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Government of **Western Australia**
Department of **Health**
WA Cancer and Palliative Care Network - Clinical Implementation Unit

Sentinel lymph node biopsy for melanoma

WA Kirkbride
MELANOMA ADVISORY SERVICE

What are lymph nodes?

Our lymphatic system is an important part of our immune system. It is made up of lymph vessels and lymph nodes. Lymph vessels are a network of thin tubes that are found throughout the body (see diagram 1). Lymph nodes – also known as lymph glands – are small bean-shaped structures that are found along the lymph vessels.

The lymphatic system has a number of important functions. As blood circulates around our body clear fluid leaks out from blood vessels into our tissues. This “lymphatic fluid” is collected by the lymphatic vessels and returned into the blood stream. As it passes through the lymph nodes, they act as a filter removing bacteria, viruses and other debris from the body. Special immune cells, called white blood cells, attack any bacteria or viruses they find to stop them damaging the body.

Cancer cells may enter through the wall of lymphatic vessels and can travel in the lymphatic fluid and get stuck in the nearest lymph nodes. This is why doctors check the lymph nodes first when they are working out how far a cancer has grown or spread as it helps to determine how advanced the cancer is (stage) and what treatment should be given.

Cancer cells such as melanoma can also invade through the wall of tiny blood vessels where they can then travel to other parts of the body including the lungs, bones, brain and liver to form a secondary cancer. It is not easy to tell whether cancer cells have spread into the bloodstream unless they cause symptoms from the secondary location such as a lump or pain, though it is usually quite simple to check whether cancer has spread to lymph nodes. This information gives doctors an idea as to whether the cancer may also have spread into the blood vessels.

What is the sentinel lymph node?

The sentinel lymph node is the lymph node closest to where the cancer began to develop. The place where the cancer first develops is known as the primary cancer or primary tumour. Cancer cells may appear in the sentinel lymph node before spreading to other parts of the body.

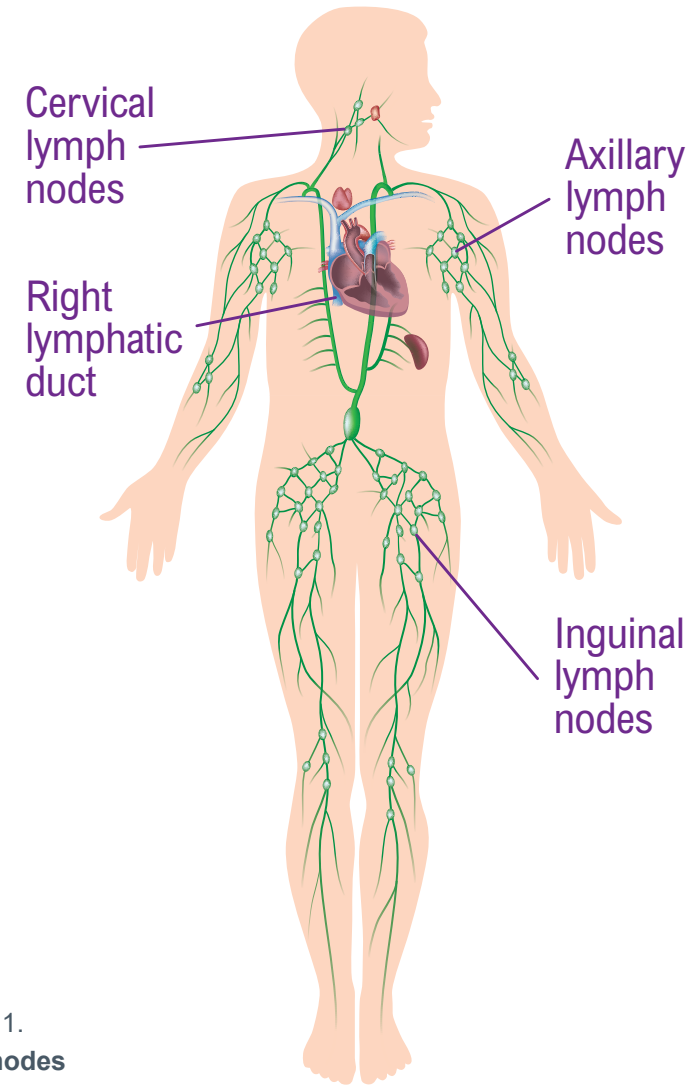


Diagram 1.
Lymph nodes

What is a sentinel lymph node biopsy?

A sentinel lymph node biopsy (SLNB) is a procedure that is done to find out if cancer has spread to the lymph nodes. It involves surgery to remove one or more of the sentinel lymph nodes. The sentinel lymph nodes are then examined to see if they contain cancer cells. **If SLNB is to be performed, it should be done at the same time as the wider excision of the melanoma.**

Why have a sentinel lymph node biopsy?

A positive SLNB means that cancer is present in the sentinel lymph nodes and may be present in other lymph nodes in the same area. This information helps the doctor determine how advanced the cancer is (stage) and how the patient should be treated. Patients who have a positive SLNB (cancer cells are found in the lymph node) tend to have more advanced cancer than if the SLNB is negative (no cancer cells found in the lymph node).

