

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?

Treatment options depend upon the cancer stage

Esophageal Cancer Staging

- **T** = Tumor - How deep has cancer grown into the wall of the esophagus?
- **N** = Nodes - Has cancer spread to the lymph nodes?
- **M** = Metastasis - Has the cancer spread to other parts of the body? lungs or liver?

Layers of the Wall of the Esophagus

- Mucosa - Inner layer
- Muscle Wall (muscularis)
- Lymph nodes located in fat outside the muscle



Early Stage Cancers

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



Locally-advanced Cancers

Over time, cancers can grow into the muscular wall



Lymph Nodes

In some cases, cancer cells can break off from the main tumor and spread to lymph nodes



T Stage

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



N Stage

Cancers are 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 also spread from the esophagus to the lungs or liver



PET scan

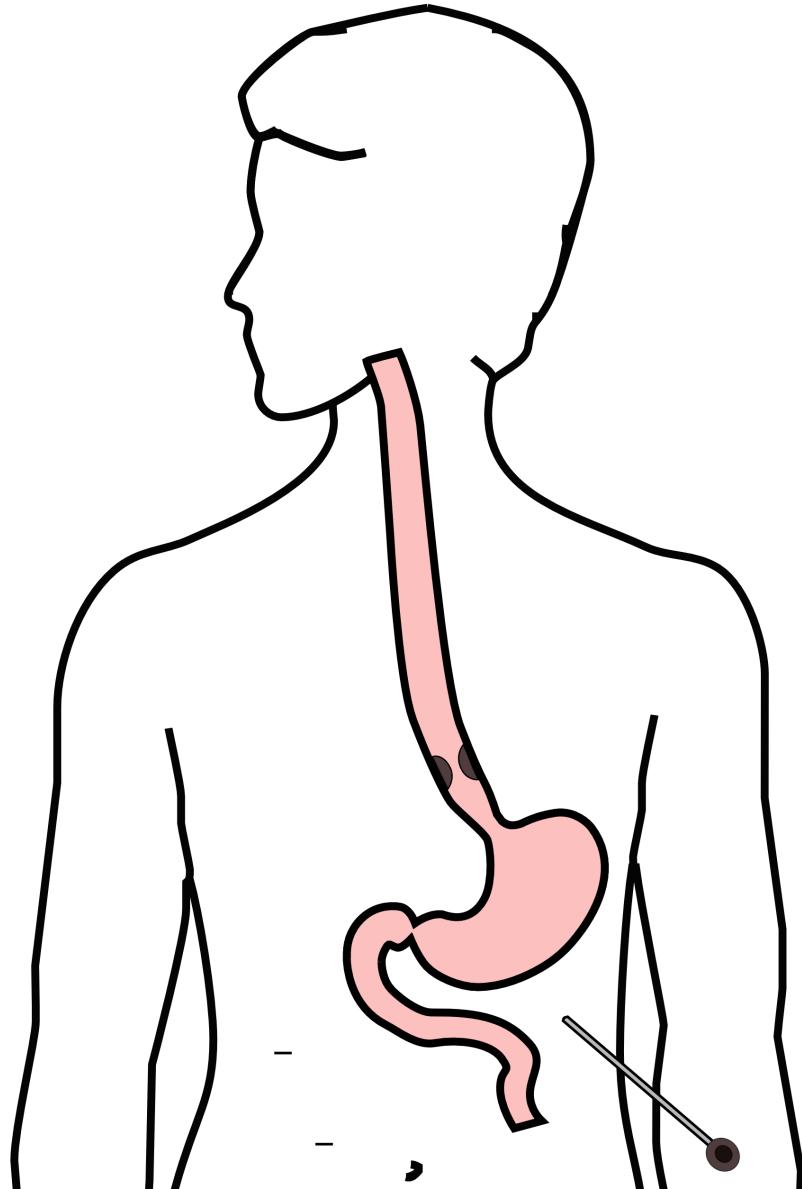
A PET scan is similar to a CT scan, and uses a small amount of tracer to light up areas of cancer.



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.

