Principles of Basic Interpretation
Assessment Types

• General Assessment
  • The routine assessment of radiographic images
  • Always conducted

• Specific Assessment
  • The in-depth assessment of abnormal (unusual) radiographic shadows
General Assessment

• Systematic
• Consistent
• Complete
• Concise
The Report

• Patient Identification
• Name, Date of Birth, Address
• Referring Dentist
• Prescribing Dentist
• Date of Exam
• Date of Report (Dictation and Transcription)
• Reason for Examination
The Report

• Type of Scan, Scan Protocol

• Findings
  • Comparison to other / previous studies
  • Diagnosis or Differential Diagnosis
  • Recommendations for further examination

• Conclusion

• Proof and Sign
General Assessment

• Assessment 1: Bone Patterns and Osseous and Soft Tissue Anatomy

• This is an overall assessment of radiographic anatomy excluding the detailed dental assessment that follows. This section would include interpretation of bone/soft tissue variations, cysts, neoplasms, developmental changes, etc.
General Assessment

• Assessment 2: General Dental Assessment
• i) Missing / Supernumerary Teeth
• ii) Eruptive and Positional Variations
• iii) Regressive Changes to Teeth
• iv) Anomalies of Teeth
General Assessment

• Eruptive and Positional Variations
• Unerupted Teeth:
  • Assess follicle, Surrounding Bone, Adjacent Teeth.
  • Eruption Pattern
    • Symmetry, Delayed, Accelerated, Impaction
General Assessment

• Eruptive and Positional Variations

• Impacted Teeth:
  • Assess follicle, Surrounding Bone, Adjacent Teeth.
  • Type: Vertical, Horizontal, Mesioangular, Distoangular, Bucco-palatal, Bone, Soft Tissue
  • Relation to: Canal, Sinus, Other Teeth
General Assessment

- Eruptive and Positional Variations
  - Tipping
  - Drifting
  - Rotation
  - Over-Eruption
  - Crowding
General Assessment

• Regressive Changes to Teeth
  • Attrition
  • Abrasion / Abfraction
  • Erosion
  • Pulp Sclerosis
• Resorption
  • Internal
  • External
    • Root
    • Crown (Impaction)
General Assessment

• Anomalies of Teeth
  • Crown
    • Size, Shape, Enamel, Dentine, Pulp
  • Root
    • Number, Size, Shape
General Assessment

• Assessment 3: Periodontal Assessment
  • i) Causative Factors
  • ii) Bone Changes
• Lamina Dura and Periodontal Ligament Space
• Crown:Root Ratio
General Assessment

• Causative Factors
  • Calculus
  • Restorations
    • Overhanging Margins
    • Deficient Margins
    • Over Contoured Crowns
  • Occlusion
    • Open Contacts
    • Crowding
  • Appliances
General Assessment

• Bone Changes
  • Severity: Mild, Moderate, Severe
  • Type: Horizontal
    • Craterform
    • Inconsistent Plates
    • Furcation Involvement
    • Vertical
    • Loss of Crestal Definition
General Assessment

• Lamina Dura & Periodontal Ligament Space
  • Funnelling
  • Secondary Traumatic Occlusion
General Assessment

• Assessment 4: Periapical Assessment
  • i) Lamina Dura and Periodontal Ligament Space
  • ii) Periapical Bone
  • iii) Root End Changes Associated with Periapical Abnormalities
General Assessment

• Periapical Bone
  • Widened PDL / Loss of LD
    • Early Inflammation
  • Rarefying Osteitis
  • Sclerosing Osteitis
  • Incomplete Healing
  • Apical Scar
  • Idiopathic Osteosclerosis (DBI)
General Assessment

• Root End Changes Associated with Periapical Abnormalities
  • Open Apex
  • External Root Resorption
General Assessment

• Assessment 5: Caries Assessment
General Assessment

• Assessment 6 : Previous Treatment
• Root Canal Fillings
• Pins and Posts
• Implants
• Restorations
An Approach to the Radiographic Interpretation of a Lesion
General Considerations

• History
• Clinical Findings
• Imaging
  • 2D Images
  • Comparison to previous images
  • Comparison to contralateral side useful?
  • 3D CBCT Imaging
• Other Imaging Modalities
• Biopsy
Radiographic Description

- Intrinsic Features:
  - Inherent features (appearance) of the lesion.

