

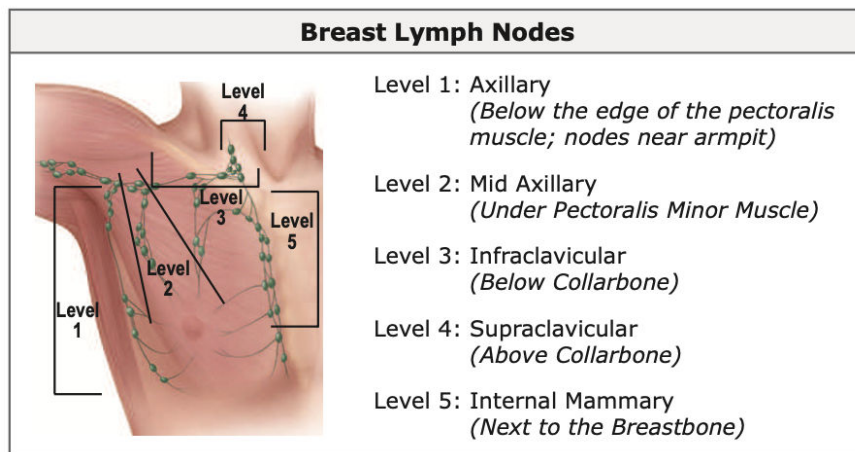
Sentinel Lymph Node Mapping: Why?

Male Patient

Sentinel lymph node (SLN) mapping is a procedure performed to determine which lymph node(s) drains first from a cancerous tumor. Identifying the lymphatic node drainage field of the tumor allows the surgeon to remove the nodes most likely to be cancerous and prevents removal of unneeded nodes.

The lymphatic system follows alongside the vascular (blood) system in every area of the body. The lymphatics pick up cellular waste and filter it through nodes (small, round, pinpoint to olive- sized capsules). The lymph nodes in the breast are found in the underarm area (axillary), near the collarbone and near the breastbone. It is estimated that the largest majority of lymph fluid exits the breast into the nodes near the arm, called the axillary nodes. These are the nodes that surgeons traditionally remove for pathologists to examine to determine whether the cancer has spread. The spread of cancer to the nodes is one of the chief considerations when determining treatment for breast cancer.

For identification purposes, breast lymph nodes have been divided into five levels for identification by surgeons.



A traditional axillary dissection removes Levels 1 and 2 nodes. Level 3 nodes may be included if nodes feel suspicious, which is called a complete axillary dissection. Levels 4 and 5 are not removed.

Before sentinel lymph node mapping, surgeons traditionally performed an axillary dissection to determine if cancer had spread outside of the breast. It is now known that according to where a tumor is in the breast, it may not even drain to the axillary nodes, but to other lymphatic chains found in the internal mammary or interpectoral nodes.

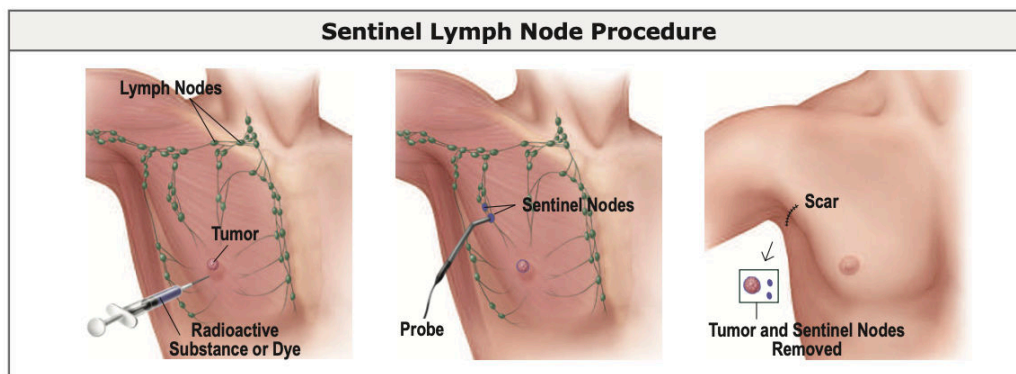
Removal of nodes from under the arm (axillary) increases a patient's risk for lymphedema, a swelling of the surgical arm from accumulated fluid. This complication has troubled and frustrated physicians and brought patients discomfort and pain. Unfortunately, evaluating the axillary nodes (usually 15 or more) was considered imperative in order to make appropriate and adequate treatment decisions. Surgeons wondered how many nodes they

should remove in order not to compromise a patient's future survival in comparison with the risk for lymphedema and discomfort associated with the second incision.

Sentinel lymph node mapping has given surgeons the answers. The sentinel lymph node is described as the first node(s) in the lymphatic basin that receives primary lymphatic flow from the tumor. A surgeon now has a road map to identify the lymphatic flow route to the correct lymphatic node drainage chain.

Sentinel Lymph Node Procedure

The identification is made by first injecting the area around the tumor or the areola with a radiographic substance and/or dye several hours before surgery. The radioactive substance or dye is carried by the lymphatic fluid to the closest lymph nodes. Before the incision is made, a gamma- detection probe identifies for the surgeon the area of greatest intake or amount of the injected material. This allows the surgeon to remove the nodes in the area that have high radioactive uptake or have been stained by the dye, identified as the sentinel nodes. This single node (or nodes) is removed and is sent to pathology for evaluation.



The pathologist may report to the surgeon during surgery. If cancer cells are present, an axillary lymph node dissection may or may not be done at this time. If additional nodes are removed, this may require a drain and increase recovery time. If the pathologist does not evaluate the nodes during surgery, additional surgery may be required later if cancer is found.

Correctly identifying the draining nodes can significantly increase the surgeon's accuracy by identifying which nodes to remove and preventing the removal of unnecessary nodes that may not be in the drainage field of the tumor or may be negative for cancer.