

# **Cancer of the Esophagus and Gastroesophageal Junction**

## **Anatomy**

Food moves from the throat

→ esophagus

→ stomach

→ small bowel (jejunum)



## Types of Esophageal Cancer

There are two common types of esophageal cancer

- Adenocarcinoma

- Squamous Cell Carcinoma

## Cancer Staging

Staging refers to the tests to determine

- How large is the tumor?
- Has there been spread to lymph nodes?
- Has it spread to other parts of the body?

**Staging is important in order to find the right treatment for a particular patient**

## Esophageal Cancer Staging

---

<b>T</b>	<b>Tumor</b> - How deep has cancer grown into the wall of the esophagus?
<b>N</b>	<b>Nodes</b> - Has cancer spread to the lymph nodes?
<b>M</b>	<b>Metastasis</b> - Has the cancer spread to other parts of the body such as the lungs or liver?

---

## Wall of the Esophagus

The esophagus is made of several layers, starting with the mucosa, which is the inner layer. The mucosa is surrounded by muscle layers and the muscle is surrounded by fat. Outside the esophageal wall are lymph nodes



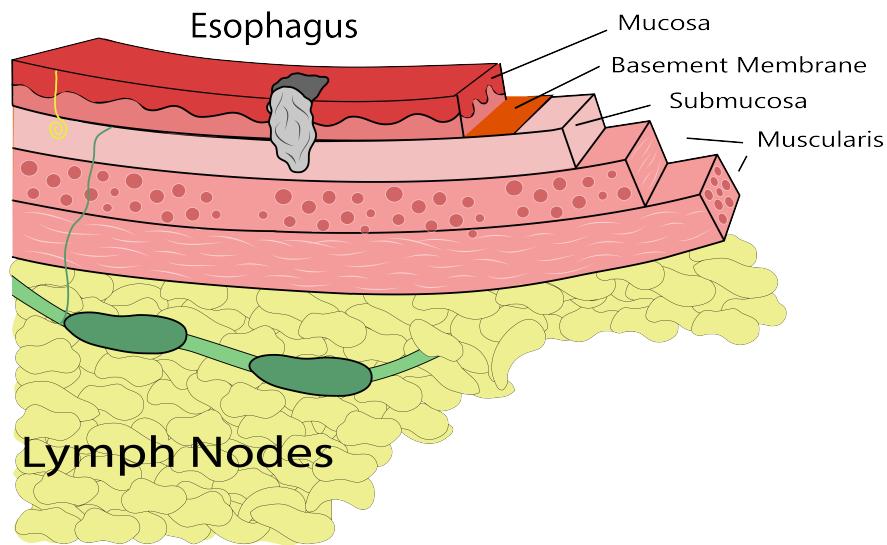
## Cancer Growth

Cancers start on the very inside of the layer called the mucosa



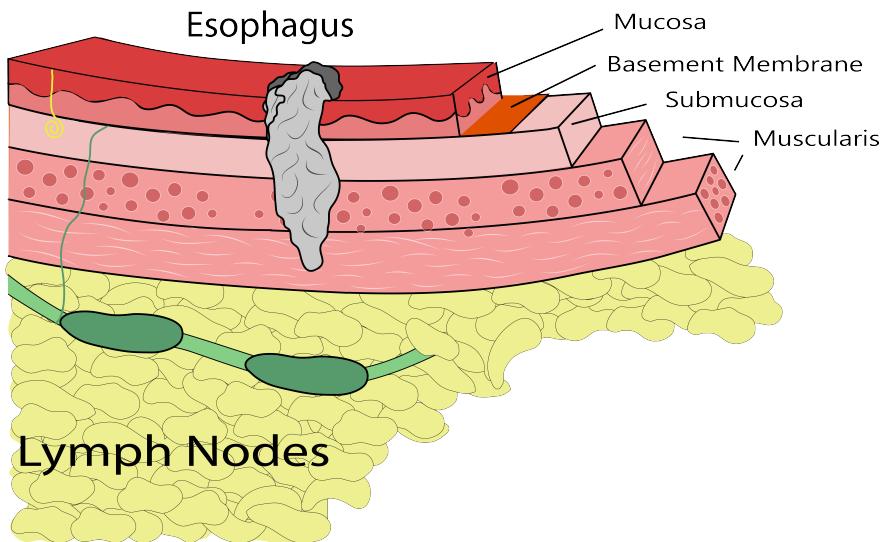
## Cancer Growth

As cancers grow, they penetrate into deeper layers of the wall of the esophagus



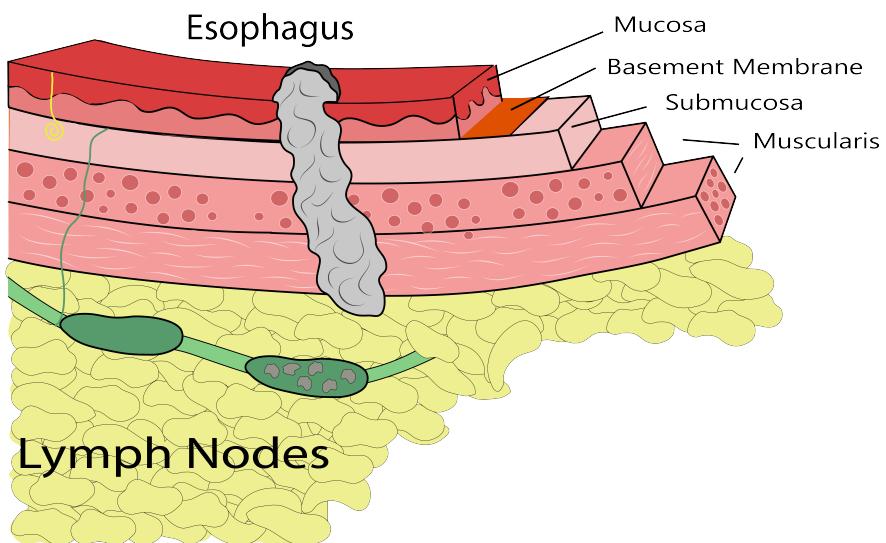
## Cancer Growth

This process of growth takes years



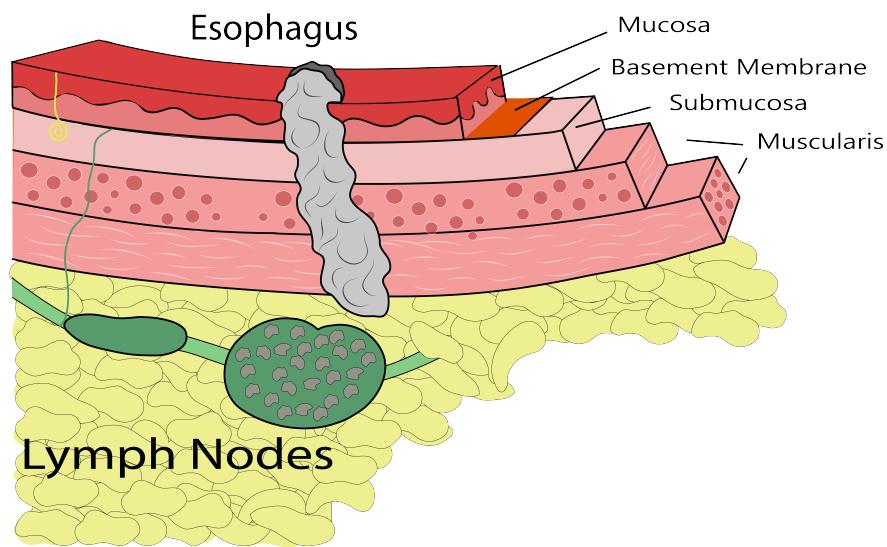
## Cancer Growth

The thicker a cancer becomes, the more likely it is to spread to lymph nodes



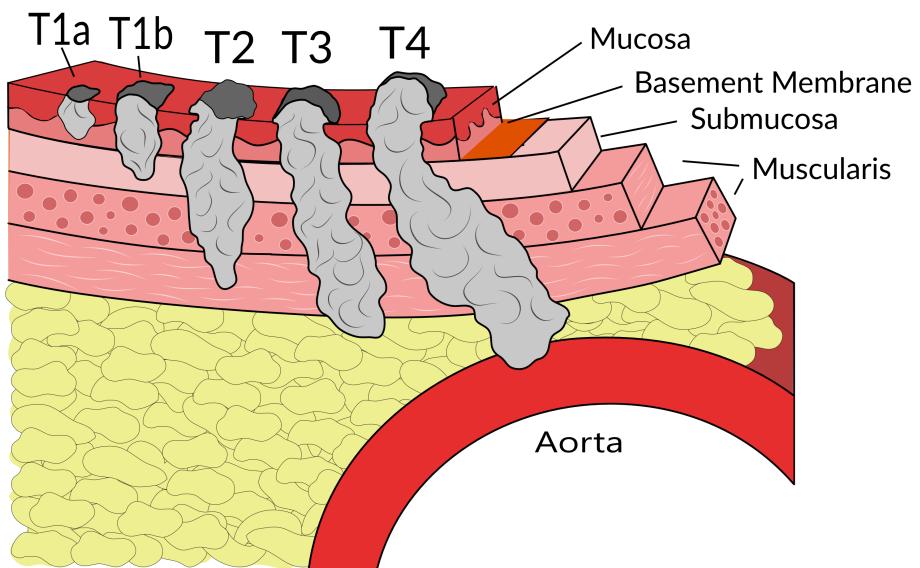
## Cancer Growth

Cancer cells can then begin to grow inside the lymph nodes



## T Stage

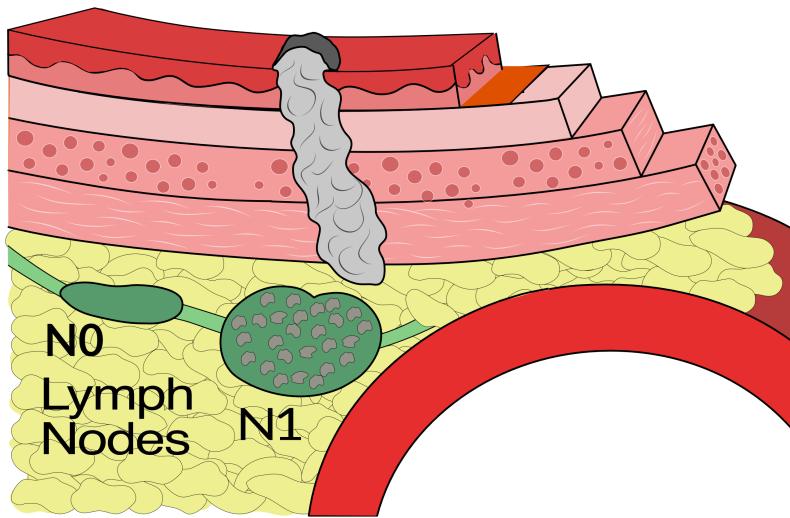
Cancers are categorized based upon the thickness of the tumor, known as the T stage



