

# Basic Imaging for Breast Cancer Detection, Diagnosis, and Staging

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# Purpose

- To review the imaging modalities used to detect, diagnose and stage breast cancer
- Outline:
  - Metastatic Disease
  - Locally Advanced Disease
  - Early disease

The background features a stylized mountain range in shades of green and teal. A thick, textured orange band runs horizontally across the middle of the image, separating the upper and lower green sections. The text is centered within this orange band.

# Evaluating Metastatic Disease

# Indications to Evaluate

- Distinguishing between distant metastatic disease and locally advanced disease is essential for guiding treatment
- Check for metastatic disease when:
  - Tumor > 5 cm with axillary lymph nodes positive for metastatic disease
  - Tumor of any size with 4+ axillary lymph nodes positive for metastatic disease.
  - Tumor of any size with positive axillary lymph nodes fixed to each other or other structures
  - Tumor directly extends to chest wall or skin
  - Patient with Stage II disease and new focal symptoms

# Imaging Modalities

- Ultrasound (Liver)
  - Radiography (Chest)
- } Limited

- Bone Scan
  - PET/CT
- } Maximal

# Liver Ultrasound

- Not used in centers with access to PET/CT
- Used to screen liver for metastasis in patients with abnormal liver function tests

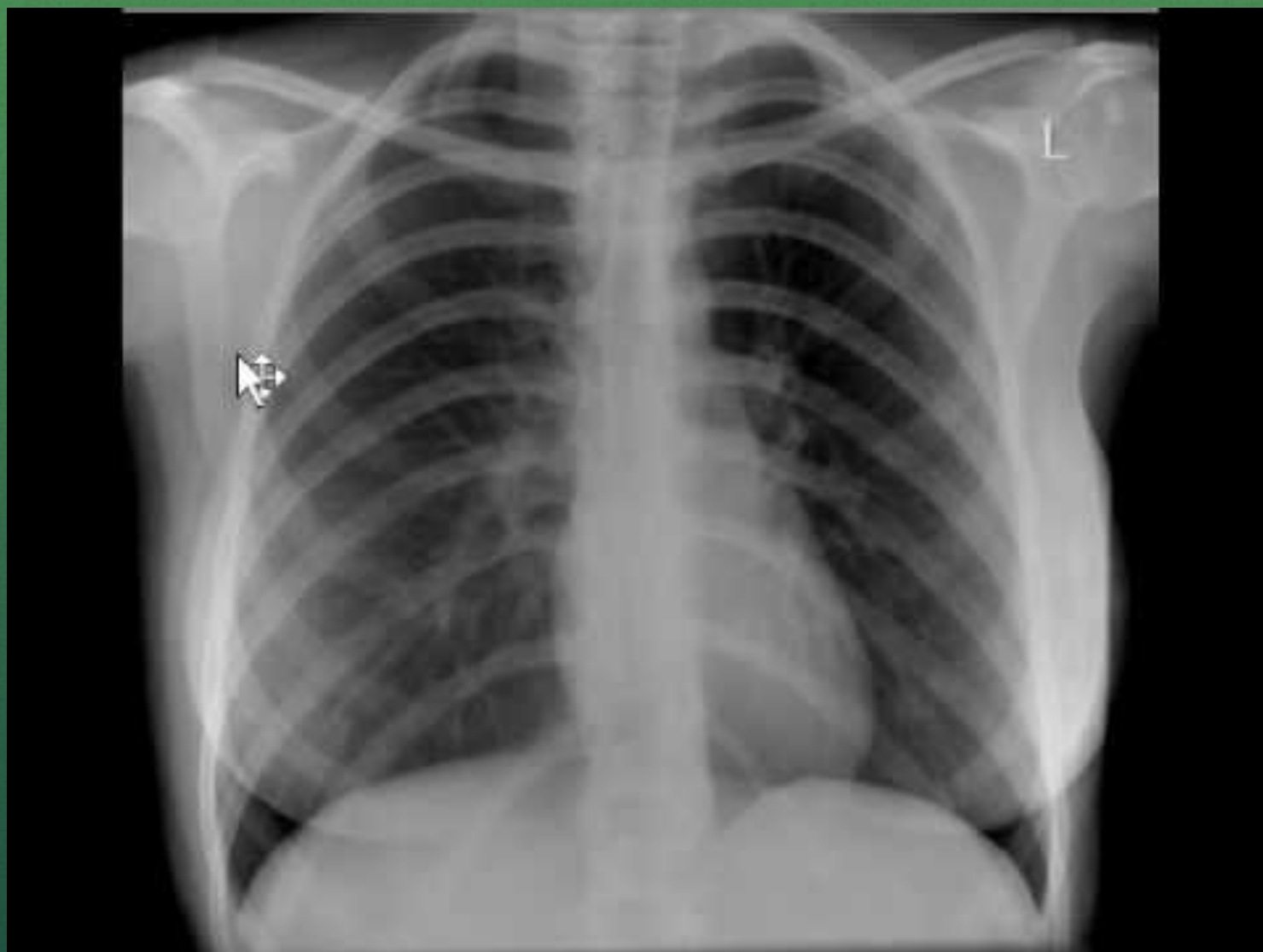


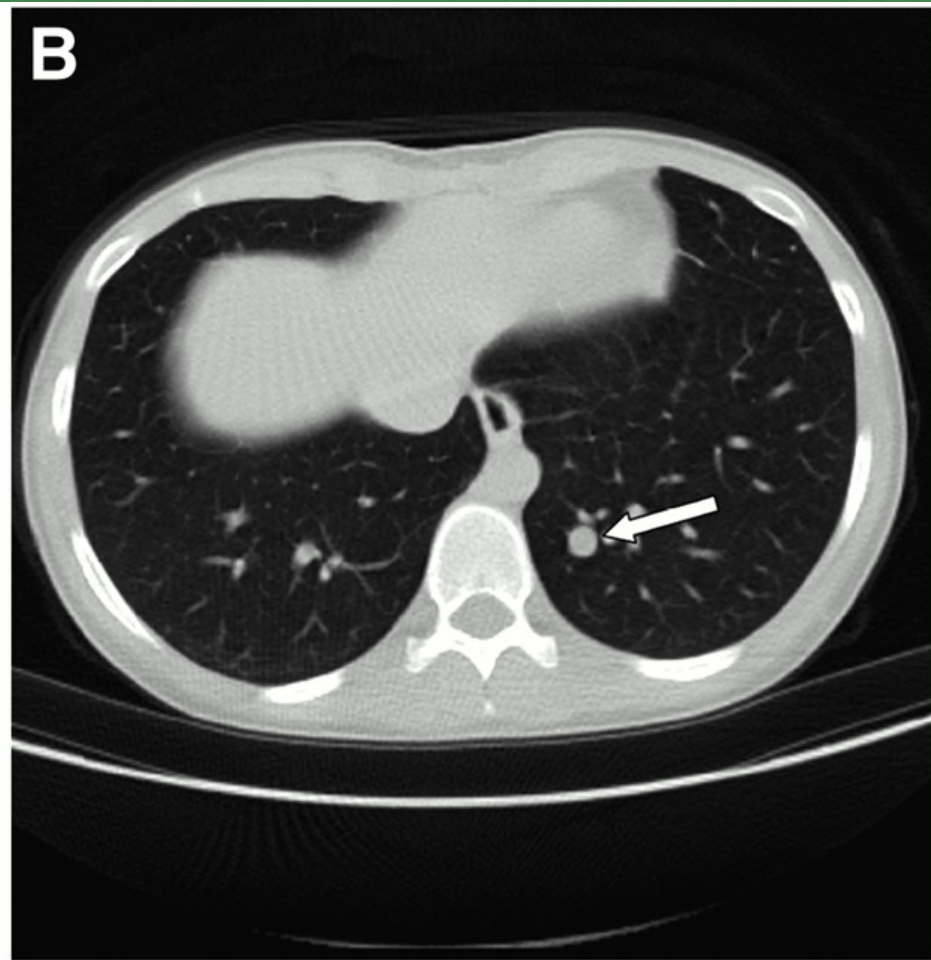
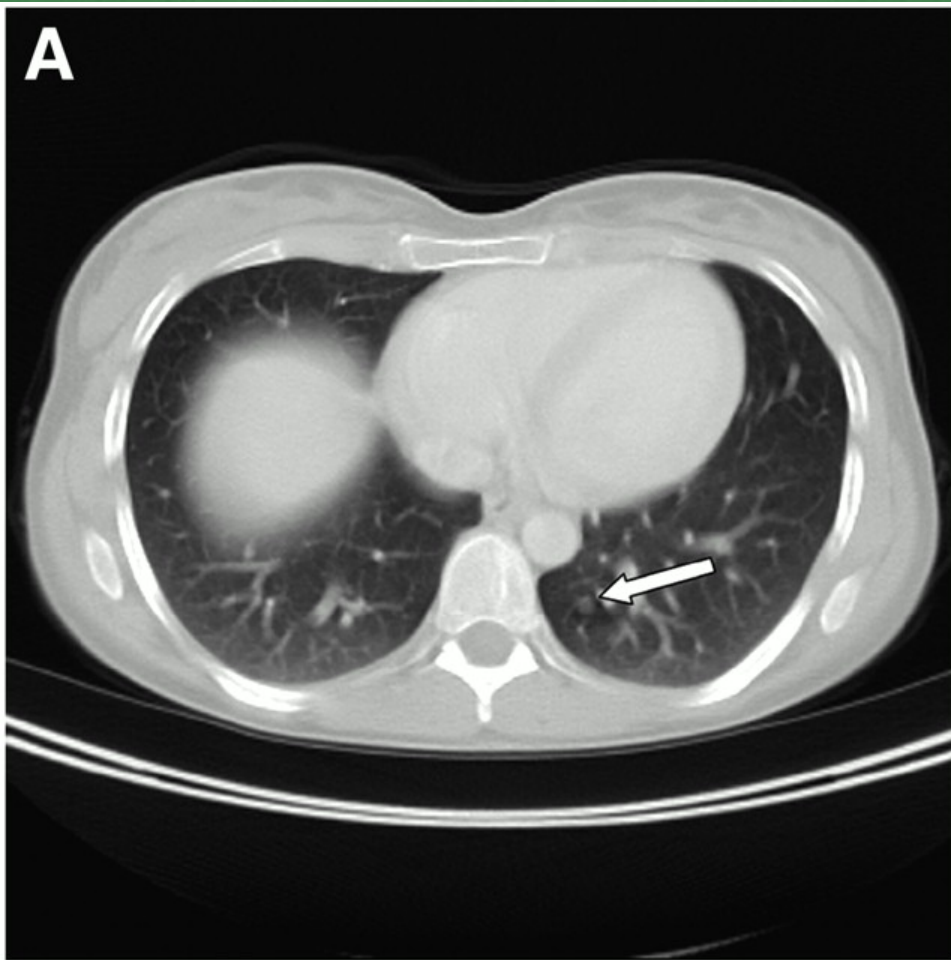
[www.Ultrasoundcases.com](http://www.Ultrasoundcases.com)

