Lymphatic Mapping and Sentinel Lymph Node Biopsy for Breast Cancer

**Sentinel lymph nodes** provide valuable information to guide breast cancer treatment.

**The Lymphatic System and Lymph Nodes**
Lymph nodes are kidney bean-shaped structures found throughout the body that are an important part of the immune system. Foreign particles such as bacteria or tumor cells can travel in lymphatic channels toward lymph nodes, which act as a filter. Some breast cancer cells have the ability to travel through the lymphatic channels in the breast toward the lymph nodes in the axilla (the underarm area).

**What Is a Sentinel Node?**
There are usually between 20 and 40 lymph nodes in each axilla, and these are connected with each other and with the breast. In general, lymphatic channels from the breast merge as they travel toward the lymph nodes, initially draining into 1 or several nodes before moving on to reach other nodes. This first point of drainage, whether into 1 lymph node or several, is considered the sentinel, or “guarding” lymph node or nodes.

**How Are Sentinel Nodes Identified?**
The sentinel nodes are identified through a mapping procedure. Because cancer cells are too small to be easily traced as they travel, a tracking substance is injected into the lymphatic channels near the cancer to define the potential path that cancer cells might take and to identify the sentinel node(s) where those cells might end up. The most commonly used tracking substances are a radioactive tracer (isotope) called technetium 99 and a blue dye called isosulfan blue. They follow the same route that cancer cells would through the lymphatic channels and allow the sentinel node to be identified at the time of surgery because the sentinel nodes will contain the dye or isotope. Although cancer might not yet have spread to this area, if it has spread, it will be found first in the sentinel node or nodes.

**How Will the Information Be Used?**
At the time of surgery, the sentinel node or nodes will be identified and removed. They will be analyzed to determine whether the cancer has reached them, and this information can be used to refine the patient’s prognosis. The information is often used to make decisions about further treatment, if surgery is performed prior to any other treatment. If the surgical procedure is performed after chemotherapy, the sentinel node procedure will indicate whether the treatment has affected any cancer that might have been in the lymph nodes before treatment.

**Important Concepts**
Everyone has sentinel lymph nodes; conducting the mapping procedure to discover the sentinel nodes does not mean that cancer is present there. Everyone has a unique number of sentinel lymph nodes; you may have 1 or more. To determine if there is cancer present in the sentinel node, it must be removed and carefully evaluated.

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**FOR MORE INFORMATION**
- Sentinel Lymph Node Biopsy for Early-Stage Breast Cancer