - Sclerotic
  - Soft tissue capsule
- Ill defined
  - Blending
  - Invasive

#### Shape

- **Circular**
- Scalloped
- Irregular

### STEP 3: ANALYZE INTERNAL STRUCTURE

- **Totally radiolucent**
- Totally radiopaque
- Mixed (describe pattern)

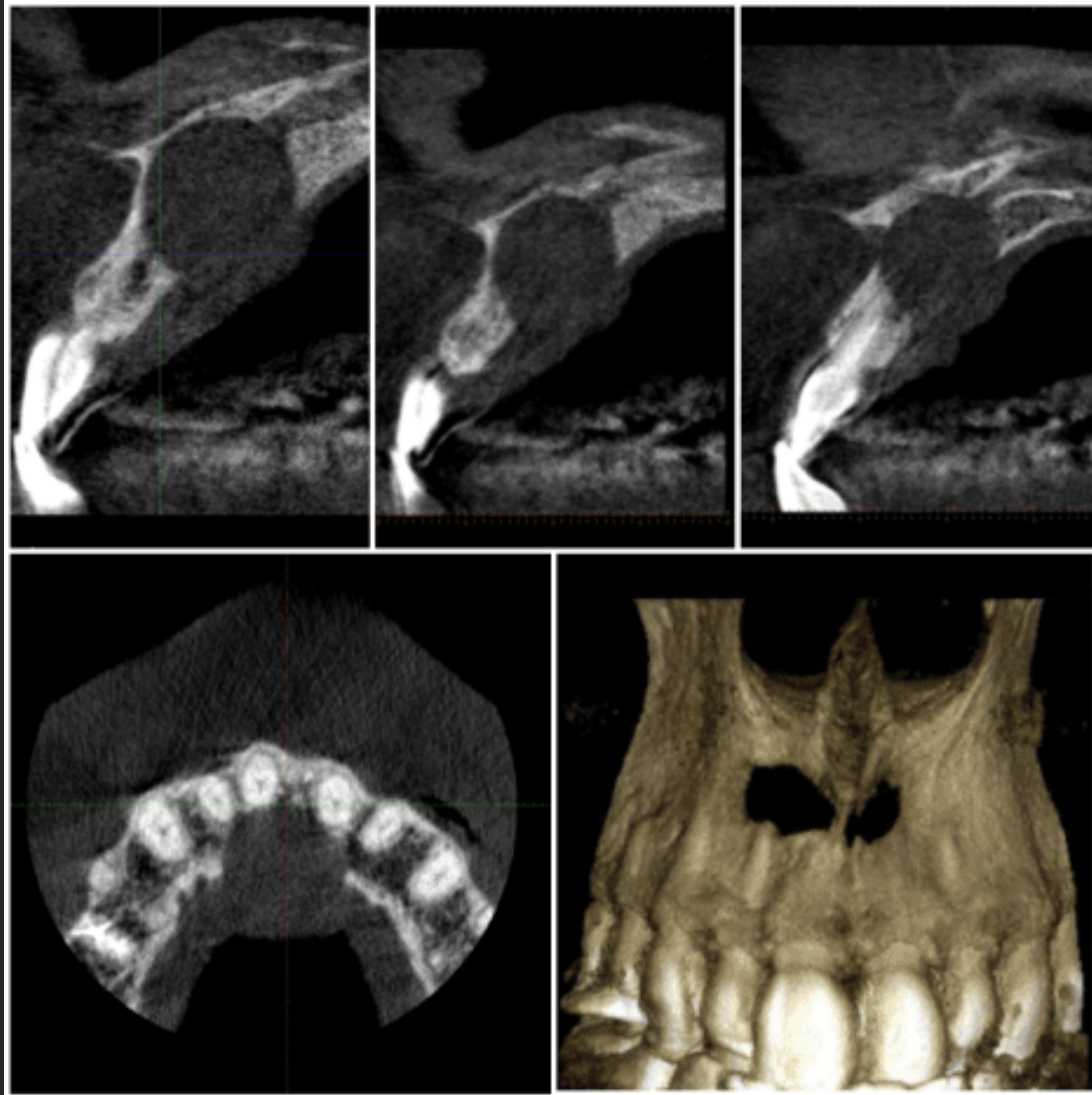
### STEP 4: ANALYZE EFFECTS OF LESION ON SURROUNDING STRUCTURES

- Teeth, **lamina dura**, periodontal membrane space
- Inferior alveolar nerve canal and mental foramen
- Maxillary antrum
- Surrounding bone density and trabecular pattern
- Outer cortical bone and periosteal reactions