# Radiography (Chest X-ray)

- Not used in centers with access to PET/CT
- Used to screen for lung metastasis



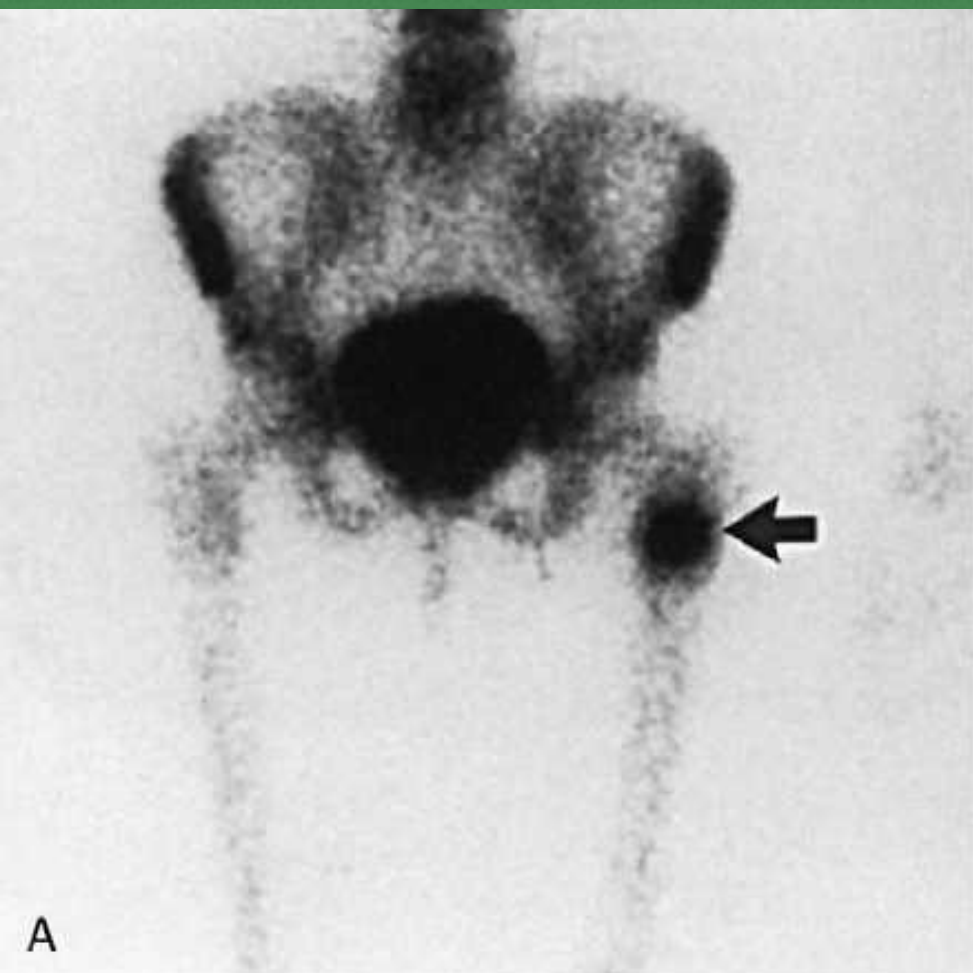




# Bone Scan - Indications

- Demonstrates presence of bone metastasis earlier than x-ray, CT, MRI scan
- Stage 2+ breast cancer with focal back pain or a pathologic fracture



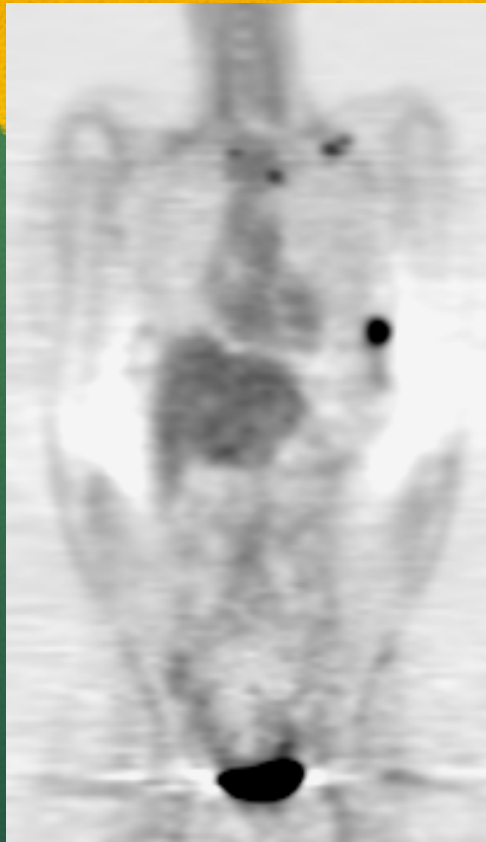


# Indications - PET

- ◆ Characterization of the primary lesion
  - Benign vs. malignant
  - Tumor grading and prognosis
  - Direct site of biopsy
- ◆ Staging
  - Evaluate tumor extent at initial diagnosis
  - Evaluate for regional or distal recurrences
- ◆ Response to therapy

