



# Sentinel lymph node biopsy (SLNB) and one step nucleic acid amplification (OSNA)

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This leaflet will explain what will happen when you come into hospital for your operation. It is important that you understand what to expect and that you feel able to take an active role in your treatment.

This surgery is usually performed as a day case; however, depending upon other medical conditions you may be required to stay overnight. This leaflet will answer some of the questions that you may have but if there is anything that you and your family are not sure about then please ask.

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## What is a sentinel lymph node biopsy?

Studies have shown that the “sentinel node” (“lead node”) technique provides an accurate assessment of the nodes in the armpit in patients with breast cancer. The sentinel node is the first lymph node or group of nodes (there may be up to four) in the armpit to which breast cancer may spread. The presence or absence of cancer cells in these sentinel nodes is important in directing your doctors as to what additional surgery or other treatments may be necessary. If the sentinel node is free of cancer cells, then no further surgery in the armpit is needed. In 7 out of 10 women with breast cancer, the lymph nodes are not affected and extensive surgery to the armpit and its associated side effects can be avoided.

However, if the sentinel lymph nodes are found to have significant cancer cells, further surgery to the armpit will be required at a second operation to remove the remaining lymph nodes.

## What is one step nucleic acid amplification (OSNA)?

This test is carried out on the lymph nodes while breast cancer patients undergo surgery, avoiding the need for a second operation if the cancer is found to have spread to the lymph nodes.

## How is the procedure carried out?

Removal of the sentinel node will be done as part of the planned operation for your breast cancer. The technique to identify the sentinel nodes involves the injection of two substances.

1. Injection of a small amount of a protein found in blood (albumin) tagged with a small amount of radioactivity in the skin around the nipple. This will usually be done the day before the operation or sometimes on the morning of the operation. This radioactive protein will follow the same lymphatics (drainage system) as tumour cells and lodge in the same nodes. You may also have a scan of your breast taken. Usually, these scans are done the day before surgery, or a few hours before surgery on the same day. The total amount of radiation

exposure is only equivalent to two mammograms so it is quite safe. By using a scan (gamma camera) these radioactive nodes can be recognised.

As the radioactive protein is retained in the sentinel nodes for about 24 hours, during surgery the surgeon can trace the small amount of radioactivity in the sentinel nodes by using a gamma probe. This is a handheld penlight-size device connected to a machine which displays the counted radioactivity. In this way the radioactive sentinel nodes can be identified and removed.

2. During the operation when you are asleep under anaesthetic, the surgeon will also inject a blue dye in the skin over the tumour. Lymphatics from the tumour site will be stained blue and can be followed into the blue sentinel lymph nodes. It can result in blue colouring of the skin which may still be seen a year or more later. Rarely, in approximately 1 in 100 patients, it can give rise to an allergic reaction. Usually this responds to simple treatments. Very rarely a severe (anaphylactic) allergic reaction can occur. If any dye is left your body will get rid of this over the next 24-48 hours. As a result of this you may notice a bluish or greenish colour tinge to your urine (or other body secretions) which is harmless.

With both techniques (usually the sentinel nodes are blue and radioactive, sometimes only blue and sometimes only radioactive) most surgeons are able to identify the sentinel nodes in over 95% of the patients. An average of two nodes are removed in total but may vary between 1-4 nodes.

The nodes which have been removed are sent down to be analysed by the OSNA machine. The pathologist will inform the surgeon of the results. If the sentinel lymph nodes have cancer cells in them, the surgeon may remove the axillary lymph nodes. This is called an axillary node clearance (ANC). Please see separate patient information leaflet on this procedure.

### **What drugs are used in the procedure?**

The injection is 0.5 – 2.0mls of a blue dye (Patent Blue V) and 0.05mls of human albumin (a blood protein) linked to a radioactive isotope called technetium 99. The combination of radioactive isotope/dye has been used safely in thousands of patients in Europe and the USA in the last few years.

### **Are there any risks in this procedure?**

You may have certain side effects which you should discuss with your surgeon. The risks and side effects for this procedure are listed below. Likely side effects are those that occur in more than 5% (1 in 20) of patients who undergo the procedure. Unlikely side effects are those that occur in 5% or less of patients undergoing these procedures.

### **For the radioactive tracer injection procedure, risks and side effects include:**

#### **Likely:**

- Exposure to radiation (equal to 1/10th to 1/20th of the annual exposure the average person receives from the background natural radiation sources).
- Tenderness, redness and pain in the area of the injection site.

#### **Unlikely:**

- Allergic reaction to the injected solution.

Compassionate

Aspirational

Resourceful

Excellent

## **For the blue dye injection procedure, risks and side effects include:**

### **Likely:**

- Slight blue colouring of the skin around the area of the injection (usually temporary) can be up to several months.
- Tenderness and pain in the area of the injection site.
- Bluish or greenish discolouration of your urine and stools for several hours after injection.

### **Unlikely:**

- Allergic reaction to the injected solution.

## **Other potential complications:**

- Bleeding (see WLE information sheet).
- Infection (see WLE information sheet).
- Altered skin sensation / numbness in under arm and upper arm area. When removing the sentinel lymph nodes the nerves under the arm can sometimes be bruised and affected leading to alteration of skin sensation or numbness this can be temporary or permanent. It may take up to two years for sensation to return to normal.
- Lymphoedema (swollen arm). This is a rare complication following sentinel node biopsy and can occur in approximately 1% of patients. This is a swelling that occurs in the tissue below the skin, caused by lymph fluid that cannot drain away. The symptoms of this include swelling or puffiness of the arm, hand or chest on the side you had surgery or sometimes feelings of tightness, firmness or heaviness. There are precautions that you need to take to prevent or lessen lymphoedema. These will be discussed with you by one of the breast care nurses.

## **Is there an alternative to SLNB?**

You will have discussed various treatment options with your doctor so that you can make the best decision for your individual situation. The decision about which type of sentinel lymph node biopsy you will have is made depending on the course of treatment you are going to undertake. This decision is usually taken at the initial consultation between yourself and your breast specialist.

The aim of the biopsy is to find out whether cancer has spread from the breast to the lymph glands and is less invasive than axillary node sampling and clearance. If the results of the SLNB are positive for cancer, then a complete axillary node clearance is usually needed to determine how far the cancer has spread. If the results of the SLNB show that the cancer has not spread, an axillary node clearance is usually not needed.

If you consent to the biopsy it will provide us with the important information we need to choose the treatment that is best for you.

## **More information**

If you have any questions about the procedure or this information, please speak to your doctor or nurse.

Visit the Breast Cancer Now website for a comprehensive guide to breast cancer  
[www.breastcancer.org](http://www.breastcancer.org)

## Useful contact details

Lister Ward (General Surgical Unit) 0118 322 7572

Hunter Ward (General Surgical Unit) 0118 322 7535

Or email [GeneralSurgicalUnit@royalberkshire.nhs.uk](mailto:GeneralSurgicalUnit@royalberkshire.nhs.uk)

Pre-operative Assessment Clinic 0118 322 8532

Breast Care Nurses 0118 322 7420 [breastcarenurses@royalberkshire.nhs.uk](mailto:breastcarenurses@royalberkshire.nhs.uk)

Surgical Assessment Unit 0118 322 7541 or 7542

Patient Advice and Liaison Service 0118 322 8338 [PALS@royalberkshire.nhs.uk](mailto:PALS@royalberkshire.nhs.uk)

To find out more about our Trust visit [www.royalberkshire.nhs.uk](http://www.royalberkshire.nhs.uk)

**Please ask if you need this information in another language or format.**

Breast Unit, July 2024

Next review due: July 2026