

Dr. Hamish Hwang Inc.

General Surgery, GI Endoscopy & Esophageal Physiology

PATIENT HANDOUT: Sentinel Node Biopsy in Breast Cancer

Sentinel Lymph Node Dissection

One of the most talked about new surgical techniques in breast cancer is sentinel lymph node dissection. This is an alternative to standard axillary lymph node dissection, and many women believe that it can spare them more invasive surgery and side effects. However, the sentinel node procedure is not appropriate for everyone. Recent research shows that even after the sentinel node procedure, more surgery may be necessary. It has its own limitations and drawbacks, and must be done by a surgeon who has significant experience with the technique.

The dictionary defines "sentinel" as a guard, watchdog, or protector. Likewise, the sentinel lymph node is the first node "standing guard" for your breast. In sentinel lymph node dissection, the surgeon looks for the very first lymph node that filters fluid draining away from the area of the breast that contained the breast cancer. If cancer cells are breaking away from the tumor and traveling away from your breast via the lymph system, the sentinel lymph node is more likely than other lymph nodes to contain cancer.

The idea behind sentinel node dissection is this: Instead of removing ten or more lymph nodes and analyzing all of them to look for cancer, remove only the one node that is most likely to have it. If this node is clean, chances are the other nodes have not been affected. In reality, the surgeon usually removes a cluster of two or three nodes—the sentinel node and those closest to it.

Strategic removal of just one or a few key underarm nodes can accurately assess overall lymph node status in women who have relatively small breast cancers (no more than two centimeters) and who have lymph nodes that don't feel abnormal before surgery. Studies have shown that after almost five years, women who had just the sentinel node removed were as likely to be alive and free of cancer as women who had more lymph nodes removed. Longer follow-up will help us better understand the long-term pros and cons of sentinel lymph node dissection.

Who Is a Good Candidate?

Sentinel node dissection is a good option for women with early-stage, invasive breast cancer who have a low to moderate risk of lymph node involvement. Learn more about sentinel node dissection.

In these women, it is critical to find out if the cancer has moved beyond the breast. But it also makes sense to remove only the few lymph nodes most likely to provide the key information, rather than remove the many other nodes that were "minding their own business" taking care of other parts of the breast.

Expert Quote

"After a crime, you don't interrogate a bunch of people who were two blocks away; you focus on eye witnesses at the scene of the crime." —Marisa Weiss, M.D.

Sometimes, based on a physical exam, X-ray studies, or the size of a tumor, a surgeon will suspect or know that a woman's lymph nodes are involved. When the question is "HOW MANY lymph nodes are positive?" not just "ARE lymph nodes positive?" a standard axillary lymph node dissection, with multiple nodes removed, makes the most sense. This is because you don't want to leave behind a significant amount of cancer that may be in the nodes, AND you also want to know how many of the nodes are involved:

- between one and three?
- between four and nine?
- more than ten?

Researchers have found that, as a woman moves up the ladder through these categories of lymph node involvement, her disease becomes significantly more serious and requires increasingly aggressive treatment.

In general, sentinel node dissection is NOT appropriate for the following women:

- anyone who is likely to have cancer in the lymph nodes
- women with any prior surgery or treatment that could have altered the normal pattern of lymph drainage.

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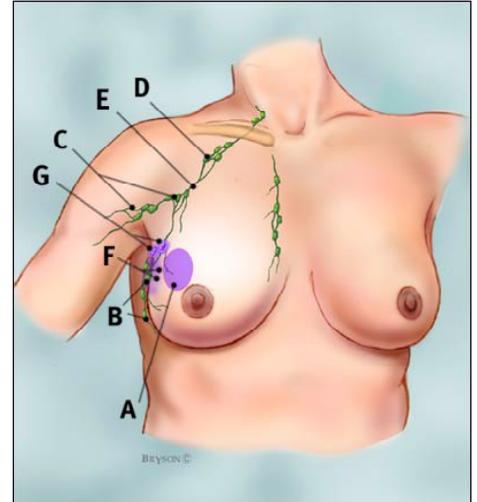
In addition, sentinel node dissection may not be suitable for:

- women over the age of 50, whose lymphatic flow may be altered by the wear and tear of the aging process; in this case, the sentinel node may not reliably indicate cancer involvement of the remaining lymph nodes
- women who had chemotherapy before surgery to reduce the size of a large cancer, or to treat many involved lymph nodes. This is because lymphatic flow may be altered by the inflammation and scar tissue that occurs as your body and the chemotherapy battle the tumor.

What does sentinel node dissection involve?

In the operating room, the surgeon injects a radioactive liquid, a blue dye, or both into the area around the tumor. The doctor then watches to see where the dye travels and seems to concentrate. A special instrument is used to track the radioactive liquid.

