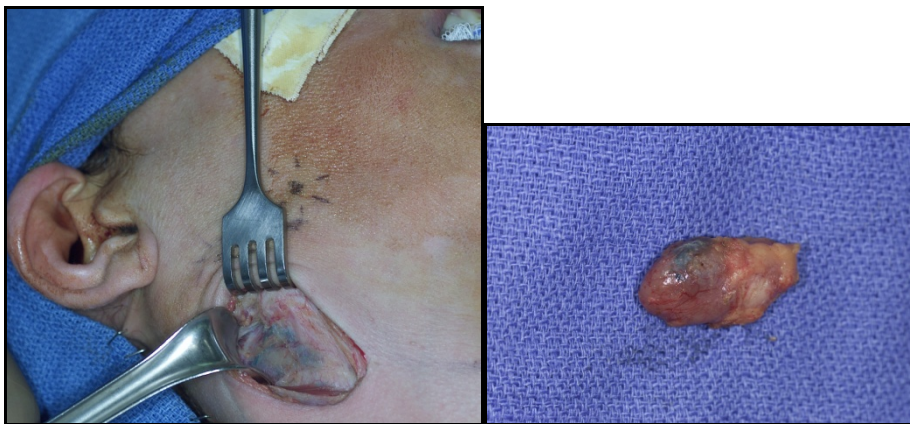


Sentinel Lymph node Biopsy for Melanoma

In certain types of cancers, such as melanoma, when tumor cells start migrating in the body, they first stop within the regional lymph nodes. The concept of sentinel lymph node biopsy is based on the fact that this spread of cancer generally follows an orderly and predictable route. It begins with the first, or **sentinel** lymph node, and then progresses to the rest of the lymph nodes in the area. Research has demonstrated that if this lymph node is free of cancer, the rest of lymph nodes in the neck would be free of cancer as well. If we can find and remove the sentinel lymph node and test it for cancer cells, this would identify patients who need further treatment of their lymph nodes with surgery or radiation. At the same time, it would spare patients with negative sentinel lymph nodes from unnecessary removal of all the lymph nodes within the neck (neck dissection) or salivary gland in front of the ear (parotidectomy).



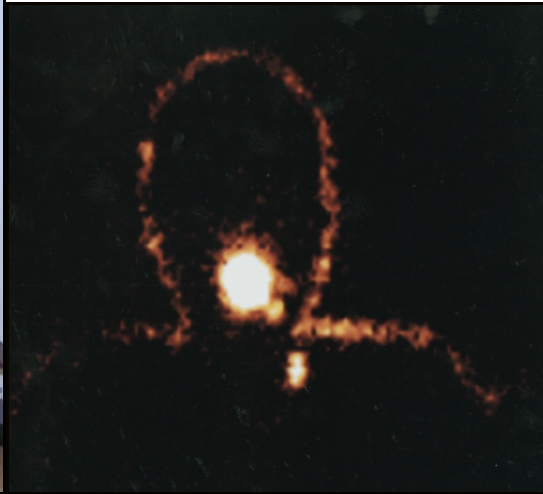
Intra-operative identification of the sentinel lymph node in the left neck, seen after uptake with blue dye.

Certain substances such as radioactive element Technetium or a blue dye Isosulfan help us visualize lymphatic drainage pathways. According to the sentinel lymph node concept, after being injected into the tumor, this radioactive substance or the blue dye will be first retained by the sentinel node, before traveling to the rest of the nodes. This is a patient with melanoma of the cheek who had her cancerous lesion injected and is undergoing a lymph node biopsy. Blue staining helps identify the sentinel lymph node.

The sequence of events is highly orchestrated. In the morning of surgery, the patient arrives to the nuclear medicine suite and receives an injection of radioactive material into the skin tumor, then undergoes a Nuclear Medicine scan. Nuclear medicine technician prints the scan and marks the location of the sentinel lymph node on the patient's neck.



A



B

Preoperative nuclear medicine procedure (A) and the image of the technetium scan (B) showing the primary tumor and a sentinel lymph node within the left lower neck.

It is best to take the patient to the OR within 120 minutes after the injection, while radioactive material is still in the neck and has not dispersed throughout the rest of the body. We use a radioactivity counter (gamma probe) in the operating room, that gives out a high pitched noise when the radioactivity of the tissue is increased. We also inject a small amount of a blue dye into the melanoma, then remove it and make a small incision in the neck looking for a blue lymph node. We confirm the identity of the sentinel lymph node by its high radioactivity count. This node goes to the pathologist, and within 20 minutes we have the result. If there are no melanoma cells within the lymph node, then we know that the rest of the lymph nodes in the neck are clear of cancer as well. If the sentinel lymph node is positive for melanoma, then I complete neck dissection or removal of parotid gland during the same surgery.



Confirmation of the sentinel node based on a high radioactive count.