## N Stage

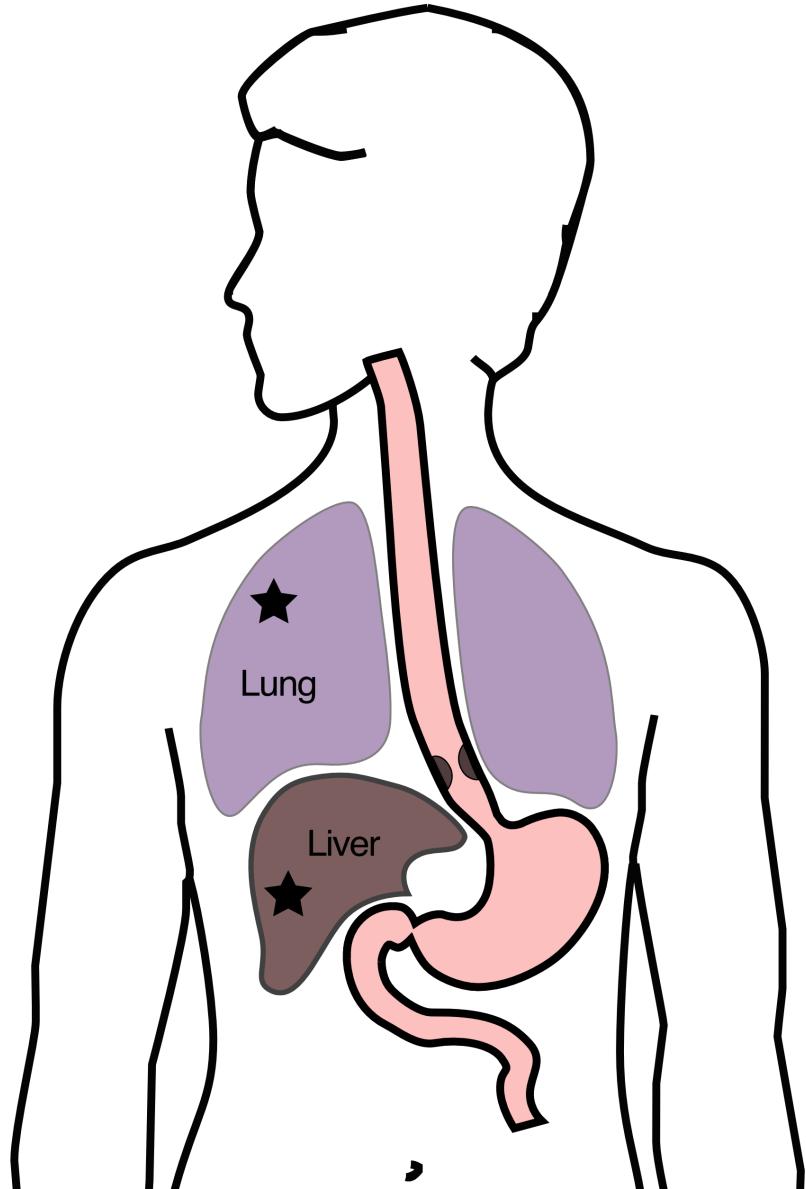
Cancers are also categorized by whether there is spread to the lymph nodes.

- N0 cancers have not spread to the lymph nodes
- N1 cancers have spread to the lymph nodes.



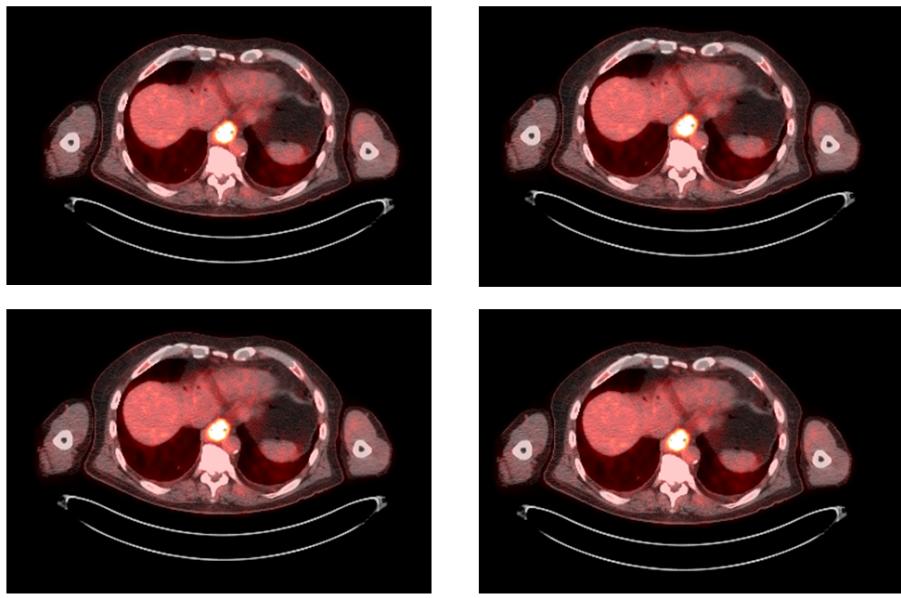
## M Stage

Some cancers can spread from the esophagus to the lungs or liver



### PET scan

A PET scan is similar to a CT scan, and uses a small amount of tracer to light up areas of cancer.



## Laparoscopy

Some esophageal cancers can spread inside the abdominal cavity. These areas of spread can be very small, as small as a grain of rice.

In order to detect spread within the abdominal cavity, a procedure called a laparoscopy can be performed in some patients.

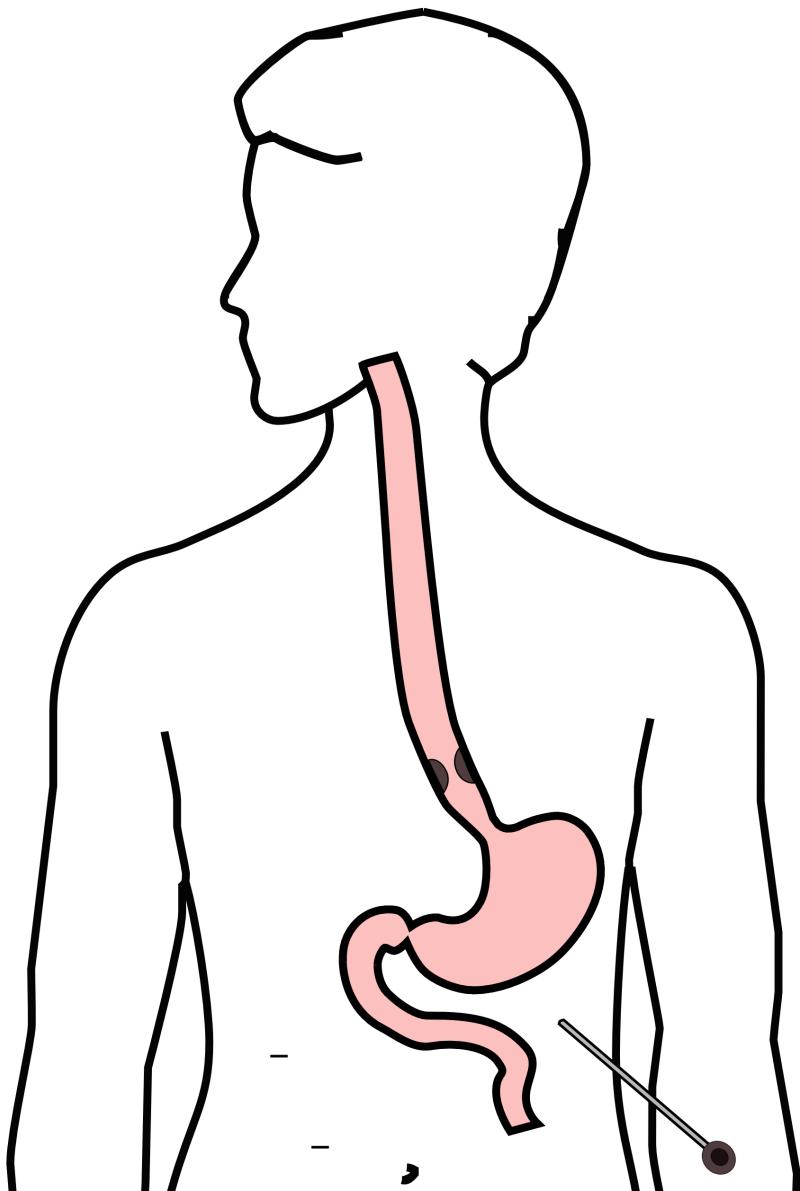


## Laparoscopy

A laparoscopy is performed under a general anesthetic.

