PET CT Bone Scan

Radiopharmaceutical:18F-Sodium Fluoride (NaF)
Dose: 10 mCi
T ½: 110 min
Energy: 511 keV
CPT: 78816 (whole body

Indications
Clinical indications for PET/CT Bone Scan include, but are not limited to:
1. To identify skeletal metastases, including localization and determination of the extent of disease.

Radiopharmaceutical
• 10 mCi 18F-Sodium Fluoride (NaF) for adults.
• Pediatric patients will be done at the radiologist's discretion with a dose of 0.18 mCi/kg of body weight.

Patient Instructions
• There are two appointments for this exam, separated by 90 minutes. Patients will have to remove all external metal prior to scanning.
• Upon scheduling, if the patient has any pertinent studies, please instruct either the patient or the ordering physician's office to make them available for correlation.

Equipment
• Philips Gemini TF 64 PET/CT Scanner.

Procedure
• Patient is to consume at least two 8 ounce glasses of water after injection staying as well hydrated as possible.
• After a minimum waiting period of 90 minutes post injection of NaF, obtain PET/CT scan from just above top of head to just below soles of feet ensuring whole body is included in scan.

Acquisition Protocol
Scan Type:
• Position patient on scan table and move into scanner until innermost positioning laser is just above patient's head. Table limit is 1900. Ensure patient is within this limit.
• Enter proper and accurate patient data on acquisition computer.
• Select TLI PET/CT BONE SCAN protocol:
    1. 60 sec/bed position for entire scan.
• Perform CT Surview (Scout view).
• Set parameters for CT, PET and Lung window.
• Perform Low Dose CT Scan for attenuation correction and follow prompts to move patient into PET gantry to perform PET scan.
• When scanning is complete follow prompts to 'End Study'.

CT Parameters
• Scout:
Bone Scan

Length 1900 mm
kV 120
mA 30

• Lung (for all scan types):
Slice Thickness 5 mm
Increment 5 mm
FOV 350 mm

• Low Dose CT scan:
Small Normal (LFOV) Large (LFOV)
Slice Thickness 5 mm 5 mm 5 mm
Increment 5 mm 5 mm 5 mm
kV 120 120 140
mAs/slice (mA) 100 (166) 125 (207) 150 (249)
Collimation 64 x 0.625 64 x 0.625 64 x 0.625
Pitch 0.829 0.829 0.829
Matrix 512 512 512
Filter Sharp (C) Sharp (C) Sharp (C)
FOV 600 mm 600 mm (700 mm) 600 mm (700 mm)

Processing
1. From Directory screen on PET/CT Host, highlight the patient's name you wish to begin processing.
2. Highlight the following image sets:
• WB_CTAC PET
• WB_NAC PET
• Low Dose Sharp
3. Left click on the FUSION VIEWER button in the upper left corner of the Directory screen. This will take a few moments to open the images.
4. Ensure that all image sets are open on the proper image layout:

AXIAL AC, AXIAL CT, FUSED AXIAL, AXIAL NOAC
COR AC, COR CT, FUSED COR, COR NOAC
SAG AC, SAG CT, FUSED SAG, COR ROT VOL

5. Left click on STOP button on MOVIE box below COR ROT VOL, and then left click on the X to remove this box.
6. Adjust the intensity of the COR ROT VOL image by holding down the scroll button in the middle of the mouse and dragging down to increase and push up to decrease intensity. You want to see a small amount of the skin in the background of image.
7. Adjust the intensity of the NOAC images by holding scroll button down and increasing or decreasing intensity accordingly.
8. Right click on FUSED COR image and select ALPHA BLEND from menu.
9. Hold left mouse button down and move right until you see "Alpha: 60%."
10. Right click again on FUSED COR towards the top of the head to get the first image with data in all sets.

11. Scroll through the AXIAL AC image until you get to end of images, then come back in to image until you eliminate the scatter (usually just 2 to 3 images from each end of the AXIAL AC images). Write down the slice numbers from each end. Make sure that the start and end of the AXIAL images match between PET and CT data sets.
12. Scroll through COR AC until no activity is seen on each end and write the slice numbers down. Do the same for the SAG AC images.
13. Left click on the arrow next to the blue box and select ALL ANNOTATION OFF.
14. Left click on the triangulation tool on the left side of screen to turn OFF triangulation.
15. Left click on COR ROT VOL, then left click on the SAVE IMAGES AS icon (pencil writing on a disk).
16. In the description box type COR ROT VOL. Set Start Offset to 1, and End Offset to 30.
17. Left click on OK.
18. Left click on AXIAL AC image, and then SAVE IMAGES AS.
19. In the Description box type AXIAL AC, and set Start Offset to smaller number for axial images and End Offset to larger number.
20. Left click on OK.
21. Do the same for COR AC, AXIAL CT, COR CT, and the SAG CT images.
22. Left click on AXIAL NOAC, and then SAVE IMAGE AS.
23. In the Description box type AXIAL NOAC. Set Start Offset to smaller number and End Offset to larger one. Left click in the box next to ACTIVITY CONCENTRATION.
24. Left click on OK.
25. Do the same for the COR NOAC and the SAG NOAC images.
26. Left click on the FUSED AXIAL images, and then SAVE IMAGES AS.
27. In the Description box type FUSED AXIAL SMART RGB. Change DATA in top right drop-down box to SECONDARY CAPTURE (SF). Set Start Offset to smaller number, and the End Offset to the larger one.
28. Left click on OK.
29. Do the same for the FUSED COR SMART RGB, and FUSED SAG SMART RGB images.
30. Once all of the images are saved, return to the DIRECTORY page, and left click on the REFRESH button at the top right of the screen. Verify that the AXIAL AC, AXIAL CT, AXIAL NOAC, and FUSED AXIAL SMART RGB saved images have the same number of images by looking at the # IMAGES column.
31. Do the same for the COR AC, COR CT, COR NOAC, and FUSED COR SMART RGB images.
32. Next, select the AXIAL AC, AXIAL NOAC, COR AC, COR NOAC, COR ROT VOL, and SAG AC images and the left click on COPY TO button at the upper left corner of screen. This will open a new window.
33. Highlight FUJIPACS at the right of the screen. Ensure that no other icons are highlighted. Left click on OK.
34. Do the same for the AXIAL CT, COR CT, CT SCOUT, DOSE INFO, FUSED AXIAL SMART RGB, FUSED COR SMART RGB, and LUNG images.
35. Ensure all pertinent patient history is typed.
36. Ensure that all image sets match in number of slices (i.e. axial images all have same number of slices).
37. Ensure that the COR ROT VOL has 30 images.
38. Verify that all image sets are complete with no slices missing.
39. Place online for Radiologists' interpretation.