Wrist CT and CT arthrography

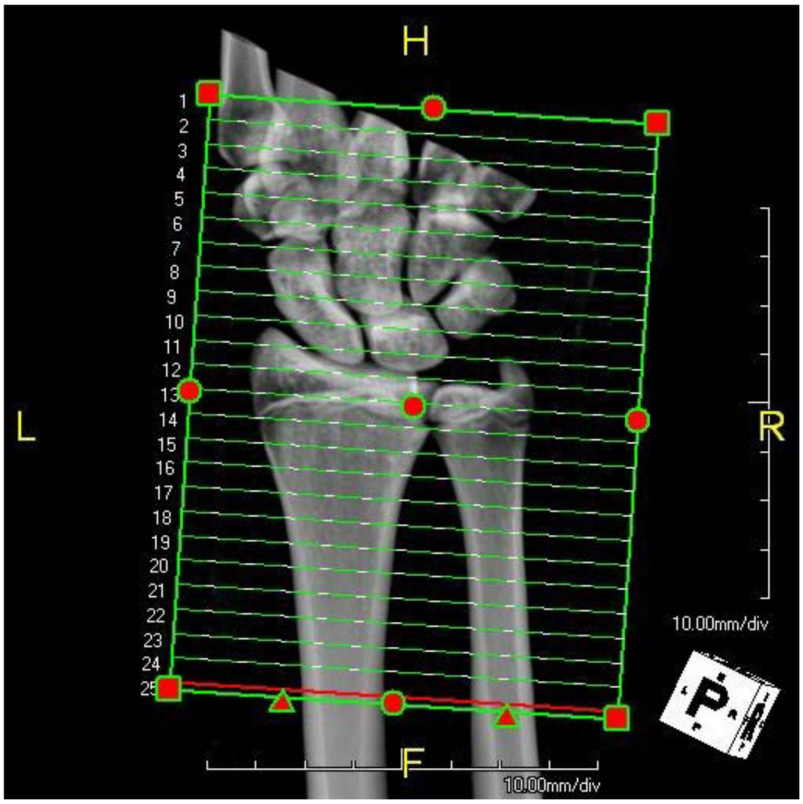
Positioning:

- Patient prone, head first into scanner
- Arm overhead and as straight as possible
- Wrist centered in gantry

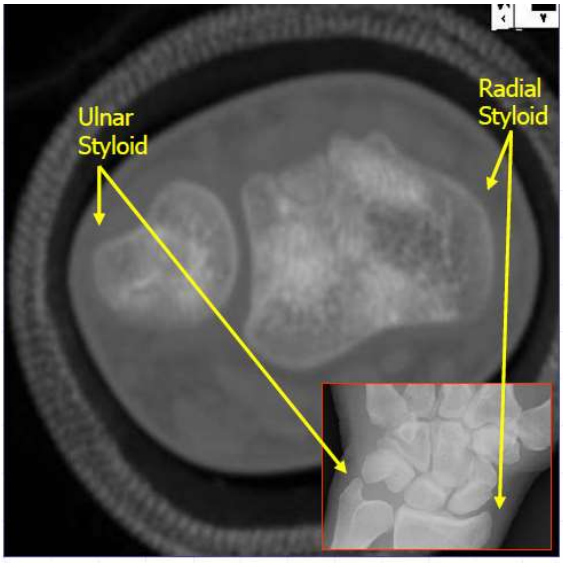
Coverage:

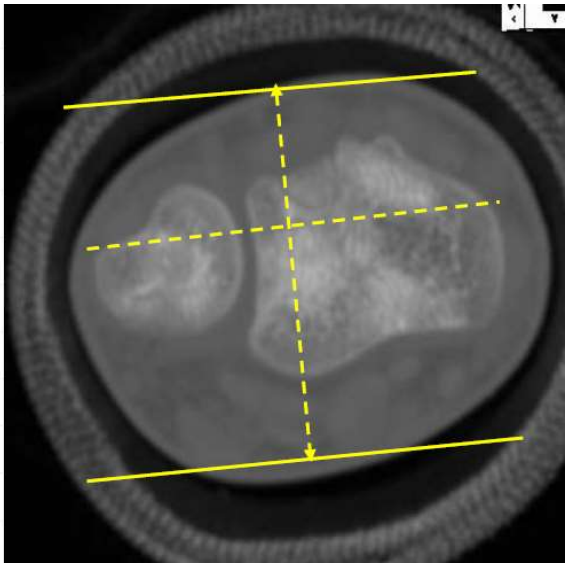
- From distal radial diaphysis through mid 2-5th metacarpals
- FOV only wide enough to include all soft tissue of the wrist.