- Several small incisions  $1/4"$  long
- A telescope is inserted to look inside the abdominal cavity.

- Biopsies can be performed.



### Treatment Plan

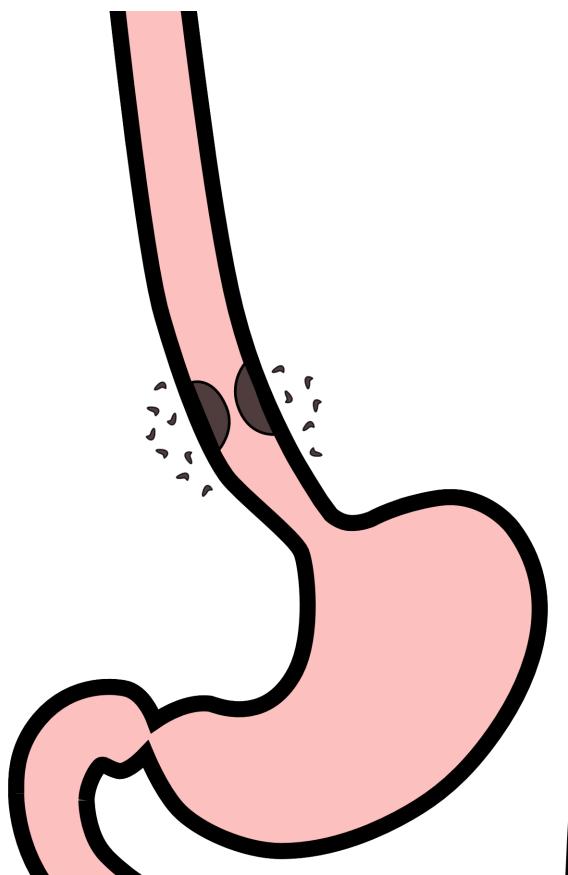
Category	Staging	Treatment
Superficial	T1	Endoscopic Therapy

Category	Staging	Treatment
Localized	T1b or T2	Surgery
Locally-advanced	T3 or N1	Preoperative therapy → Surgery
Metastatic	M1	Chemotherapy

Treatment is determined by staging

### **Locally-advanced cancers**

Patients with locally-advanced esophageal cancer often have localized spread of cancer cells in the surrounding area



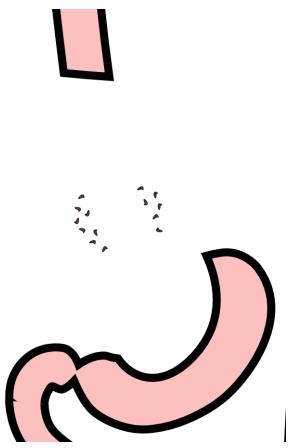
### **Locally-advanced cancers**

Surgery removes the top of the stomach and a portion of the esophagus



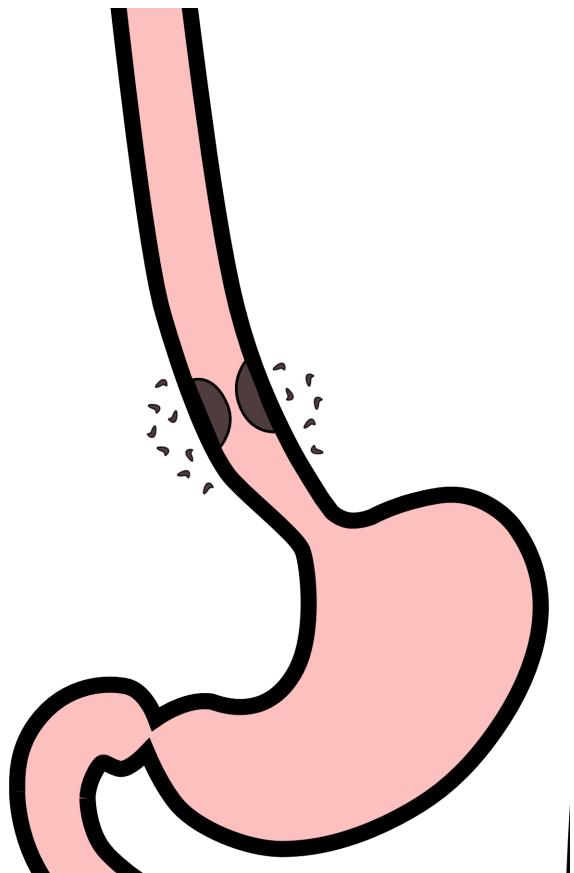
### Locally-advanced cancers

However, with locally-advanced cancers, there is a risk that small amounts of cancer could be left behind at the time of surgery