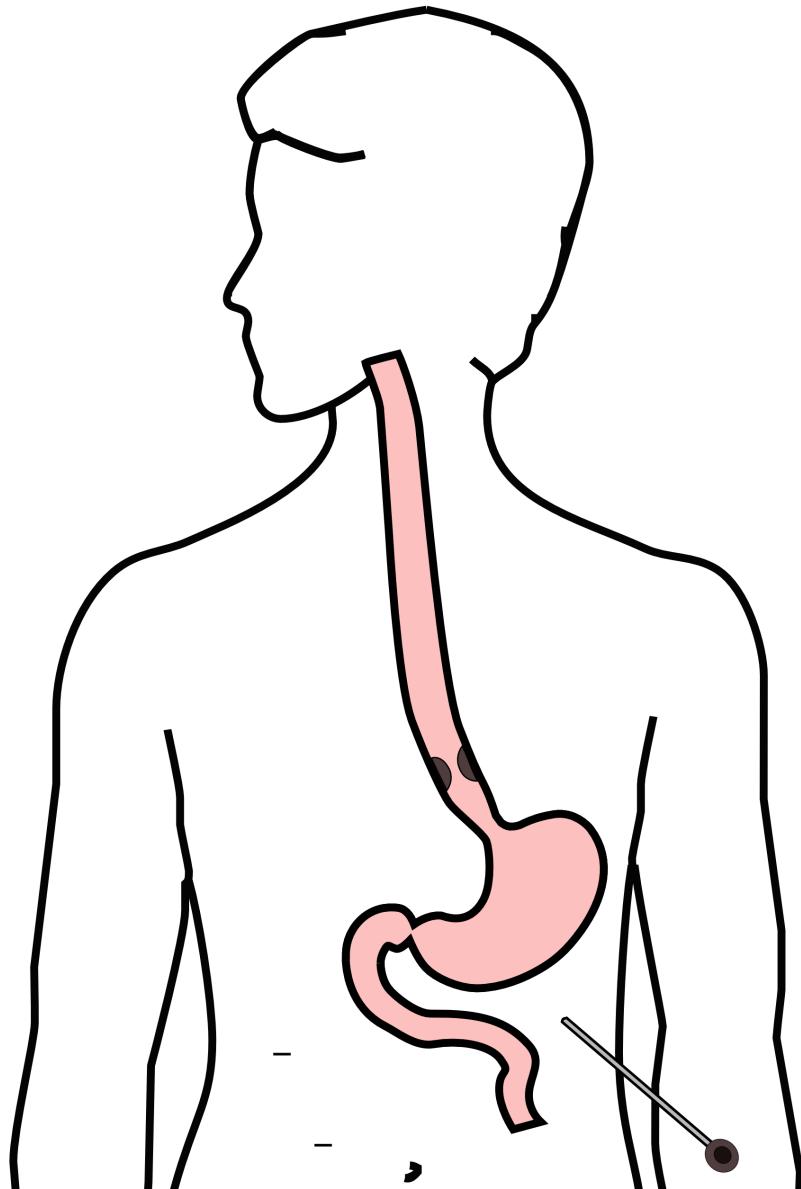


Laparoscopy

A laparoscopy is performed under a general anesthetic.

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

- Biopsies can be performed.