# Breast Cancer

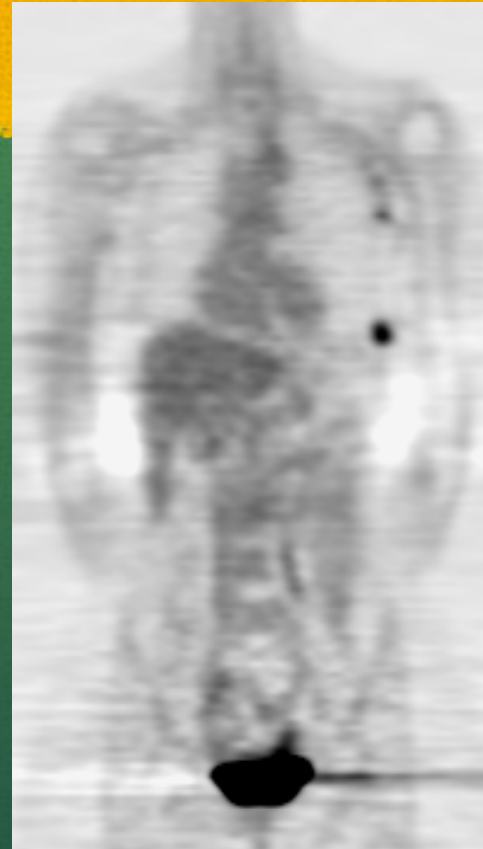
Coronal  
images



Left  
supraclavicular,  
Bilateral IM LNs

All LNs <1 cm  
on CT

Left Axillary  
LNs



Axial  
images

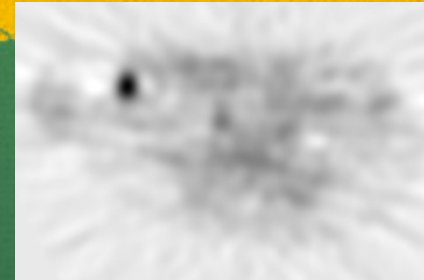
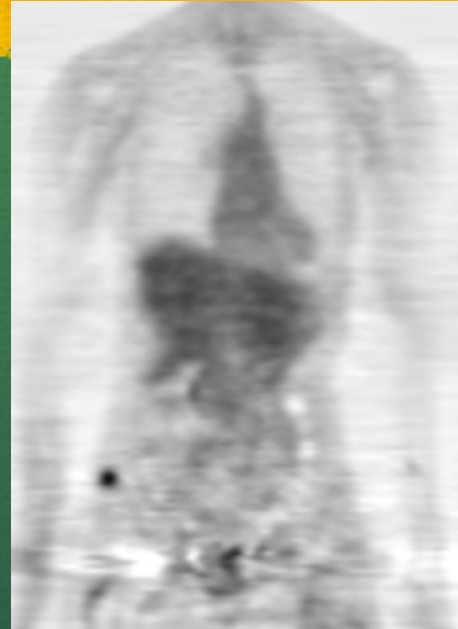