1. Obtain coronal scout image and obtain axial images in plane parallel to distal radius (see image below). Please note that if patient cannot be positioned straight in the scanner with the elbow straight, corrected axial images will have to be created off of coronal reconstructions.



2. Coronal reconstructions are made off of axial images, parallel to a line drawn from the ulnar styloid to the radial styloid.





3. Sagittal reconstructions are made off of the axial images, perpendicular to the coronal images.

Elbow CT and CT arthrography

Positioning:

- Patient supine
- Affected arm raised above head, palm up. If patient cannot straighten arm, see alternate protocol below.
- Contralateral arm down
- Try to center elbow in scanner to use a small FOV and tilt head toward contralateral shoulder to reduce artifact

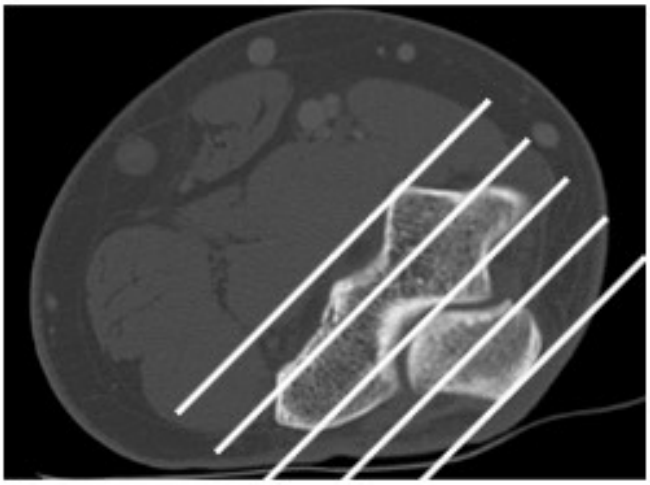
Coverage:

- From distal humeral diaphysis through radial tuberosity
- FOV wide enough to include all soft tissue of the elbow.

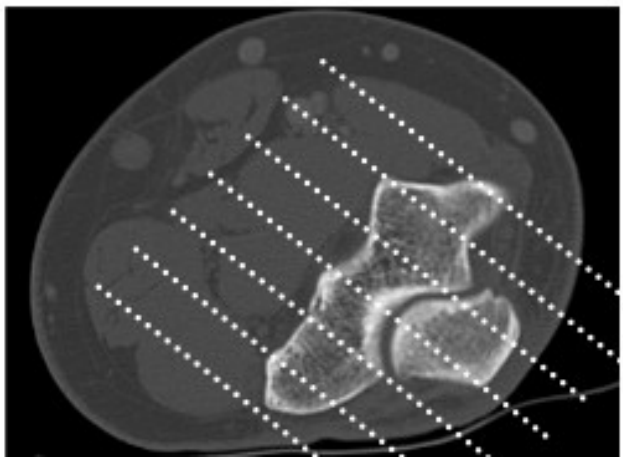
Imaging Planes (3 planes)

