

Patient Education Series



BREAST SURGERY Using Fluorescence Guided Surgery Techniques

Patient Education

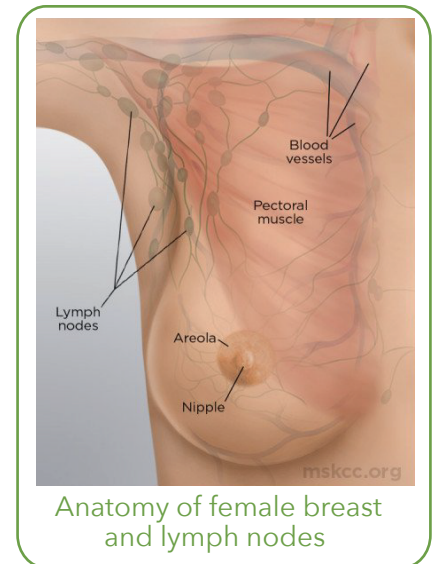
The information presented in this leaflet will equip you with the knowledge to participate in your care and make informed decisions about your operation.

Fluorescence guided surgery helps to optimize visibility during surgery, help identify lymph nodes and reduce complications. With less complications, your length of time in hospital may be reduced, with less biopsies and follow up visits required.

THE CONDITION

Breast surgery is recommended to remove cancerous tissue and areas surrounding the cancer. There are several different ways of undertaking surgery for breast cancer. Your surgeon will discuss the best option for you.

The main surgical approaches are: Breast conserving surgery, where a lump or part of the breast is removed or a mastectomy, where the whole breast is removed. Also, the surgery may involve removing some or all the lymph nodes in your armpit to accurately stage the cancer.



TREATMENT OPTIONS

While the surgical approach is dependent on the type and location of your cancer, you can expect:

- **An incision in your breast to remove the cancer and surrounding tissue.** How much tissue is removed will depend on whether you undergo lumpectomy to remove part of the breast tissue or mastectomy to remove all the breast tissue. The site and length of the incision depends on the location of the cancer within the breast.
- **An assessment of the lymph nodes in your armpit.** During a sentinel lymph node biopsy, the surgeon removes a few lymph nodes into which a tumor is most likely to drain first (sentinel nodes). These are then examined for cancer. If no cancer is present, no additional lymph nodes need to be removed. If cancer is found, the surgeon may remove more lymph nodes and may modify the treatment you receive after your operation.
- **Breast reconstruction.** If you are undergoing mastectomy and choose breast reconstruction, the reconstruction is often completed at the time of your cancer operation. In some cases, reconstruction may be delayed and completed in a separate surgery.

THE PROBLEM

The goal of breast cancer surgery is to safely remove the cancer from your breast, identify sentinel lymph nodes to stage your cancer and, if reconstruction is being undertaken, to do so with no complications. Breast surgery is complex and techniques continue to evolve that give more consistent outcomes with fewer complications. Fluorescence Guided Surgery (FGS) offers significant benefits at critical parts of this operation.

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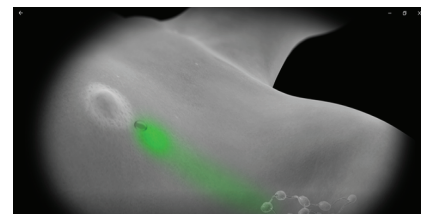
Fluorescence Guided Surgery techniques (using Near Infrared) is "one of the most suitable methods to measure intraoperative free flap tissue perfusion, resulting in improved free flap survival... resulting in reduced overall operative time, and procedure related length of hospital stay"

Bigdeli AK et al., Journal Reconstr Microsurg. 2020

THE SOLUTION

Sentinel Lymph Node (SLN) detection

Sentinel lymph node biopsy is an important tool in the staging of breast cancer. Sentinel lymph node identification using fluorescence guided techniques allows the surgeon to map the lymphatics in the breast and underarm area and more precisely identify the location of the sentinel lymph node. Guided by the fluorescence, the lymph node is more visible and is removed. The axilla (armpit) is then re-examined to confirm that no additional sentinel lymph nodes are present and the procedure is completed. The sentinel lymph node is then taken away for biopsy to confirm presence of cancerous cells or not.



Sentinel lymph node identification using fluorescence dye

Reduce complications and flap failure during reconstruction

If the breast is being reconstructed using a flap procedure, the key to success is to harvest and transplant healthy tissue to the breast area. One of the major concerns with breast reconstruction is necrosis - or death of all or a portion of transplanted tissue, which occurs when there is reduced blood flow to the tissue during the critical 14 day wound healing period. Adequate blood flow is crucial to surgical success and the body's ability to accept the transplanted tissue - known as the flap. Insufficient or impaired blood flow can cause tissue damage which can result in post-operative complications including flap failure. By using FGS, the surgeon can in real time see if adequate blood flow (or perfusion) is present in the flap tissue. In one clinical study, the chance of tissue necrosis was reduced by 86%.¹ FGS during breast reconstruction is associated with a lower occurrence of surgical complications, and a quicker recovery time for you.

HOW IT WORKS

FGS involves the use of a special US FDA approved dye, called Indocyanine Green (ICG) and a special Near Infra-Red (NIR) light camera systems to illuminate the anatomy of the breast and associated tissue such as the lymph nodes and flap tissue. By visualizing these structures, the surgeon can more clearly identify your anatomy and make better decisions during your procedure.

DISCLAIMER

This information is intended to educate you about your specific surgical procedure. It is not intended to take the place of a discussion with a qualified surgeon who is familiar with your situation. It is important to remember that each individual is different, and the reasons and outcomes of any operation depend upon the patient's individual condition. The International Society for Fluorescence Guided Surgery (ISFGS) has endeavored to present information for prospective surgical patients based upon current scientific information.



Reference:

1. Harless CA, Jacobson SR. Tailoring through technology: A retrospective review of a single surgeon's experience with implant-based breast reconstruction before and after implementation of laser-assisted indocyanine green angiography. *Breast J.* 2016;22(3):274-281.