Courtesy of Dr.  
Hubert Vesselle

# Breast Cancer with Bone Mets



FDG PET  
9/11/03

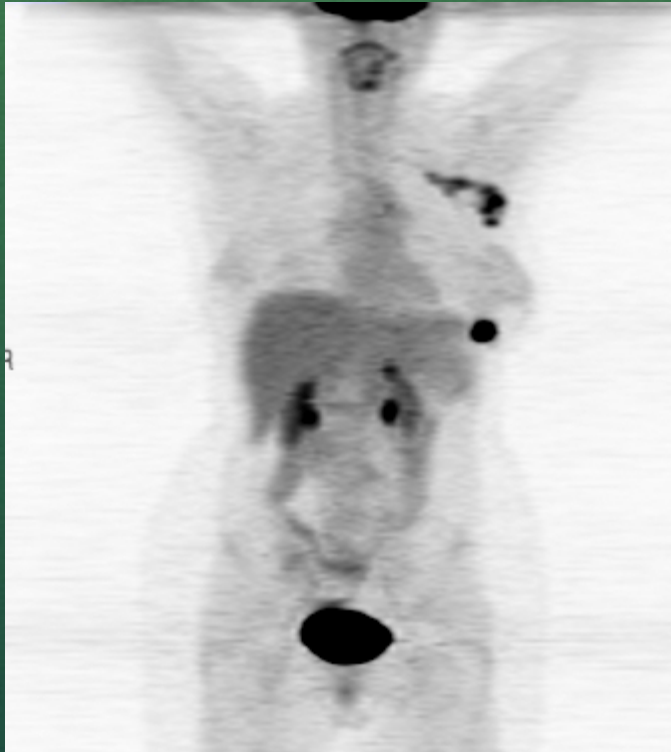


FDG PET  
4/5/04

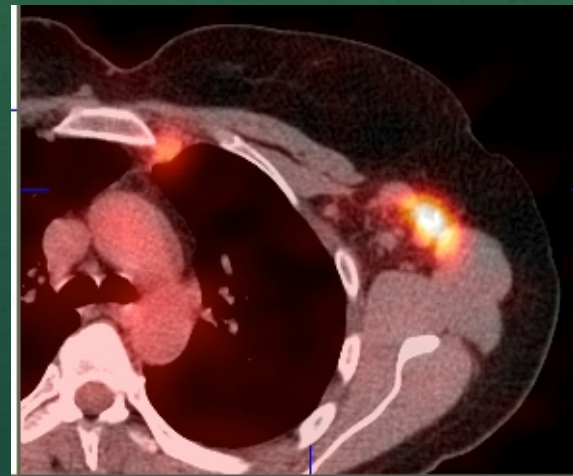


