

Lymphoscintigraphy for Breast Cancer or Melanoma

Special Instructions Prior to administering the radiopharmaceutical, the radiologist will confirm the site to be injected by review of the requisition and other imaging studies as appropriate, as well as by confirm the lesion location and/or side in consultation with the patient.

Tilmanocept is similar in structure to dextran and thus must not be administered to patients who are allergic to dextran. Patients should be screened at the time of scheduling and at radiopharmaceutical administration for dextran allergy. In patients with a dextran allergy, Tc-99m sulfur colloid should be used instead.

Breast lymphoscintigraphy: To be performed at UNMH and SRMC.

Melanoma lymphoscintigraphy:

To be performed at UNMH.

To be performed at SRMC on a case by case basis with attending radiologist approval.

Radiopharmaceutical: Tilmanocept is preferred for breast cancer; sulfur colloid is preferred for melanoma

Tc-99m tilmanocept (Lymphoseek): in 2 tuberculin syringes (for breast cancer) and 4 tuberculin syringes (if sulfur colloid is unavailable, for melanoma)

Tc-99m sulfur colloid, in 3 syringes (2 used for the initial administration; 1 held in reserve) for melanoma (or for breast cancer, if tilmanocept is unavailable).

Dose (Adult/Pediatric): Refer to Nuclear Medicine Dose Chart
Note different doses for same-day versus next-day surgeries
Note also that no lidocaine should be used in Tc-99m tilmanocept syringes

Route of Administration: Intradermal

Patient Preparation: No special preparation for lymphoscintigraphy prior to appointment; patients should follow preparation as instructed by the surgical service.

Tc-99m tilmanocept: EMLA cream is optional.

Tc-99m sulfur colloid: For breast lymphoscintigraphies, if the patient is provided with EMLA cream by the referring clinical service, she should place the cream in a thick layer over and around the edge of nipple (do not rub in) and cover with an occlusive bandage. Placement should preferably be 1-2 hours prior to lymphoscintigraphy injections.

For all lymphoscintigraphy patients with Tc-99m sulfur colloid, if no EMLA cream has been provided, patients should arrive 1 hour prior to the examination to have EMLA cream placed over the planned injection site. (Longer times are

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preferred when possible; EMLA cream is most effective when in place for 1-2 hours.) Follow the instructions on the package insert for application of the EMLA cream.

Equipment Setup:

Collimator: LEAP (Orbiter) or High resolution (all others)

Computer set up:

128 x 128 matrix

Static images, 500K counts/image (may stop image sooner if adequate)

Patient Positioning:

Breast lymphoscintigraphy: supine

Melanoma lymphoscintigraphy: so that the lesion (or scar) is easily accessible for the injections

Procedure:

For Tc-99m tilmanocept: The radiopharmaceutical is delivered from the commercial radiopharmacy prepared in tuberculin syringes, 2 for breast and 4 for melanoma. Do not add lidocaine to these syringes.

For Tc-99m sulfur colloid: The radiopharmaceutical is prepared in 3 syringes: 2 provided to the administering provider, 1 held in reserve. Lidocaine (WITHOUT epinephrine) should be added to each syringe, with goal of total volume roughly 0.2 ml/syringe. Using 1% lidocaine (without epinephrine), add 1 part lidocaine (~0.1 mL) and 1 part sulfur colloid (~0.1 mL) to total ~0.2 mL/syringe.

If EMLA has been used, it should be removed and wiped off. The administering provider will clean the skin surface **with hospital-approved skin preparation in the appropriate region prior to administering the radiopharmaceutical intradermally.** The typical number and location of injections is as follows:

Breast lymphoscintigraphy:

Tc-99m tilmanocept: 2 injections, periareolar, same quadrant as lesion (or upper outer quadrant if unknown)

Tc-99m sulfur colloid: 4 injections, periareolar, all 4 regions (12, 3, 6, and 9 o' clock)

Melanoma lymphoscintigraphy:

Either agent: typically 4 injections around the scar, all 4 regions (12, 3, 6, and 9 o' clock)

After the injections are complete, wipe any contamination, place a gauze bandage over the injection site and have the patient massage the region to aid lymphatic drainage.

Obtain immediate images over the injection site:

For breast lymphoscintigraphy, include the injection site and the ipsilateral axilla anteriorly.

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For melanoma, consult with the radiologist about the appropriate region(s) to image. Initial imaging will be performed over the injection site; however, subsequent images will need to follow the course of the lymphatic drainage proximally (e.g., from a lower extremity to the pelvis).

For breast lymphoscintigraphies, if no lymph nodes are identified within 20-30 minutes after injection, attempt to displace the breast tissue (for breast lymphoscintigraphy) and/or obtain an additional view from another (e.g., lateral) projection, in case the injection site obscures the nodes. **For Tc-99m sulfur colloid only:** If no nodes are visible at 30 minutes, the radiologist will usually repeat injection(s) with the reserved syringe. If no nodes are then visible approximately 45 minutes after the initial injection, consult with the radiologist. The examination should be terminated at that time. Goal is for the total time from first injection to the patient departure is less than 1 hour.

For melanoma lymphoscintigraphies, if no lymph nodes are identified within 30 minutes after injection, attempt to obtain an additional view from another (e.g., lateral) projection, in case the injection site obscures the node. Consult with the radiologist about need for repeat injections with the reserved syringe. Visualization and marking of node(s) is typically important for surgery, and so imaging will likely continue until a node has been visualized.

After a node has been visualized, obtain anterior and lateral static images with transmission. If the injection site is in the field of view, block it with a lead shield. **Have the radiologist review the images to confirm node identification.** Label the images with the view (e.g., anterior, right lateral, etc.) and 'INJ SITE' and 'LN MARKED' with arrows as appropriate. If no nodes are identified, provide anterior and lateral static images labeled "NO NODES SEEN"

For melanoma only: The node(s) will then be marked on the skin surface by the administering provider or radiologist with Castellani paint.

Items Required For Complete Study:

- Lightboxes/savescreens of all images (label the injection site and lymph node as appropriate)
- Transfer of all digital images to PACS
- Complete the examination in RIS