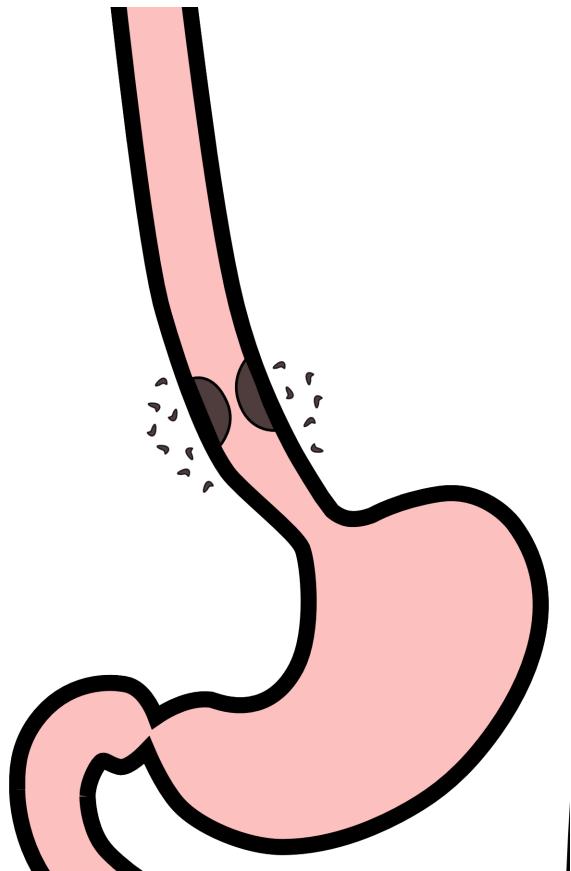
Treatment Plan

Category	Staging	Treatment
Superficial	T1	Endoscopic Therapy
Localized	T1b or T2	Surgery

Locally-advanced	T3 or N1	Preoperative therapy
Metastatic	M1	Surgery Chemotherapy

Locally-advanced cancers

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



Locally-advanced cancers

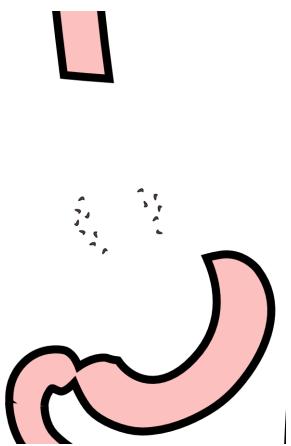
If locally-advanced cancers are treated with surgery alone...



Locally-advanced cancers

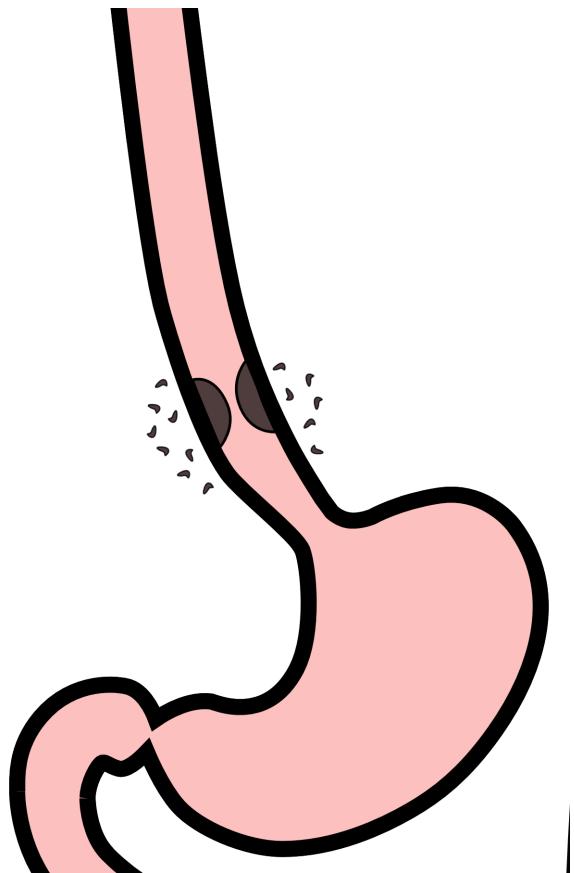
If locally-advanced cancers are treated with surgery alone...

There is a risk that cancer cells can be left behind



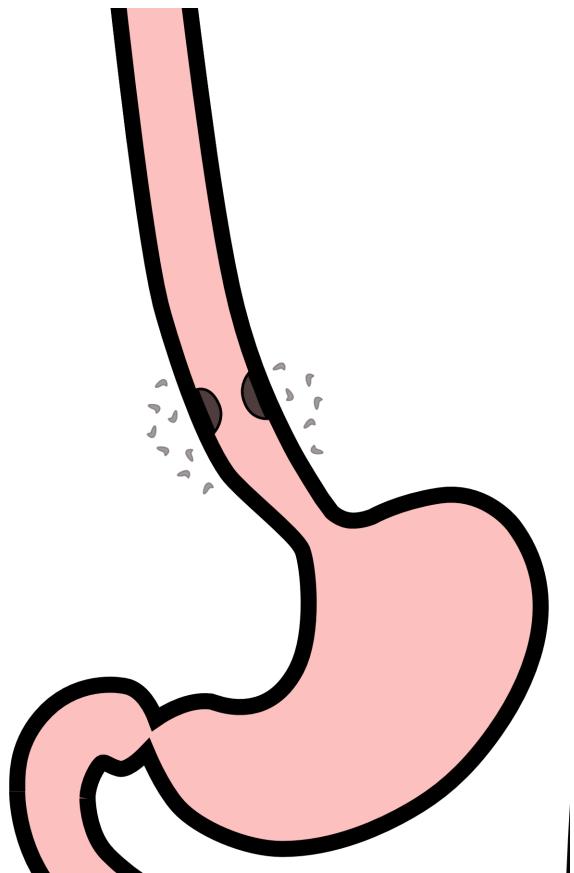
Preoperative Therapy for Locally-Advanced Cancers