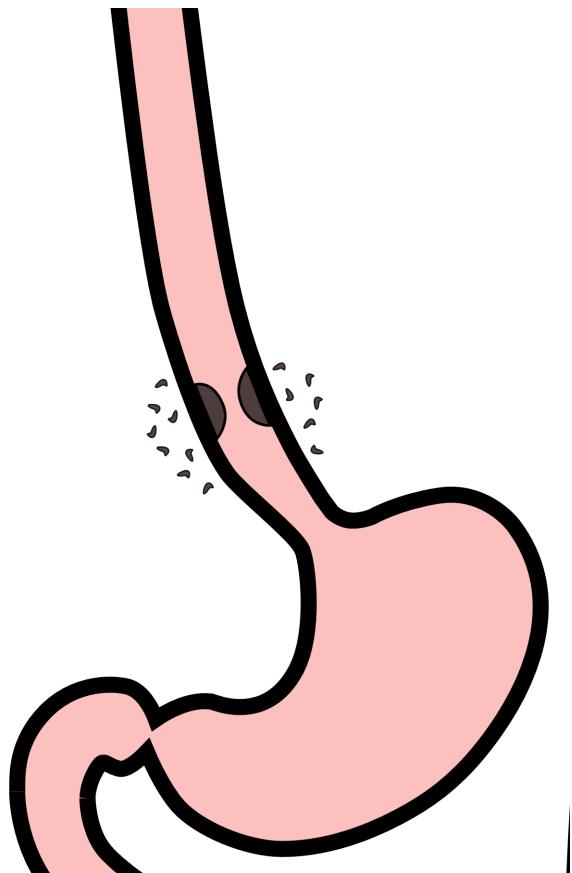
### Locally-advanced cancers

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



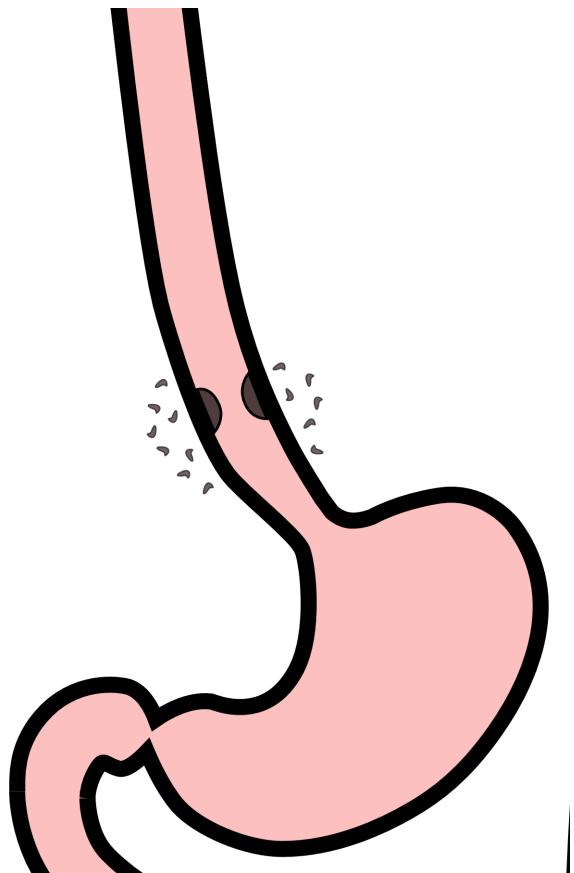
### Preoperative Therapy

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



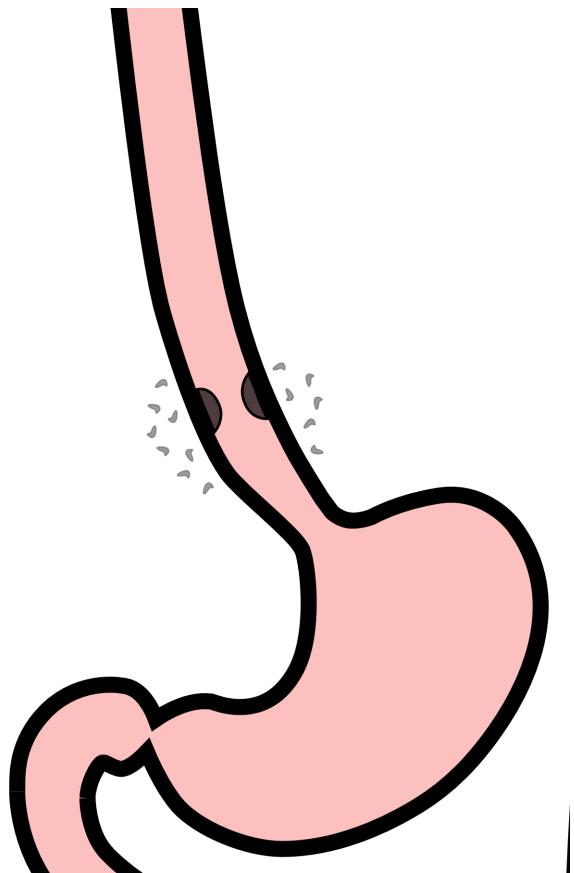
### Preoperative Therapy

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



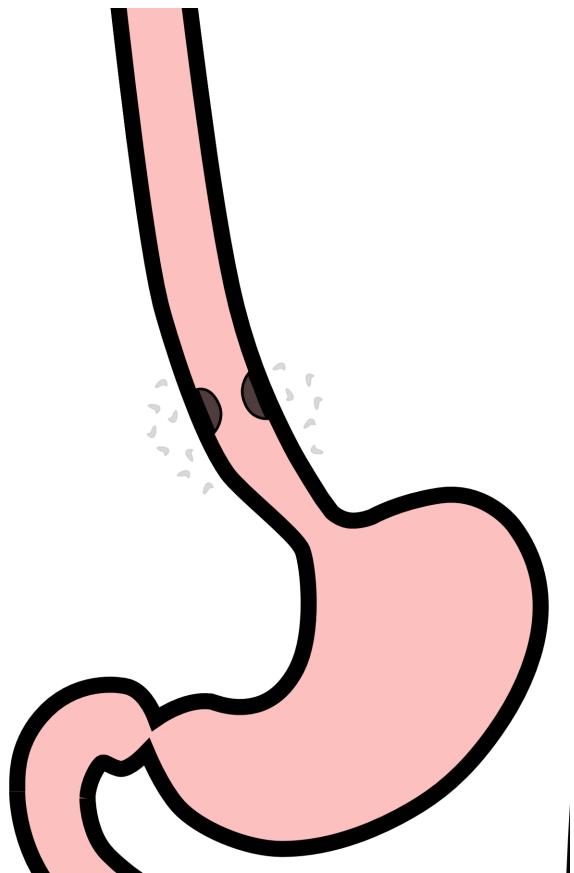
### Preoperative Therapy

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



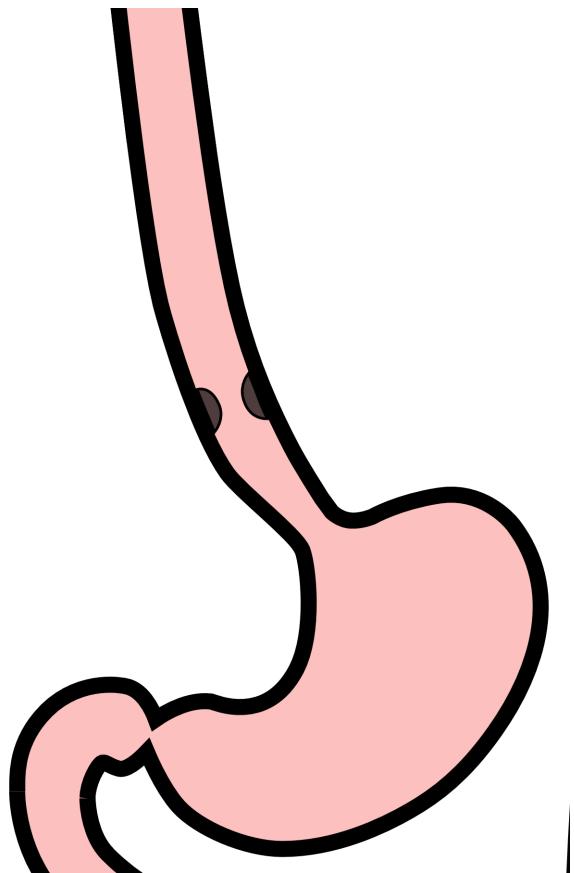
### Preoperative Therapy

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



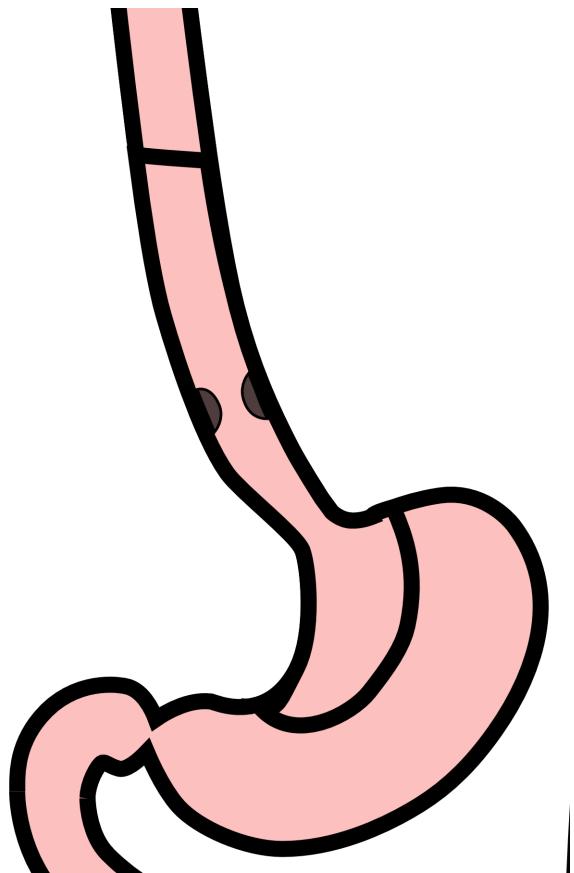
### Preoperative Therapy

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



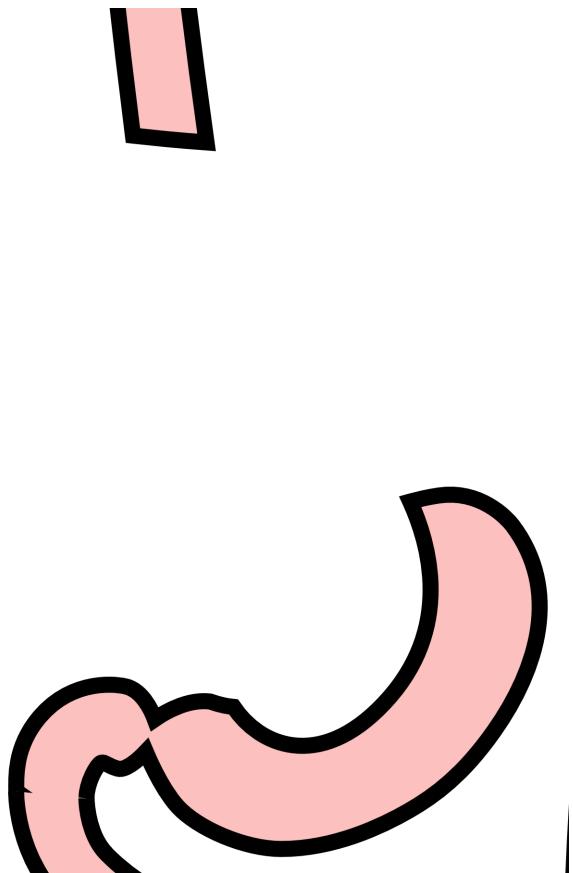
### Preoperative Therapy

For these patients, it is helpful to start with therapy *before* surgery that will shrink the cancer.



### **Preoperative Therapy**

In this way, surgery can be performed with the best chance of removing all of the cancer and avoid leaving any cancer cells behind.



### **Chemotherapy + Radiation**

Over 10 years ago, researchers in the Netherlands took 363 patients with esophageal cancer and divided them into two groups. They treated the two groups with two different treatment strategies.

#### **Surgery Group**

Surgery Alone

#### **Chemo + Radiation Group**

Chemotherapy + Radiation →Surgery

Chemotherapy and radiation were administered together over six weeks

## **Chemotherapy + Radiation**

The results were quite dramatic: The group that was treated with all three therapies, chemotherapy and radiation and surgery, lived on average twice as long as patients who had surgery alone.

### **Surgery Group**

Surgery Alone

### **Chemo + Radiation Group**

Chemotherapy + Radiation → Surgery

- Longer survival
- Fewer cancer recurrences

This scientific study was called the **CROSS** trial.