1. Obtain coronal scout image and obtain axial images in plane perpendicular to coronal scout image.

4. Coronal reconstructions are made off of axial images, parallel to the humeral condyles

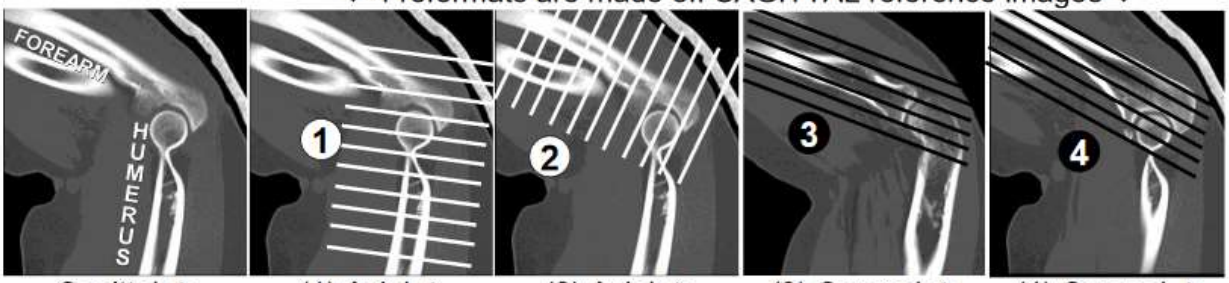


5. Sagittal reconstructions are made off of the axial images, perpendicular to the coronal images (and the humeral condyles).



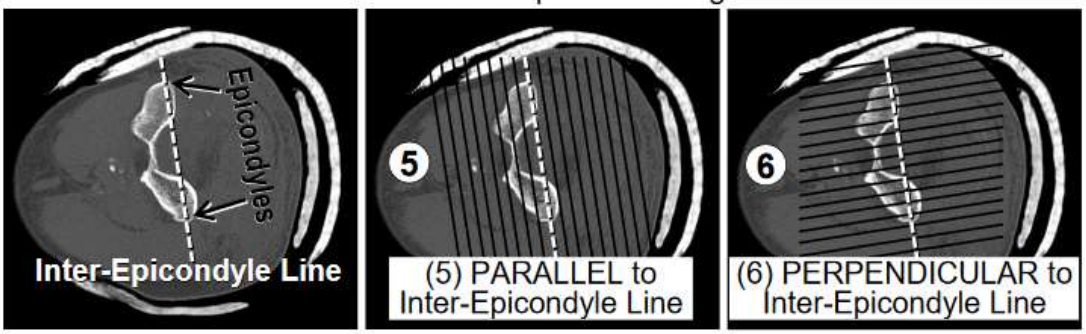
*****If patient is unable to straighten the elbow, then the arm must be positioned overhead (never across the abdomen) and the following 6 imaging planes should be obtained.

↧ 4 reformats are made off SAGITTAL reference images ↧



Sagittal ↑ reference image | (1) Axial ↑ to HUMERUS | (2) Axial ↑ to FOREARM | (3) Coronal ↑ to RADIUS | (4) Coronal ↑ to ULNA

2 additional reformats are made off an AXIAL TO HUMERUS reference image ↧ that passes through both EPICONDYLES ↧



SHOULDER CT and CT arthrography

Positioning:

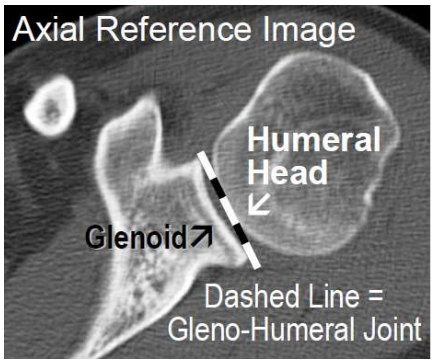
- Patient supine
- Affected arm by side of body, palm up
- Contralateral arm raised above head

Coverage:

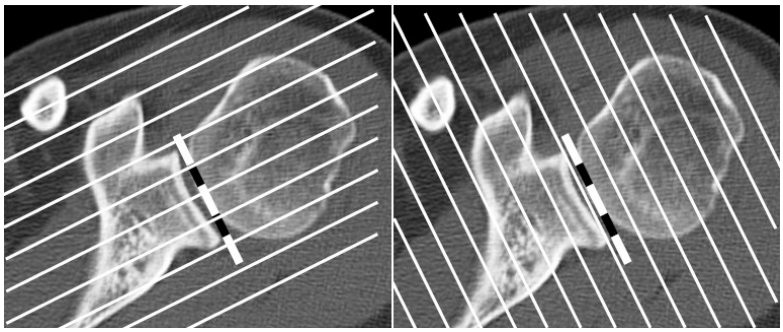
- From above AC joint through bottom of scapula. If there is a prosthesis or a fracture, scan all the way through it.
- FOV wide enough to include entire scapula and proximal humerus.

