What Happens When the Sentinel Node is Found to be Cancerous?

After the surgeon removes the sentinel node(s), a pathologist looks at them under a microscope to see if they contain cancer cells. The sentinel lymph nodes will be classified as negative (no cancer), positive (contain cancer), or indeterminate. Close examination and a final pathology report will follow.

If the sentinel node is determined to be cancerous, this suggests that other lymph nodes in the armpit may contain cancer cells, so you will likely have further surgery and a complete axillary node dissection.

What are the Side Effects of a Sentinel Lymph Node Biopsy?

- There may be mild discomfort or burning associated with the injections of the tracer and the blue dye into the breast tissue surrounding the tumor.
- The blue dye that is injected will turn the urine green for about 24 hours and may cause a temporary bluish discoloration of the breast skin.
- The levels of radiation are very low as only a small amount of radioactive material is injected. There are no long-term effects from the injections and there is no danger to the people you are in contact with.

References:

1. Sentinel Lymph Node Biopsy: What Breast Cancer Patients Need to Know - Kathleen M. Diehl, MD and Alfred E. Chang, MD, Division of Surgical Oncology, University of Michigan Comprehensive Cancer Centre
2. Imaginis – Sentinel Lymph Node Biopsy
3. RVH Nuclear Medicine Department
4. Dr. Kamla Maharajh, Department of Surgery - RVH
5. Sentinel Node Biopsy in Breast Cancer – 2000 European Institute of Oncology
What is Sentinel Lymph Node?
Breast cancer can be confined within the lining of the endothelial cells along the breast duct (in-situ cancers); or it can start to spread beyond the breast duct (invasive cancers). This is important because the blood vessels and lymph vessels that potentially spread the cancer beyond the breast run along this area. If the cancer has spread beyond the lining of the breast duct, and is picked up by the blood vessels or lymph vessels, then it can potentially spread elsewhere in the body. Lymph vessels are small vessels that drain all the tissues of the body. Lymph vessels drain excess fluid back into your circulation. As lymph fluid drains back into your circulation, it goes through lymph nodes. Lymph nodes are collections of lymph tissue that have a high concentration of white blood cells, the cells in your body that fight infection and cancer. The lymph vessels of the breast drain into the lymph nodes in your axilla (underneath your arm), and sometimes along your sternum (breastbone), and above your clavicle (collarbone). The “sentinel” node is the very first lymph node (or nodes) to receive drainage from a cancer-containing area of the breast. The object is to find that node and determine whether it has cancer cells or not.

What is Sentinel Lymph Node Biopsy?
When breast cancer is diagnosed, traditionally your surgeon would recommend an axillary node dissection (removal of underarm lymph nodes) to check for the spread of cancer. This process is part of “staging” the cancer. Unfortunately, the removal of these lymph nodes can lead to chronic problems such as lymphedema (swelling of the arm), restricted shoulder movement, and/or ongoing discomfort in the area of the dissection. Almost all patients will have some residual numbness under the inside of the arm.

A sentinel lymph node biopsy is a technique that was developed to determine if breast cancer has spread to the lymph ducts or lymph nodes under the arm without having to do a traditional axillary lymph node dissection. Experience has shown that the lymph ducts of the breast drain to the sentinel node(s) first, before draining through the rest of the lymph nodes underneath the arm. A sentinel lymph node biopsy requires the removal of only one to three nodes for close review by a pathologist. If the sentinel nodes do not contain cancer cells, there is a > 95% chance that the remaining lymph nodes in the axilla are also cancer free and this eliminates the need to remove additional lymph nodes in the axillary area. This technique is associated with less pain and fewer complications than standard axillary dissection. It represents an important step forward in the staging of the axilla in breast cancer, with the potential of avoiding unnecessary excisions in a large number of patients.

How is Sentinel Lymph Node Biopsy Performed?
Lymph node mapping helps identify the sentinel lymph node(s). The sentinel lymph node is identified in one of two ways: either by a low dose radioactive tracer that can be measured by a hand held probe, or by a blue dye that stains the lymph tissue a bright blue so that it can be seen. Most breast cancer surgeons use a combination of both dyes.

The morning of your surgery, after you register with a clerk in Registration, you will go to Nuclear Medicine in Imaging Services. A Radiologist will inject a small dose of the radioactive tracer in a series of 4 to 8 needles directly into the breast tissue around the tumor, and/or around the nipple areolar area of the breast. A series of pictures will be taken over the next several hours that will show the pathways the lymph fluid takes as it leaves the breast. This will help to guide your surgeon in identifying the sentinel lymph node. The entire imaging procedure can take from one to four hours depending on how quickly the tracer moves through the lymph system. When you are in the Operating Room, after you are asleep, the surgeon will inject a small amount of blue dye into the breast tissue near the area of the tumor. This provides additional visual confirmation of the sentinel node’s location during surgical removal.