## **Chemotherapy + Radiation**

A typical schedule for chemotherapy + radiation:

- Chemotherapy once per week for six weeks
- Radiation five days per week for six weeks (28 treatments)
- PET scan (or CT) 4 weeks after the end of radiation
- Surgery 8 weeks after the end of radiation

## **Chemotherapy + Radiation - Side Effects**

The radiation attacks the cancer cells in the esophagus and nearby lymph nodes, but it can also cause irritation of the lining of the esophagus. You could think of it as a sunburn on the inside of the esophagus. What this means is that for patients who have some trouble eating before starting therapy, swallowing can get worse before it gets better. The most challenging time will be the last week of treatment. By two weeks after the end of treatment, the tumor is beginning to shrink and the inflammation is getting better, and most patients find that their swallowing gets easier. But during the treatment, it's important to get enough nutrition and stay hydrated. Protein shakes and nutritional supplements can help here. In some cases, a feeding tube can help provide nutritional support to get through treatment.

## **Locally-advanced Adenocarcinoma**

For patients with *adenocarcinoma* another option is “sandwich” chemotherapy administered before and after surgery:

Chemotherapy (8 weeks) → Surgery Chemotherapy (8 weeks)

Two different drug combinations can be used:

- FLOT
- FOLFOX

## **“Sandwich” Chemotherapy**

There are two different drug combinations used:

### **FLOT**

- 5-FU
- Leucovorion
- Oxaliplatin
- Taxotere

### **FOLFOX**

- 5-FU
- Leucovorin
- Oxaliplatin

A *medical oncologist* administered the chemotherapy drugs

## **Locally-advanced Adenocarcinoma**

Patient with Adenocarcinoma have two options for therapy prior to surgery:

### **Chemo + Radiation**

- Chemotherapy + Radiation (6 weeks)
- Surgery

### **Chemotherapy**

- Chemotherapy (8 weeks)
- Surgery
- Chemotherapy (8 weeks)

The cancer treatment team will work together to recommend a therapy

### **Chemotherapy**

Chemotherapy drugs are administered intravenously. There are several options:

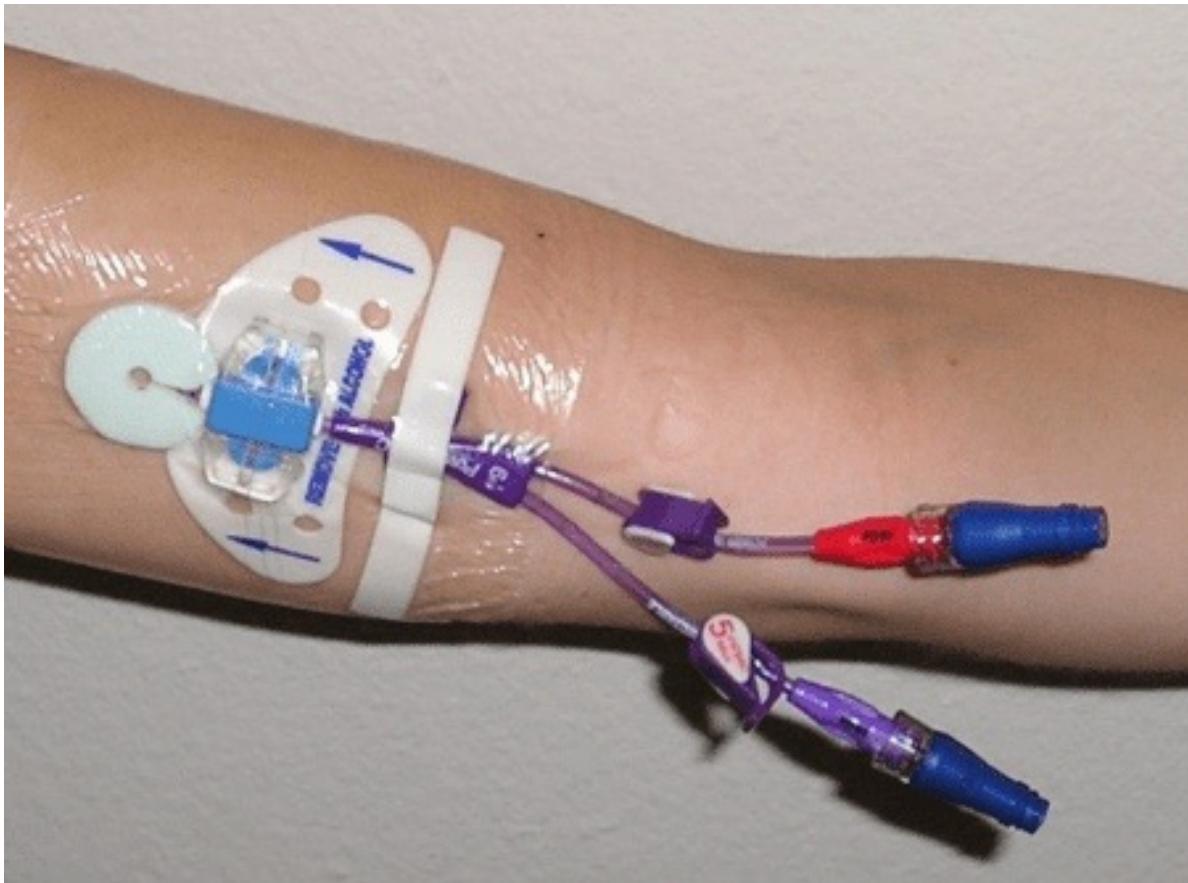
- Peripheral IVs in the hand
- PICC line (Peripheral Inserted Central Catheter)
- Central Venous Port

### **Peripheral IVs**

Some patients with good veins can be treated with an intravenous line placed in the hand or arm for each dose of chemotherapy