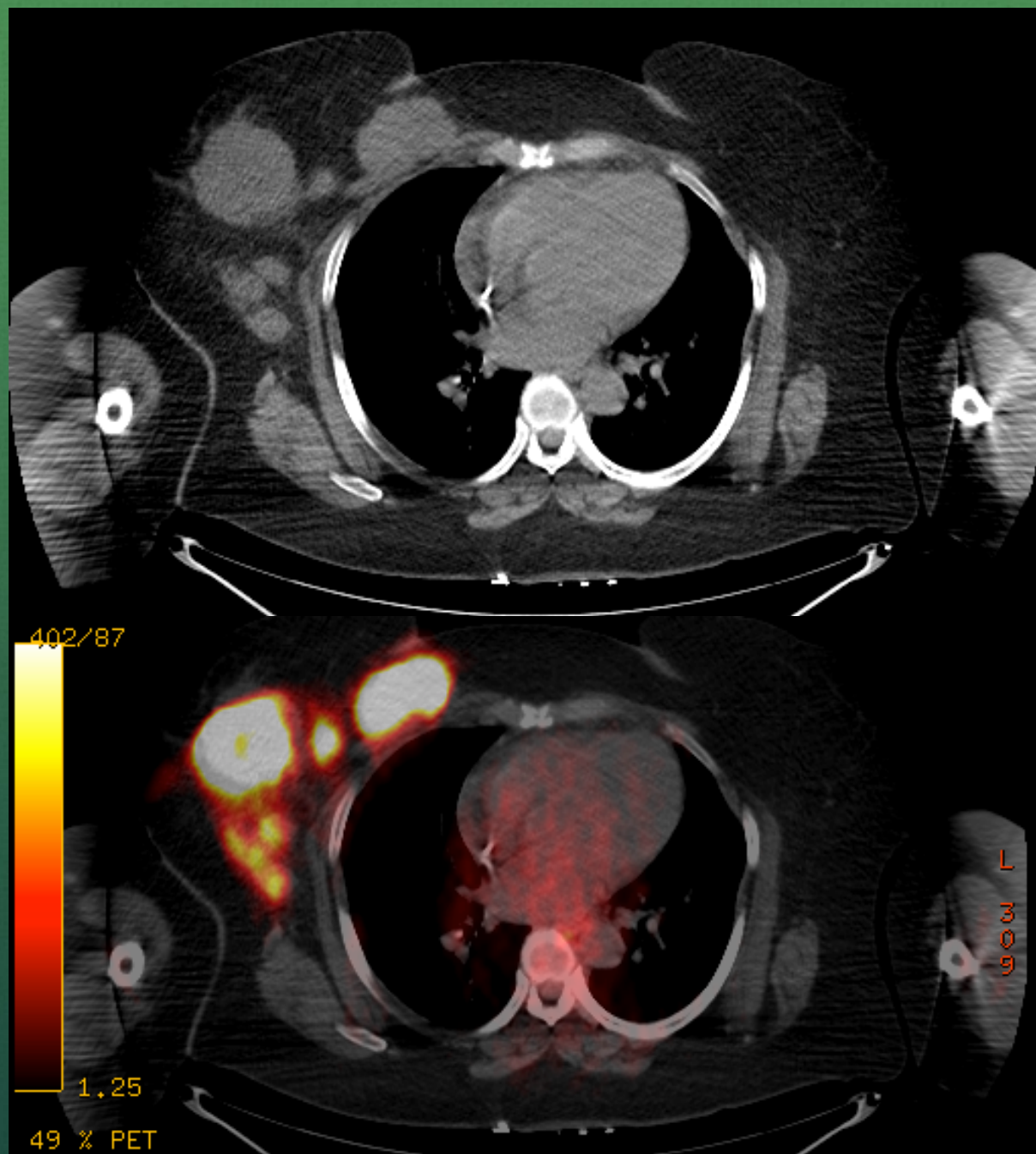
Courtesy of Dr.  
Hubert Vesselle

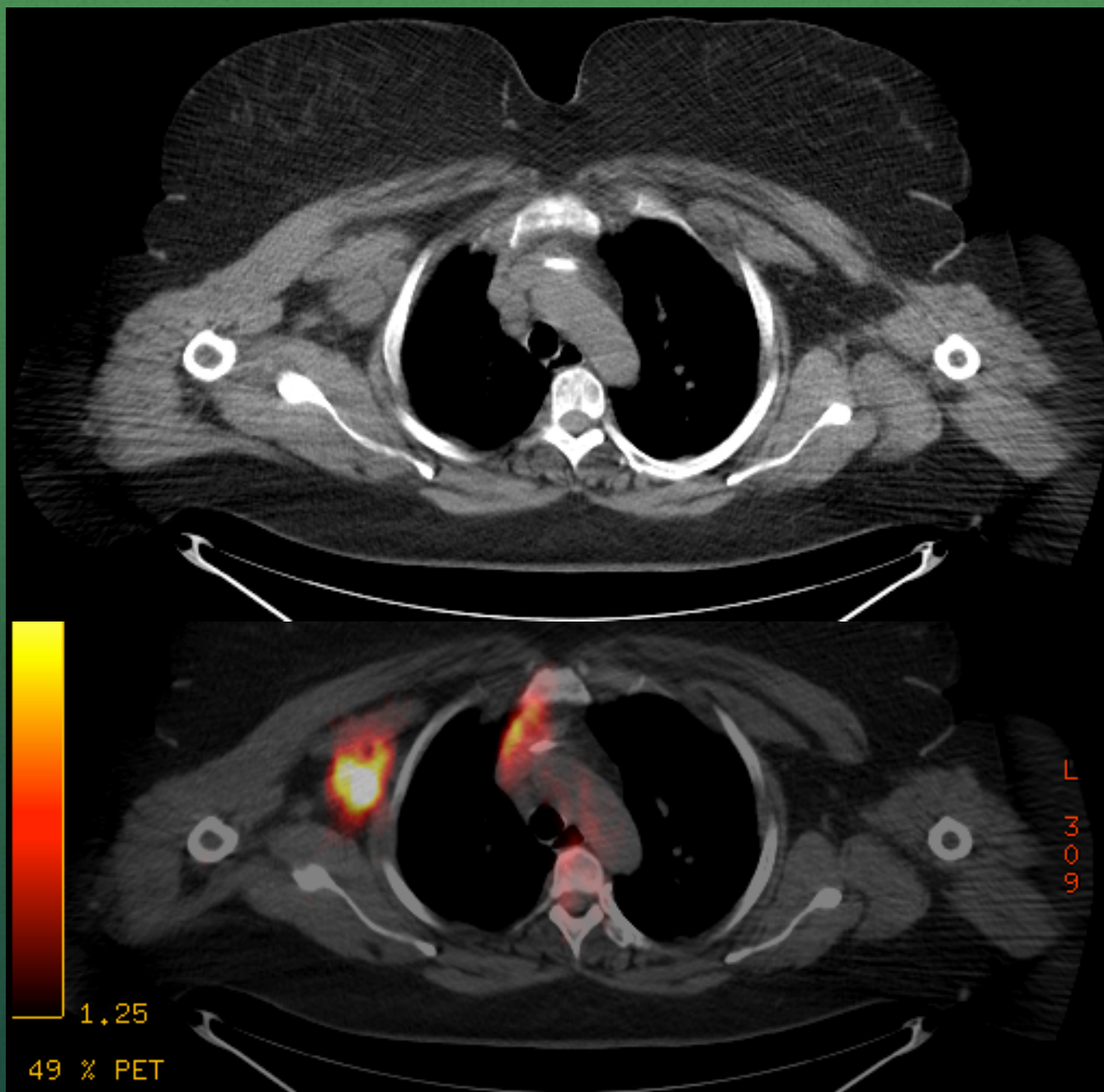
# Breast cancer with axillary and IM nodes