- Extrinsic Features:
  - Effect of lesion on surrounding structures.
Radiographic Description

• Intrinsic Features:
• Number
• Location
• Size
• Shape
• Periphery
• Internal Structure
• Soft Tissue
Radiographic Description

• Extrinsic Features:
• Erupted Teeth, LD and PDL
• Unerupted Teeth, Follicle space and cortex
• Canals
• Sinus
• Cortex
• Periosteum
• Midlines
• Soft Tissue
Number of Lesions

- Solitary
- Localized
- Multiple
- Descrete
- Generalized
- Diffuse

Florid Cemento-Osseous Dysplasia
Location of Lesion

- Location
  - Maxilla
    - Anterior or Posterior
      - Involving Antrum or Nasal Cavity
        - Cancellous Bone / Cortical Bone
  - Mandible
    - Above or Below Canal
      - Anterior, Posterior Ramus, Condyle
        - Cancellous Bone / Cortical Bone
  - Soft Tissue
    - Bone Lesion Involving Soft Tissue
      - Soft Tissue Lesion Involving Bone
LOCALIZATION

Right Angle Views
Localization

Female
9 Years
Asymptomatic
Localization
SIZE OF LESION

• Is the entire lesion visible?
• Benign lesions can become large
• Rate of growth is more important than size
Shape of Lesion

Regular, Oval
Regular, Circular
Regular, Oval, Scalloped
Irregular

Lateral Periodontal Cyst
Residual Cyst
Metastatic Thyroid Ca
Periphery of Lesion

- Well Defined Uncorticated Punched-Out
- Well Defined Corticated
- Well Defined Corticated Scalloped Border
- Well Defined Radiolucent Border Corticated Rim
- Well Defined Uncorticated Radiolucent Rim
- Poorly Defined Uncorticated Irregular Infiltrative

Images:
- Lateral Periodontal Cyst
- Complex Odontoma
- Metastatic Thyroid Ca
Internal Structure of Lesion

- Radiolucent
- Radiopaque
- Mixed

Rarefying Osteitis
Dense Bone Island (Idiopathic Osteosclerosis)
An Approach to Radiographic Interpretation of a Lesion

Internal Structure of Lesion

- **Ground Glass**
  - Fibrous Dysplasia

- **Cotton Wool**
  - Pagets Disease
  - Florid Cemento-Osseous Dysplasia

- **Moth Eaten**
  - Malignancy
  - Osteomyelitis

- **Fibrous Dysplasia**

- **Squamous Cell Carcinoma**
Internal Structure

- Multilocular Soap Bubble
- Multilocular Honey Comb
- Multilocular Tennis Racket
- Multilocular Fine, Wispy
- Multilocular Tubular
- Mixed

Ameloblastoma
Periapical Cemento-Osseous Dysplasia
Extrinsic Factors

- Erupted Teeth
  - Lamina Dura and Periodontal ligament Space
- Unerupted Teeth
  - Follicle Cortex and Follicle Space
- Canals
- Sinus
- Cortex
- Periosteum
- Midlines
- Soft Tissue
Effect On Erupted Teeth

An Approach to Radiographic Interpretation of a Lesion

Not Involved  Interdigitating  Hanging In Space  Displacement  Resorption

Lymphoma
Effect on Lamina Dura and Periodontal Ligament Space

Not Involved
Normal

Widened PDL
Loss of LD

Involved
Not Affected

Loss of LD
Loss of PDL

Multiple Myeloma
Effect on Unerupted Teeth and Follicle Space and Cortex

- Displacement of Tooth in Follicle
- Impaction
- Follicle Enlargement
- Loss of Cortex
- Loss of Cortex due to Irregular Follicle Enlargement

Leukemia
Effect on Canal

- Not Involved
- Involved Not Affected
- Displaced
- Expanded
- Altered Course
- Destroyed

Fibrous Dysplasia
Effect on Sinus

Halo Shadow
Extrinsic
Intrinsic
Encroachment
Expansion
Destruction
Infiltration

Odontogenic Cyst
Squamous Cell Carcinoma
Effect on Cortex

Not Involving Inferior Cortex

Thinned and Expanded Intact Cortex

Cortical Destruction

Dentigerous Cyst

Squamous Cell Carcinoma
Periosteal Reactions

Onion Skin
Osteomyelitis

Sun Ray
Hair-On-End
Malignancy

Codman Triangle
Malignancy

Metastatic Breast Ca

Osteosarcoma
The Assessment of Diffuse Bone Sclerosis

Increasing bone sclerosis decreases the contrast between cortical bone and cancellous bone.

Increasing bone sclerosis increases the contrast between canal and cancellous bone.
Assessment of Diffuse Bone Sclerosis
Midlines and Sutures

- Respected = Benign
- Violated = Malignant

Incisive Canal Cyst

Osteosarcoma
Cases
Describe the Lesion.

What is the most likely Diagnosis?

An Approach to Radiographic Interpretation of a Lesion
Describe the Lesion.

What is the most likely Diagnosis?
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What is the most likely Diagnosis?
Describe the Lesion at 38.

What is the most likely Diagnosis?
Describe the Lesion. 

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