This process shows the pathway by which the lymph travels when it drains away from the part of the breast that "housed" the tumor. It indicates which lymph node is the "sentinel node" for a particular tumor. After the sentinel node and one or two nodes closest to it are removed, your surgeon will look at them and feel them in the operating room, to see if they seem to be affected by cancer. This is just a rough exam and doesn't provide definitive information. Next, the nodes are sent to the pathology lab for analysis under a microscope. If the sentinel node does NOT show any cancer, it is likely that no other axillary lymph nodes contain cancer. And the chances are good that the cancer has not spread beyond the breast. Treatment decisions can be made with this important information in mind.



If the sentinel node DOES contain cancer, another treatment step may be needed. There are several effective options:

- A surgeon who suspects, right in the operating room, that the sentinel node is affected by cancer may decide to remove more nodes for evaluation (an axillary dissection) during the same operation.
- If the laboratory finds significant cancer present in the sentinel node (or nodes) after surgery, the surgeon may recommend another operation—an axillary dissection—to remove and analyze more lymph nodes from the armpit.
- Your medical team may recommend that radiation treatment of surrounding lymph nodes—instead of more surgery—is the best way to treat cancer that may have spread there.

Drawbacks of sentinel node dissection

"The need for additional treatment (surgery, radiation, or both) if the sentinel node turns out to be involved represents a key limitation of the sentinel lymph node approach. Many doctors favor the traditional lymph node approach, just to avoid the situation where another treatment is needed to deal with remaining nodes that may be involved with cancer. This reinforces the importance of carefully selecting the right procedure for the each individual woman. If you have a significant chance of having lymph nodes involved in the cancer—based on your initial staging information and what the surgeon found during your surgery—you would be best served by traditional lymph node dissection." —Marisa Weiss, M.D.

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Benefits of sentinel node dissection

With sentinel node dissection, a surgeon may only have to remove one lymph node, or a small cluster of two or three nodes, to know whether or not breast cancer has spread to the axilla (underarm). This procedure leaves the other non-involved, functional lymph nodes intact. The procedure allows critical treatment insights, with the least possible surgery and trauma.

There are many good reasons why women want to minimize the number of underarm lymph nodes that are removed. Lymph node surgery can lead to uncomfortable temporary side effects, such as lymph backup in the armpit ("seroma"). Other side effects can linger, including mild discomfort and numbness in the armpit and the upper arm, and swelling of the arm on the side of the affected breast, called lymphedema. The swelling of lymphedema can involve the breast area as well as the armpit. Finally, the more surgery a woman has in the breast/armpit area, the more potential for numbness, heightened sensitivity, and discomfort.

Therefore, in appropriate women, the sentinel node procedure is an important step in the right direction. It's an intelligent way to identify the node(s) that are at highest risk for involvement with breast cancer. It works well in many women who have early-stage disease with a relatively low risk of lymph node involvement. Strategic removal of just one or a few key underarm nodes can accurately assess their overall lymph node status in women who have relatively small breast cancers (less than or equal to 2 centimeters) without abnormal feeling lymph nodes before surgery. Studies with follow-up of just less than 5 years, show that women who had just the sentinel node removed lived just as long and were just as likely to be free of cancer as the women who had more lymph nodes removed. Longer follow-up will help us better understand the long-term pros and cons of sentinel lymph node dissection.

Other things you'll want to know

- This is a fairly new surgical approach and should only be performed by an experienced team. One leading surgeon recommends that you look for a physician who has performed at least twenty sentinel node dissections.

Expert Quote

"You really want to be 100% accurate in terms of whether or not lymph nodes are involved, because that provides the answer to a lot of questions about adjuvant treatment. If you can find the one lymph node that the cancer drains into, you can look at it much more closely than you can look at twenty lymph nodes that you might take out otherwise." —Thomas G. Frazier, M.D.

- Even with an experienced medical team, about 5% of the time no particular sentinel node will take up the dye or tracer during the procedure. It is not a foolproof technique.
- The procedure is about 10–15% more reliable if both the dye and the radioactive tracer are used, rather than if only one of these two "localizing techniques" is used.
- When a surgeon puts the dye or tracer directly into the tumor area (not just under the skin), it will drain better into the appropriate axillary lymph nodes. Your surgeon may also massage the breast area after putting in the dye and tracer. Massage improves the chance that the dye and the tracer will be absorbed by the tissues and drain away properly.
- Undergoing a sentinel lymph node dissection does NOT guarantee that you will not have any side effects of surgery, such as pain, numbness, or lymphedema.
- The blue dye used in this procedure will stay in your body for quite some time—possibly a few months to a year. You will notice that it looks like a kind of stain under your skin. Some women also notice that their urine is blue immediately after the surgery. This does NOT mean that anything has gone wrong.

The National Surgical Adjuvant Breast Project, sponsored by the National Cancer Institute, is currently studying the best way to evaluate underarm lymph nodes in breast cancer.

For more information on sentinel node biopsy and breast cancer in general visit www.breastcancer.org