What happens during the sentinel lymph node biopsy procedure?

a) Identifying the sentinel node

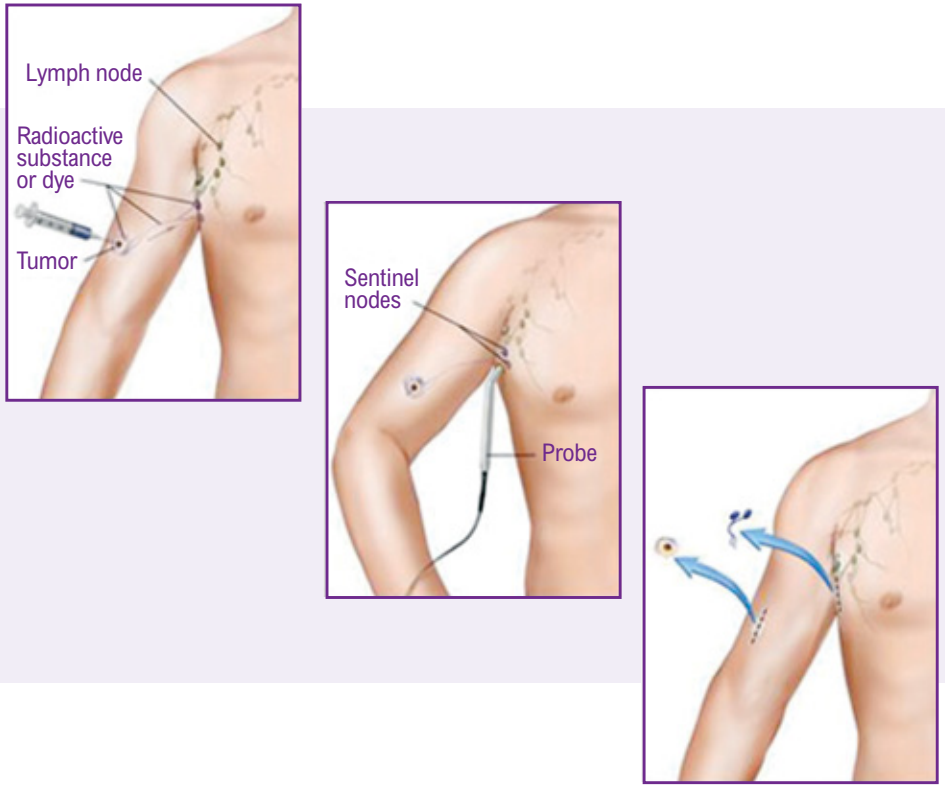
A procedure called a lymphoscintigram is performed in the Nuclear Medicine Department at the hospital either the day before or the day of the surgery. A small amount of radioactive solution is injected around the skin of the primary melanoma and a special camera is used to see how the radioactive solution travels to the lymph nodes.

This helps the surgeon find the sentinel node(s) and the skin over the node(s) is marked. This procedure takes one to two hours.

b) Performing the sentinel lymph node biopsy

Within 24 hours of the lymphoscintigram, the patient is taken to an operating theatre for surgery. Under a general anaesthetic the surgeon injects a blue dye around the site of melanoma. The dye is quickly absorbed into the lymphatic channels and moves to the sentinel nodes. The surgeon uses markings made during the lymphoscintigram and a hand-held gamma detector to find the sentinel lymph node(s) so it/they can be removed. The sentinel node(s) is/are sent to a pathologist who looks for melanoma cells in the lymph node. It may take up to two weeks to get the results back from the pathologist.

Diagram 2.
The sentinel lymph node biopsy procedure



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Who is suitable for a sentinel lymph node biopsy?

Patients who have a primary melanoma with a thickness of at least 0.8mm, or less than 0.8mm thick with ulceration, should discuss the option of having a SLNB. Generally, SLNB is not offered to people who are in poor health. Sometimes the location of the melanoma can make it hard to identify the sentinel lymph node(s). For example, lymphatic fluid from the face or scalp may travel to a number of different lymph nodes, so it may be more difficult to reliably identify sentinel lymph nodes for melanoma on the face and scalp. By contrast, the lymphatic fluid draining a melanoma on the arm would tend to travel to the armpit of that arm, making the sentinel node easy to identify. Melanomas on the back or chest may have several sentinel nodes in different sites.

What if melanoma is found in the sentinel lymph node?

If the sentinel node contains melanoma then the surgeon may recommend regular monitoring using ultrasound to examine the lymph node region where the sentinel node was removed. There is no evidence that removal of the other lymph nodes in the area of the sentinel node affects the long-term outcome in patients with a positive SLNB so this is not routinely done.

Additional tests such as scans (PET/CT) may be done at this time.

Some patients with a positive SLNB may be advised to have additional therapies to reduce the occurrence of further melanoma and to improve their prognosis. Whether these therapies are recommended depends on the stage of the melanoma. Patients who have a positive SLNB should be seen by a medical oncologist to discuss their options for further treatment.

A negative SLNB is no guarantee the melanoma has not spread to other parts of the body through the bloodstream.

What are the side effects of sentinel lymph node biopsy?

- All operations have risks including unexpected anaesthetic complications, excessive bleeding, bruising or infection.
- A collection of blood (haematoma) or fluid (seroma) may occur where the lymph node was removed from the body.
- There may be slight pain at the injection site during and shortly after the lymphoscintigram.
- There may be some redness at the site for one to two hours after the lymphoscintigram.
- There can be blue staining at the injection site for weeks or even months after the procedure.
- Pain and/or discomfort can occur where the lymph node was removed.
- Loss of sensation in and around the area where the lymph node was removed can occur.
- A small number of patients may have temporary swelling of the limb. Occasionally this may persist as a longer-term problem that is known as lymphoedema.

In a small number of cases the results from a SLNB may indicate that cancer cells are present when they are not (false positive) or cancer cells are not present when they are (false negative).

The decision whether to proceed with a SLNB is therefore one that should be made for each patient by considering the advantages and the risks, in consultation with the treating surgeon.

Further questions?

Please discuss any questions or queries with your doctor or alternatively call the Skin and Melanoma Cancer Nurse Coordinator on **0417 952 129**.