

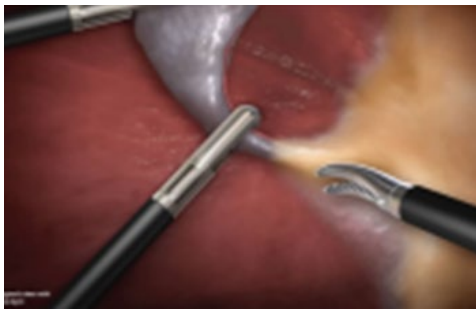
Patient Education Series

Fluorescence Guided Surgery



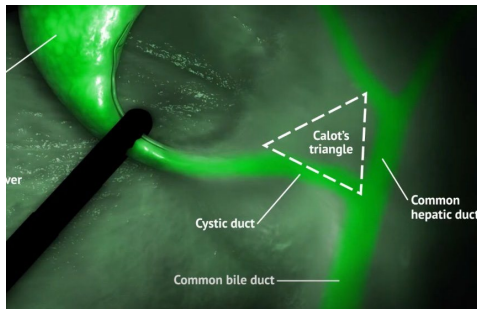
Why Fluorescence Guided Surgery (FGS)?

Many surgical procedures are considered safer today because of a new technology called fluorescence guided surgery. This technology provides surgeons with critical information in real-time that was previously not available. Potential benefits to you, the patient, are reduced complications and better surgical outcomes.



Surgeon's view of the gall bladder with regular white light

Traditionally, surgeons were limited to what they could see under visible what is called white light. Today, using a special light called infrared light, a special dye called Indocyanine Green (ICG) and special cameras, the surgeon is able to see the anatomy of the patient in a way that was previously not possible.



Surgeon's view of the gall bladder using special fluorescence guided light

The problem

While there have been many advancements in preoperative medical imaging such as CT and MRI scans, surgeons still almost exclusively operate under white (visible) light during their procedures.

Normally, surgeons rely on their ability to see and feel the tissues during surgery. However, most human tissue looks very similar under white light, and it can sometimes be challenging to distinguish one type of tissue from another, or to accurately remove diseased tissue. In addition, a surgeon can only see the topmost layer of tissue under white light, while tissues and structures underneath remain hidden.

Using the special dye, ICG, along with special-imaging equipment allows structures

and vessels to be seen by the surgeon. By seeing these structures, the surgeon can more clearly identify the anatomy and make more informed decisions during your procedure. This allows the surgeon to see beneath the top layers of tissue to areas of interest to layers below.

Fluorescence guided surgery has the added advantage of being in real-time. Traditional images like X-Rays, CT scans, and MRI scans can provide excellent images, but they can only provide static images taken before the operation. With the additional information available using fluorescence guided surgery, the surgeon can adapt the surgery for each individual patient.

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.

"FGS approach fundamentally changing how surgery can be performed more safely and accurately for patients."

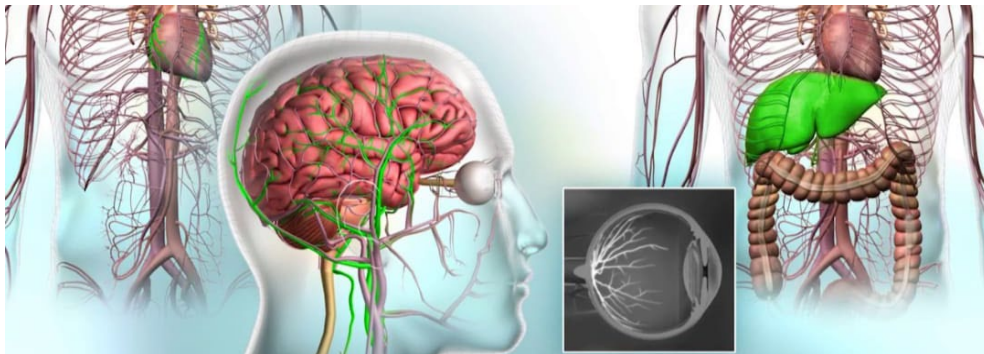
Dr. Raul Rosenthal
Chairman, Department of General Surgery and Director, The Bariatric and Metabolic Institute, Cleveland Clinic Florida



Advantages of the Fluorescence Guided Surgery Approach

There are many advantages to this type of approach including:

- It is a useful aid for surgeon to identify and visualize anatomy of the patient. Fluorescence imaging during a surgical procedure offers multiple benefits to the surgeon and ultimately you, the patient. Compared with standard unaided vision using white light imaging, real-time fluorescence imaging is helpful in identifying each patient's specific anatomy.
- It can be used in a variety of surgical procedures. Fluorescence imaging can be used across a wide range of surgeries from common procedures, like gallbladder removal, colon resection, breast surgeries, as well as more complex surgeries like liver surgery, cervical, endometrial, prostate, parathyroid, endocrine and neurosurgical procedures.
- It is associated with a lower occurrence of surgical complications. It is also associated with reduced complications from surgery, reduction of the need for additional surgeries, and faster recovery time after surgery. Research studies have shown that fluorescence guided surgery can result in a lower occurrence of complications after the surgery.^{1,2}
- It can help improve surgical precision. Many surgeons have reported an increase in the ability to operate more precisely by utilizing fluorescence guided surgery techniques.



Fluorescence guided surgery is used in a wide variety of procedures

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.

References:

1. Vettoretto N, Foglia E, Ferrario L et al., Could fluorescence-guided surgery be an efficient and sustainable option? A SICE health technology assessment summary. *Surgical Endoscopy*, April 2020.
2. 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.

Patient Education

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"Improved visualization of the tissues can reduce damage to important normal structures, such as nerves, blood vessels, ureters and bile ducts."

Dr Michael Bouvet
Director of Endocrine Surgery
Professor of Surgery, UC San Diego Medical Center.