Imaging Planes

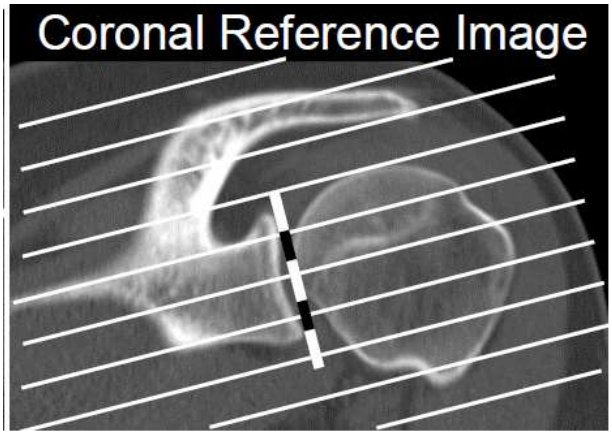
1. Obtain axial reference image.

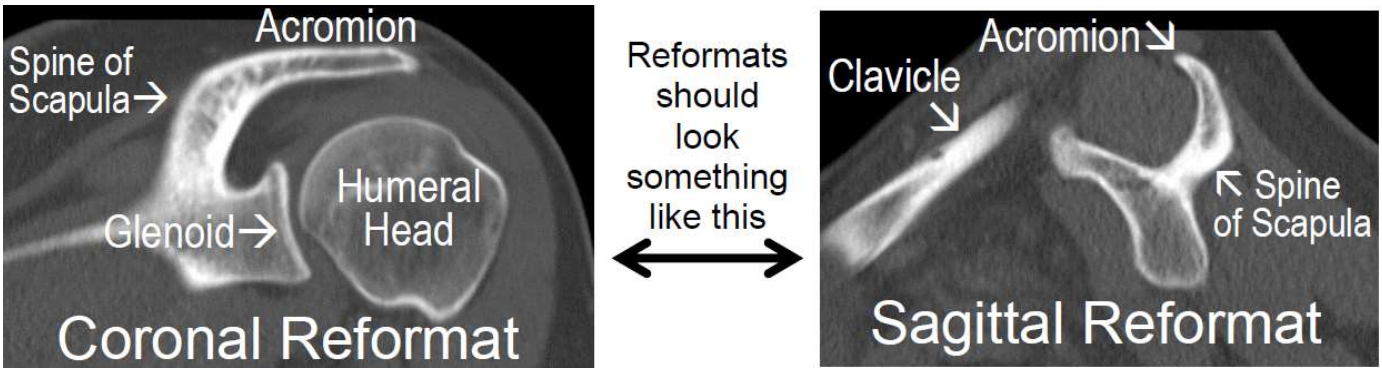


2. Coronal and sagittal reconstructions are made off of axial reference image, perpendicular and parallel to the glenohumeral joint



3. Reconstruct axial images off of coronal reconstructions with images perpendicular to the glenohumeral joint.





Knee CT and CT arthrography

Positioning:

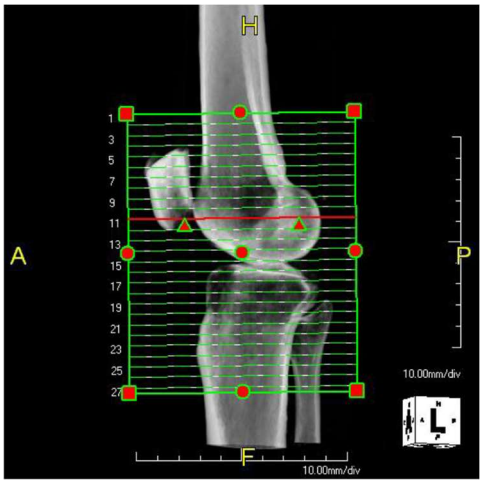
- Patient supine, feet first into scanner
- Knees fully extended, unless the opposite knee has an arthoplasty, in which case the opposite knee should be partially flexed to limit artifact.
- Tape feet together with toes pointing up to prevent motion.
- Position patient so that knee being scanned is centered on the table