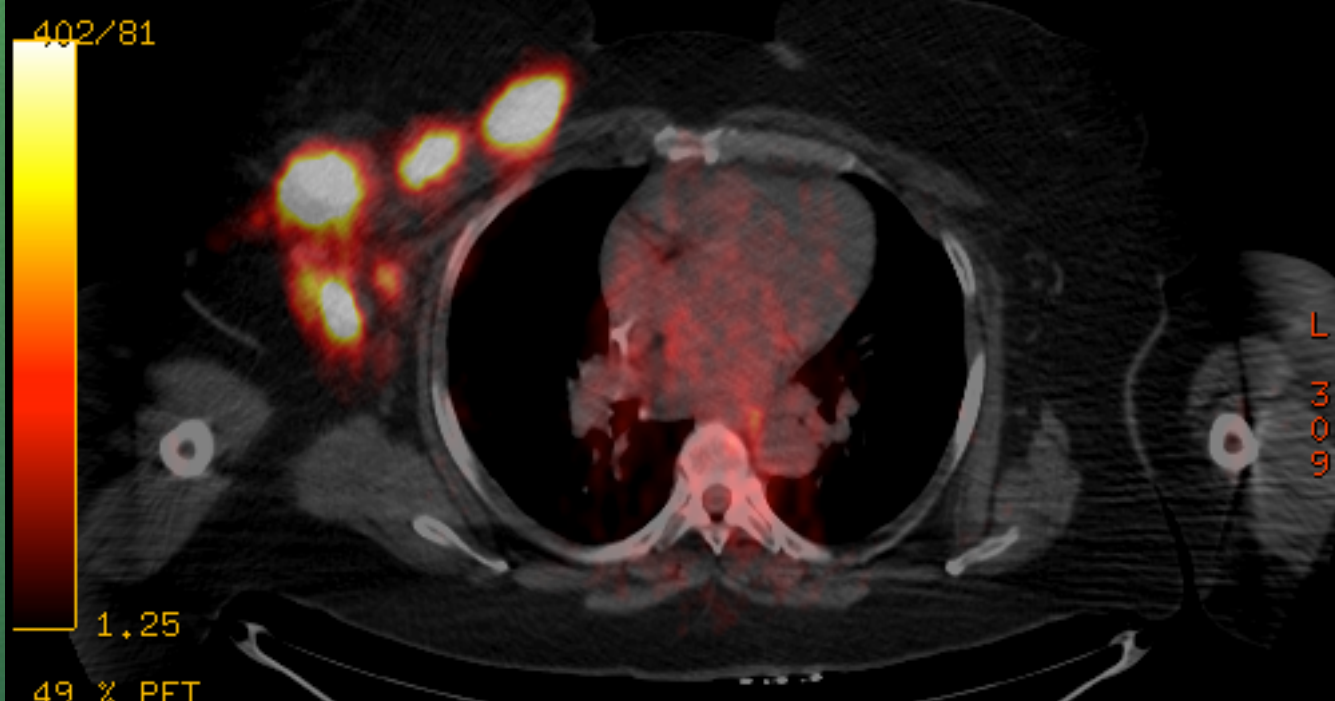
Courtesy of Dr. Hubert Vesselle







Pre-chemo



Post-chemo

