Assignments

• Read 42-53
• Review Image Orientation and Naming Slides in Review Session
  Section on Vista

Radiographic Geometry

• Radiographs are 2-dimensional
• Patients are 3-dimensional
• This results in
  ➢ Loss of depth perception
  ➢ Magnification/distortion
  ➢ Summation shadows
  ➢ An unfamiliar image
**Depth Perception**

**Distortion:** Note decreased length of right femur due to distortion.

**Summation Sign**

- Overlapping of structures creates a “summation” opacity that is not really present in the patient.
Orientation of x-ray beam to object determines how familiar the image is

The **Silhouette Sign** is another important radiographic phenomenon

- The effacement (loss of visualization) of the border of two structures of the same radiographic opacity that are *in contact*. 
Pleural Effusion: DV vs. VD

DV: Heart obscured
Fluid deeper

VD: Heart visible
Fluid less deep
Naming Radiographs

- Point of Entrance
- Point of Exit
- Use correct anatomic terminology

Interpretation

- Signalment and history
- Physical examination
- Is the radiograph normal?
  - Hardest call
- Describing abnormalities
  - Roentgen signs
- We usually do not make a diagnosis from radiographs
Is It Normal or Not?

- Reference books
- Build a collection
- Radiograph opposite limb
- Experience
- Can’t decide …get help

Roentgen Signs

- Size ✓
- Shape ✓
- Number
- Location
- Margination
- Opacity
**Summing It Up**

- Consider roentgen signs along with history and signalment
- Formulate a list of possibilities
- Plan on how to get to the next step
  - More imaging
  - Invasive procedure

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**9y dog with mammary tumor excision 1 mo. ago**
- Back pain and pelvic limb paresis for 1 week
- We see change in size, opacity, margin of T9.
- Aggressive lesion
- DDx: infection vs. tumor
- Biopsy!

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**Bone Lesions**

- Roentgen signs are not as useful as in other organ systems
- This results from limited response of bone
  - Lysis or sclerosis
- Try to assess lesion aggressiveness
- Assessing aggressiveness will help in deciding the next step
Bone Lesion Aggressiveness

- Is there cortical destruction?
- Is there an active periosteal reaction?
- What is the characteristic of the transition zone?
  - Border between normal and abnormal bone

<table>
<thead>
<tr>
<th></th>
<th>Cortical Destruction</th>
<th>Periosteal Reaction</th>
<th>Transition Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggressive</td>
<td>Yes</td>
<td>Active or irregular</td>
<td>Not distinct</td>
</tr>
<tr>
<td>Non-Aggressive</td>
<td>None or expansion without destruction</td>
<td>None or smooth</td>
<td>Distinct</td>
</tr>
</tbody>
</table>

Periosteal Reaction
Cortex Destruction

Transition Zone

Aggressive Bone Lesions
- Assessing aggressiveness will help you decide what to do
- One sign of aggressiveness is all it takes
- The more signs, and the more extreme, the more aggressive
- Lysis vs. sclerosis has nothing to do with aggressiveness
Aggressive vs. Nonaggressive

- Aggressive lesion
  - Thoracic radiographs
  - Aspirate or biopsy
- Nonaggressive lesion
  - Can wait more safely depending on circumstances
  - Waiting can still be risky