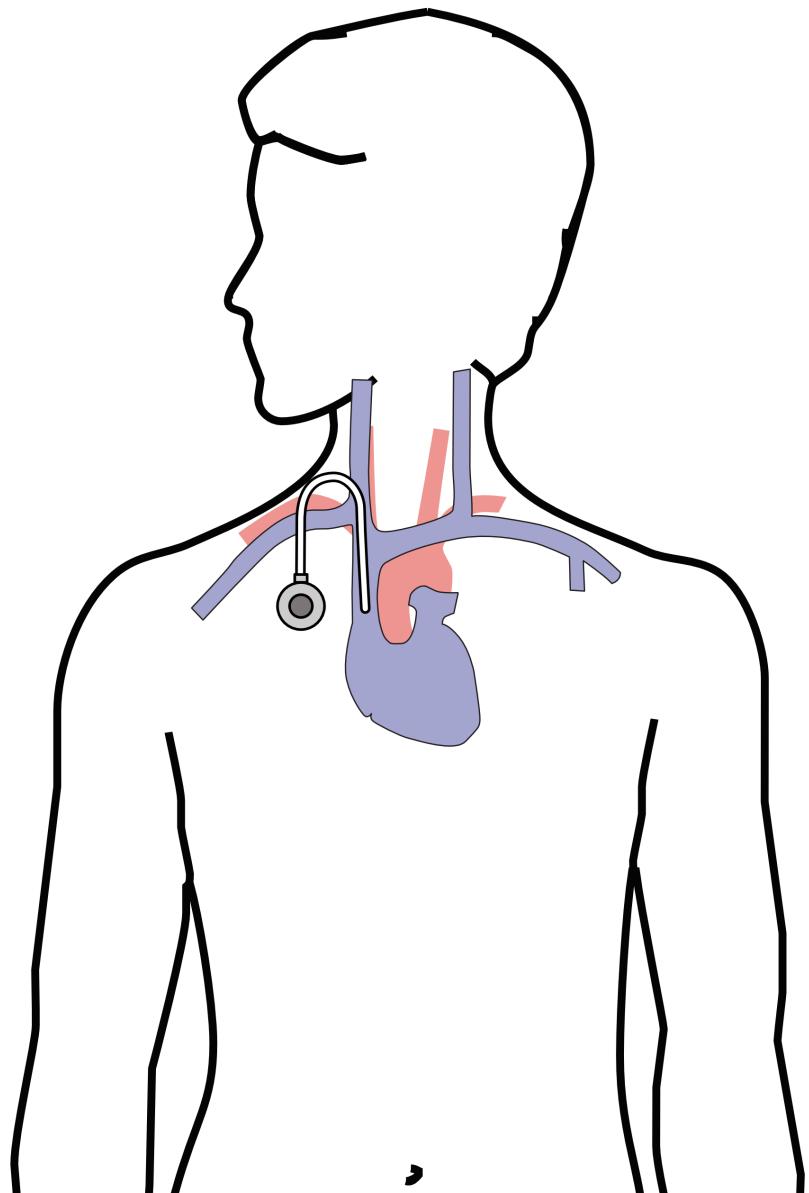
### **PICC Lines**

A PICC line is placed in Radiology and stays in place during the treatment course



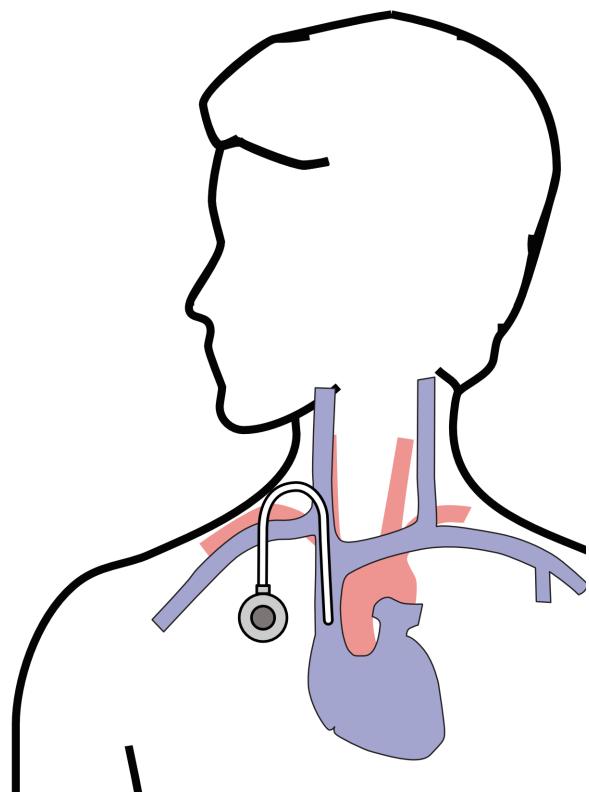
### **Central Venous Port**

A central venous port is an implantable device that makes the administration of chemotherapy easier



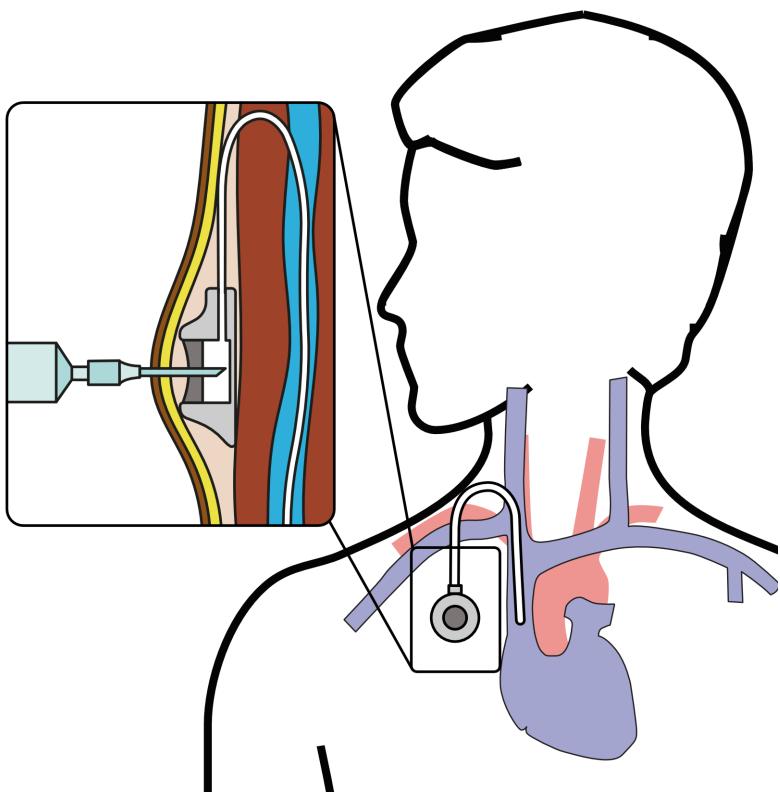
### Central Venous Port

A central venous port is typically placed underneath the skin below the right collarbone



### **Central Venous Port**

When it is time for chemotherapy, a needle is inserted through the skin into the port



## Restaging

Several weeks after the completion of preoperative therapy, a CT or PET scan will be performed

Surgery is typically performed 4-8 weeks after therapy, once recovery is complete