Coverage:

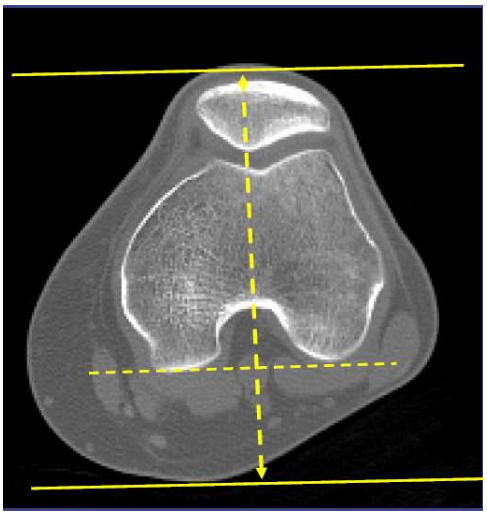
- From distal femur above the patella through the proximal tibia to include the fibular head. If there is a tibial plateau fracture, scan through the entire fracture.
- FOV wide enough to include all soft tissue of the knee.

Imaging Planes (3 planes)

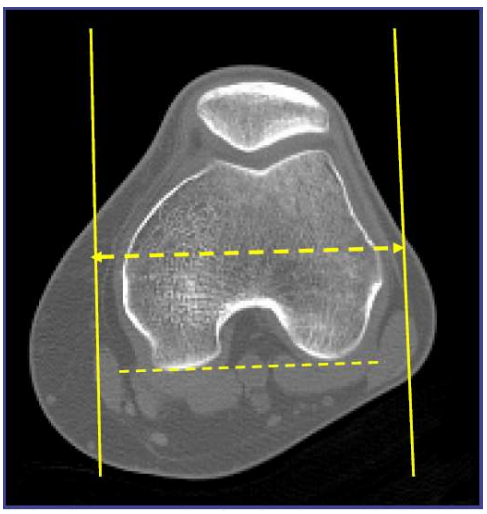
1. Obtain sagittal scout image and obtain axial images in plane parallel to tibial plateau.



2. Coronal reconstructions are made off of axial images, parallel to the femoral condyles



3. Sagittal reconstructions are made off of the axial images, perpendicular to the coronal images (and the femoral condyles).



Ankle CT

Indications: Distal tibial fractures and talar dome lesions

Positioning:

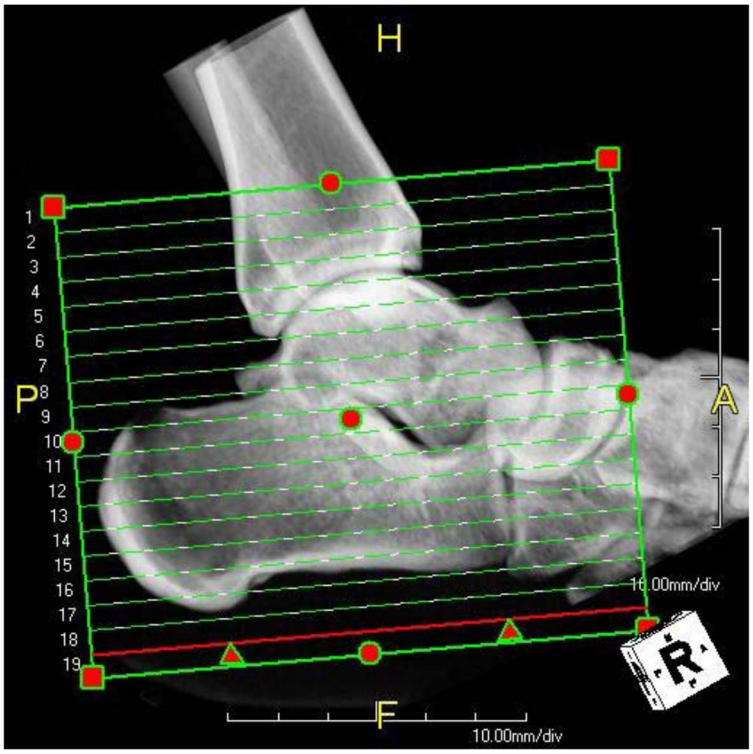
- Patient supine, feet first into scanner
- Legs straight, feet together or one foot straight out, toes pointing STRAIGHT up. Use a footboard if available

