What are the advantages of sentinel node biopsy?

Most women who have breast conserving surgery and sentinel node biopsy have a shorter hospital stay, a smaller scar and a quicker recovery time than women who have all the lymph nodes removed from under their arm (axillary clearance). Sentinel node biopsy removes fewer lymph nodes than the standard operation of axillary clearance. This lowers the risk of developing lymphoedema, pain and numbness. Although sentinel node biopsy is now the standard treatment for women with small breast cancers who do not have other evidence of involvement of their lymph glands, there are still some situations where its accuracy has not been fully tested. These situations are discussed later in this fact sheet.

What are the possible side effects of sentinel node biopsy?

- The small amounts of radioactive tracer and blue dye that are used disappear from your system in 24–48 hours. The blue dye will turn your urine blue-green for about 24 hours. The skin over your breast will also be stained blue for a couple of weeks. Mild allergic reactions can occur but are extremely rare.
- There may be wounds in the breastbone area as well as the armpit and on the breast.
- Lymphoedema is still possible with sentinel node biopsy. The risk of moderate or severe lymphoedema is estimated to be around 1%–2% compared to a risk of around 7%–8% with full axillary clearance. A false-negative result is possible (see next section).

What is a false-negative result?

A false-negative result occurs when the lymph node removed as the sentinel first draining node does not contain cancer cells, while another lymph node that does contain cancer cells is left behind in the armpit. The rate of false-negative results varies between different breast cancer treatment centres. The chance of a false-negative result ranges between 1% for tumours under 2cm and 3% for 4 larger tumours.

What if the sentinel node biopsy is ‘positive’?

If the pathologist sees cancer cells in a sentinel node, the biopsy is said to be ‘positive’ (Fig. 4). If this happens, your surgeon is likely to recommend that you have an operation to remove all the glands under your arm (axillary clearance) in case there are other affected lymph nodes in the armpit. Sometimes there are only a few cancer cells in the sentinel node, it may be safe not to do an axillary clearance. This remains an area of controversy and your surgeon will discuss the possible benefits and risks of each option. Research into how to best deal with this situation is currently happening around the world.

In some cases, a pathologist may be able to do tests during the operation to see if there are cancer cells in the sentinel node. If cancer cells are seen, the surgeon can do an axillary clearance as part of the same operation. In other cases, more tests are needed to find the cancer cells and the axillary clearance is performed as a separate operation if it is necessary. Sometimes, radiotherapy to the armpit may be offered as an alternative to axillary clearance if the sentinel node biopsy is positive.

If the sentinel node biopsy is negative (i.e., no cancer cells are seen in the sentinel node), usually no further treatment to the armpit is required.

When is sentinel node biopsy not recommended?

Some patients with breast cancer are still best treated with the traditional operation of full axillary clearance rather than with sentinel node biopsy. Some of the cases where sentinel node biopsy may not be recommended include those with:
- a large cancer in the breast
- more than one cancer in the breast
- enlarged lymph glands felt in the armpit before surgery

In some of these cases, sentinel node biopsy is performed in addition to full axillary clearance. This is to ensure that if the cancer ‘drains’ to lymph nodes near the collarbone and breast bone areas, these are also sampled.

Sentinel node trials

Results from research trials evaluating sentinel node biopsy have shown that in appropriately selected patients, it is a safe method of deciding which patients should go on to have full axillary clearance.

Clinical trials are still being done to further define the role of sentinel node biopsy in the treatment of breast cancer. You may be asked whether you would like to be part of such a study.

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Sentinel Node
Biopsy
Westmead Breast Cancer Institute
Why do lymph nodes need to be removed?

Treatment for breast cancer usually involves removing some lymph nodes as well as removing the cancer from the breast. Testing the lymph nodes is very important, as it gives you and your doctor information about the breast cancer. This helps to plan further treatment.

Overall, about 70% of women with breast cancer will not have cancer in the lymph glands. The chance of cancer spreading to the lymph nodes is partly determined by the size of the cancer. Smaller breast cancers are less likely to involve the lymph nodes.

How can the lymph nodes be sampled?

In the past, the usual operation for breast cancer was to remove most, if not all of the lymph nodes from the armpit on the same side as the breast cancer. This operation is called axillary clearance or axillary dissection. Axillary clearance is a very effective operation to get information about whether or not the cancer has spread to the lymph nodes. Because all of the lymph nodes are removed, axillary clearance helps to reduce the chance of breast cancer coming back in the armpit in the future. Axillary clearance has some possible side effects. These include:

- Stiffness of the shoulder
- Nummularity of the inner aspect of the upper arm
- Sensitivity of the arm

Lymph node biopsy is a technique that has evolved over recent years and it is now the usual way to assess whether or not the cancer has spread to the lymph nodes. Because all of the lymph nodes are not necessarily removed, it is easier to find the sentinel node. Sentinel lymph node biopsy is a technique that aims to identify and remove just the sentinel nodes and no others.

What is a sentinel lymph node biopsy?

The sentinel node/s are the lymph nodes that fluid from the breast drains to first. Usually there are between one and three sentinel nodes. It is thought that if breast cancer cells were to escape into the lymphatic system, they would travel to the sentinel node/s before moving on to other nodes and the rest of the body.

Sentinel lymph node biopsy is a technique that aims to identify and remove just the sentinel node/s and no others.

Who can have sentinel node biopsy?

Sentinel node biopsy is recommended for patients who have early breast cancer. The breast cancer itself may be removed with wide excision (conserving most of the breast) or with mastectomy (removing the whole breast).

Sentinel node biopsy is also sometimes used for some women who have early breast cancer. The breast cancer itself may be removed with wide excision (conserving most of the breast) or with mastectomy (removing the whole breast). Sentinel node biopsy is also called axillary dissection. Sentinel node biopsy can perform special tests to identify even the smallest cancer deposits if they are present.

Pathologist, knowing this to be an important node, can perform special tests to identify even the smallest cancer deposits if they are present.

Once the sentinel node is found, it is removed and sent for examination by a pathologist. The pathologist will check the tissue for cancer. If cancer is found in the sentinel node, then axillary clearance is usually recommended.

How is sentinel node biopsy performed?

The sentinel node is identified, or ‘mapped’ using a combination of three techniques. These are:

- a nuclear medicine test called lymphoscintigraphy (lymphatic mapping) performed before the operation
- a scan using a handheld probe performed by the surgeon during surgery
- a blue dye test, also performed by the surgeon as part of the operation.

These techniques produce a ‘road map’ to help the surgeon find the sentinel node for removal during the operation.

Lymphatic mapping is performed the day before, or a few hours before surgery. It is usually performed in a nuclear medicine or X-ray department. A small amount of radioactive material is injected either around the cancer or under the nipple. The radioactive tracer travels from the cancer site to the sentinel node along the same lymphatic channels that cancer cells could travel. This can take a few minutes or a couple of hours. A series of pictures is taken to show where the sentinel node is located.

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