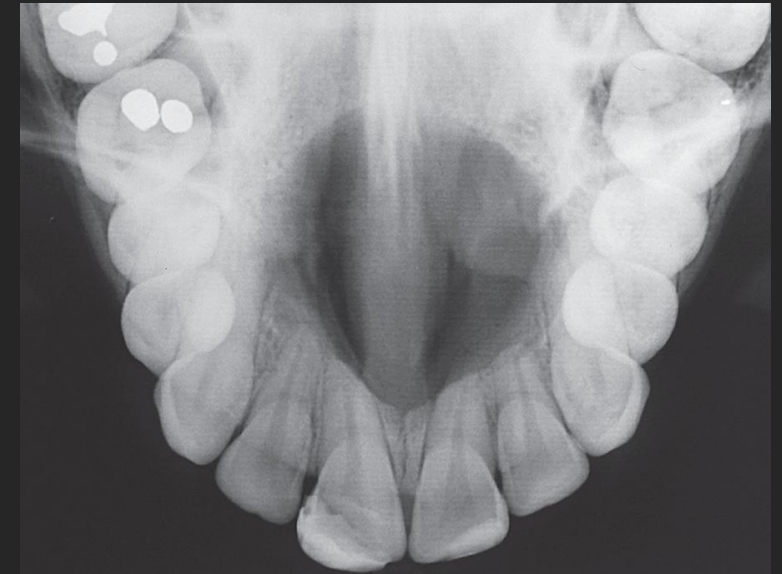
### STEP 5: FORMULATE INTERPRETATION







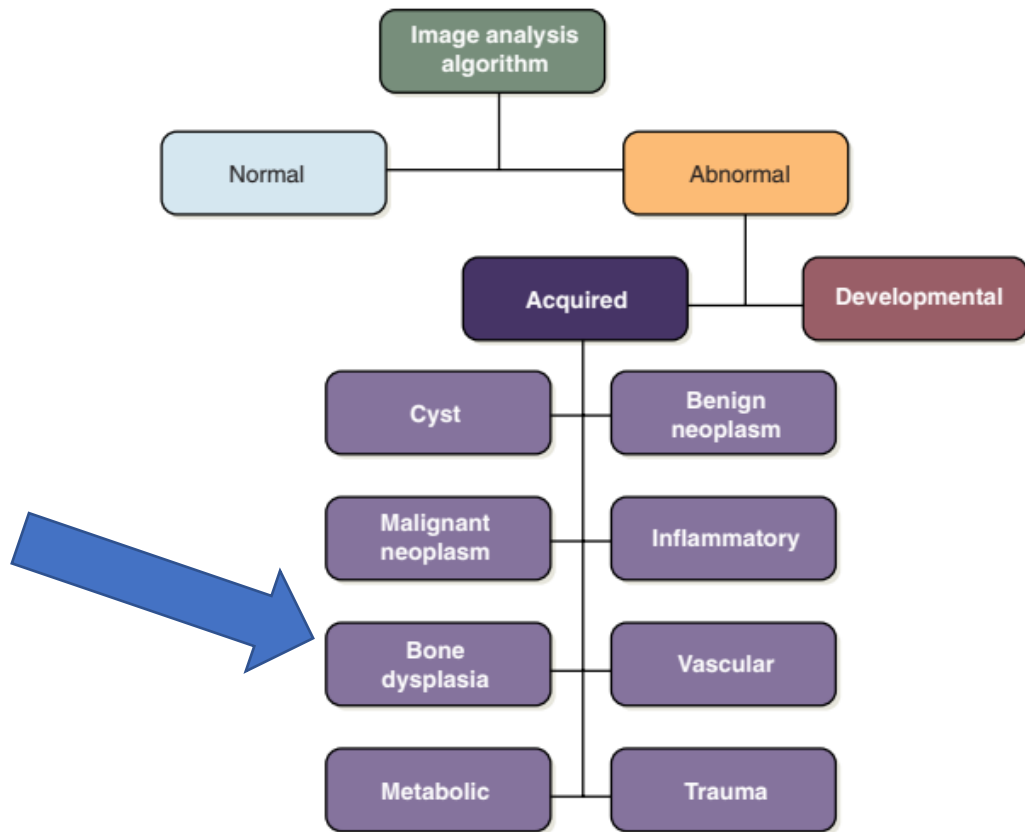
AlQahtani et al. 2018



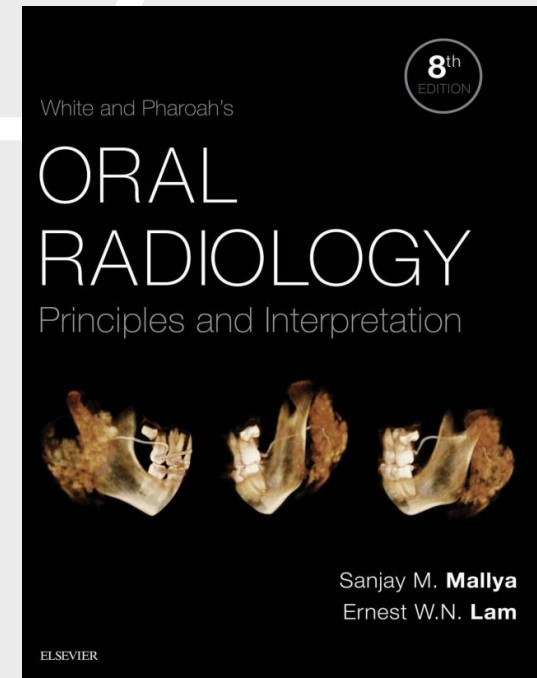
Further Reading:

<http://dx.doi.org/10.1016/j.path.2016.10.006>





**FIGURE 17-26** Algorithm representing the diagnostic process that follows evaluation of the radiographic features of an abnormality.