Coverage:

- From distal tibia through calcaneus. If there is a distal tibial or fibular fracture, expand coverage to include it.
- FOV only wide enough to include from the posterior calcaneus through the proximal metatarsals.

Imaging Planes (3 planes)

1. Obtain sagittal scout image and obtain axial images in plane parallel to long axis of the calcaneus (see image below).



2. Coronal images are made perpendicular to axial images and cover the posterior calcaneus through the proximal metatarsals.

3. Sagittal images are made off of the axial images, along a line bisecting the calcaneus.

Hindfoot/Midfoot CT

Indications: Calcaneal and talar fractures, tarsal coalition, subtalar joint degeneration.

Positioning:

- Same as ankle
- Patient supine, feet first into scanner
- Legs straight, feet together or affected foot straight out, toes pointing STRAIGHT up. Use a footboard if available

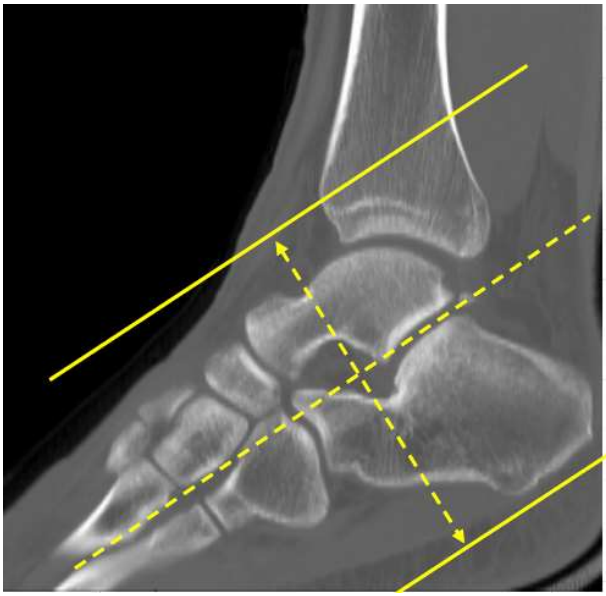
Coverage:

- From distal tibia beyond calcaneus to include to mid metatarsals.
- FOV wide enough to include from the posterior calcaneus through the mid metatarsals.

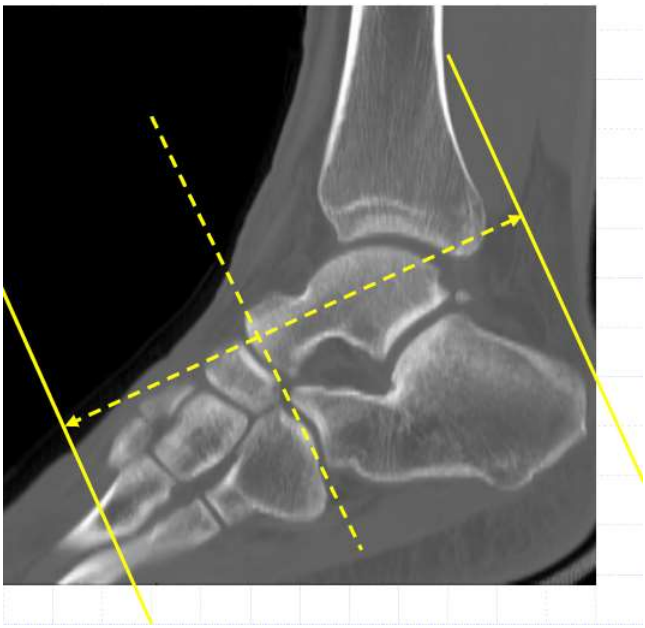
Imaging Planes (4 planes)