Further Reading:

White & Pharoah's Oral Radiology 8<sup>th</sup> Ed  
(Chapter 25)





## BOX 17-1 Analysis of Intraosseous Lesions

### STEP 1: LOCALIZE ABNORMALITY

- Anatomic position (epicenter)
- Localized or generalized
- Unilateral or bilateral
- Single or multifocal

### STEP 2: ASSESS PERIPHERY AND SHAPE

#### Periphery

- Well defined
  - Punched-out
  - Corticated
  - Sclerotic
  - Soft tissue capsule
- Ill defined
  - Blending
  - Invasive

#### Shape

- Circular
- Scalloped
- Irregular

### STEP 3: ANALYZE INTERNAL STRUCTURE

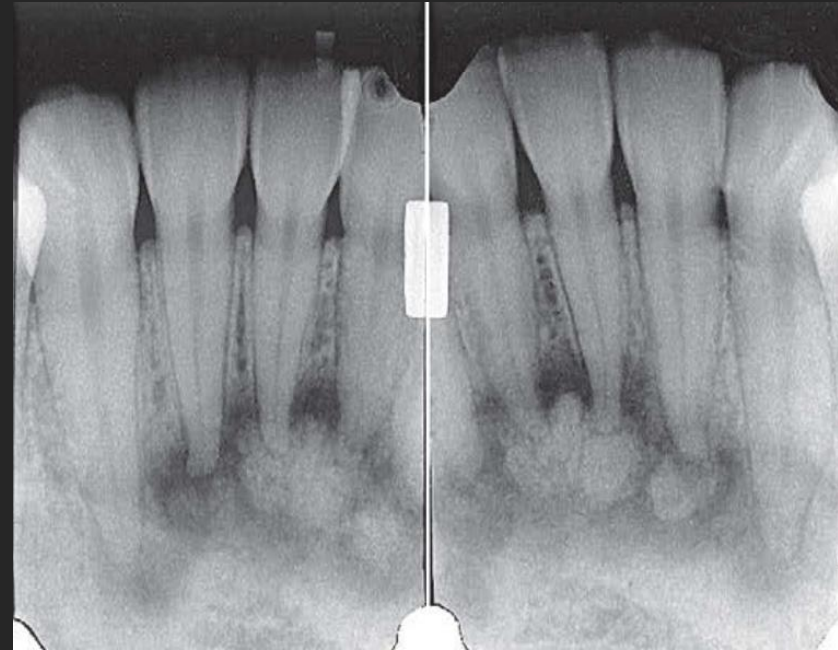
- Totally radiolucent
- Totally radiopaque
- Mixed (describe pattern)

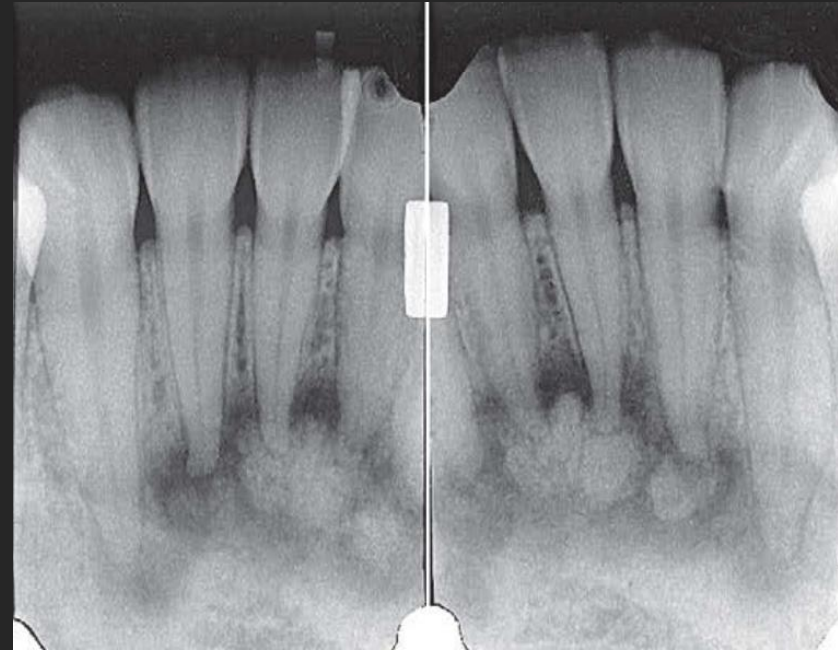
### STEP 4: ANALYZE EFFECTS OF LESION ON SURROUNDING STRUCTURES

- Teeth, lamina dura, periodontal membrane space
- Inferior alveolar nerve canal and mental foramen
- Maxillary antrum
- Surrounding bone density and trabecular pattern
- Outer cortical bone and periosteal reactions

### STEP 5: FORMULATE INTERPRETATION







# Challenge Case

---