1. Axial images in plane parallel to tibiofibular joint.

2. Axial oblique images are made parallel to subtalar joint (should also be parallel to 1st metatarsal)



3. Coronal oblique images are made perpendicular to axial oblique images.



4. True sagittal images are made off of axial images.

Forefoot/Midfoot CT

Indications: metatarsal fractures, evaluation of Lisfranc interval, evaluation of MTP joints.

Positioning:

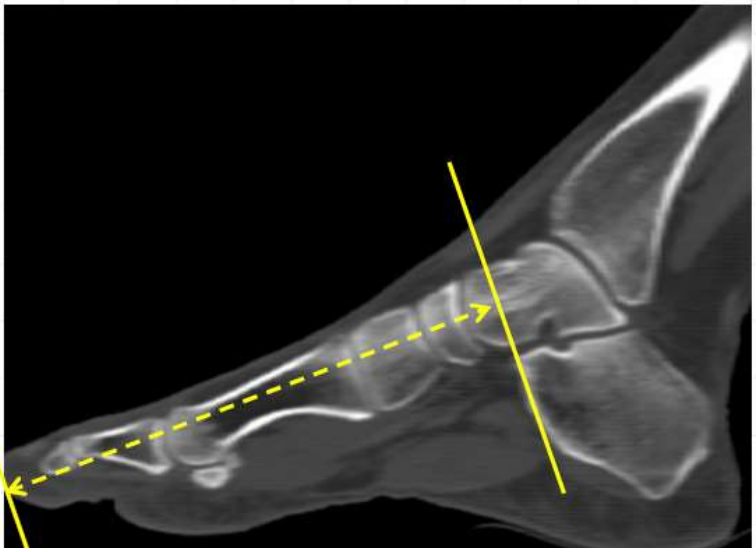
- Same as ankle
- Patient supine, feet first into scanner
- Legs straight, feet together or one foot straight out, toes pointing STRAIGHT up. Use a footboard if available.

Coverage:

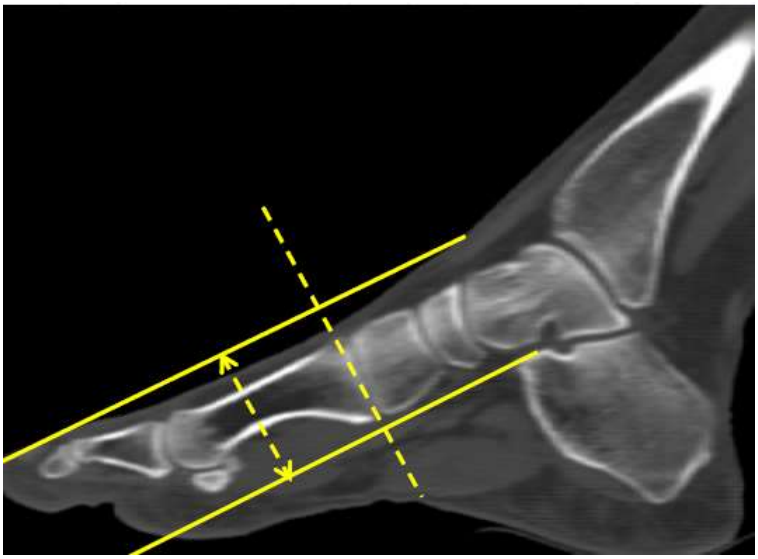
- Scan entire forefoot/midfoot.
- FOV wide enough to include from distal talus through toes.

Imaging Planes (3 planes)

1. Coronal (long axis) images in plane parallel to 1st metatarsal.



2. Axial (short axis) images are made perpendicular coronal (long axis) images and should parallel the 1st TMT joint



3. Sagittal images are made parallel to 1st metatarsal.