It is helpful to start with therapy *before* surgery that will shrink the cancer.



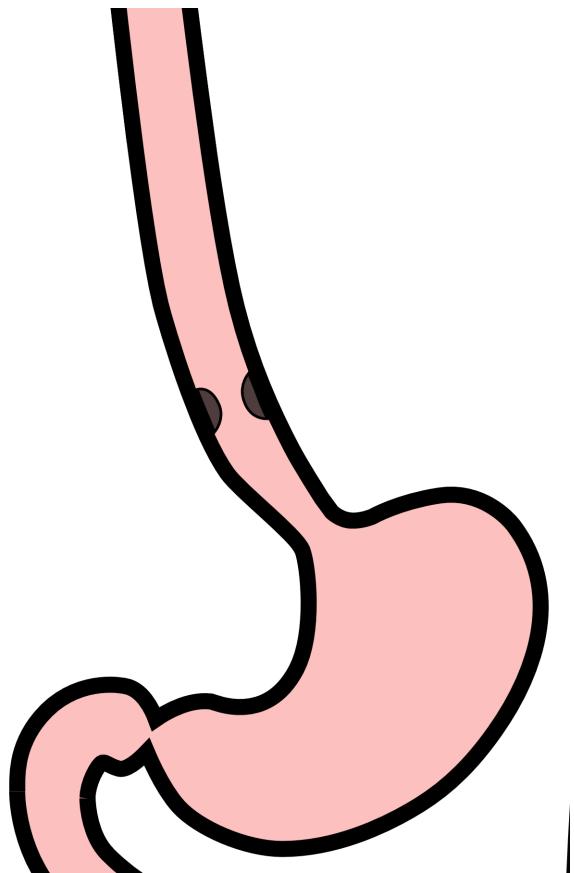
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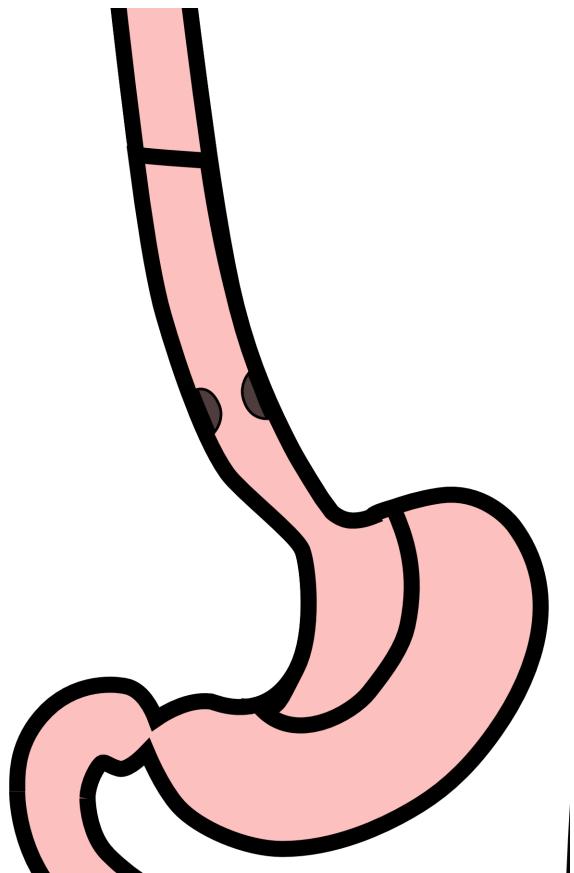
Preoperative Therapy

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Surgery after Preoperative Therapy

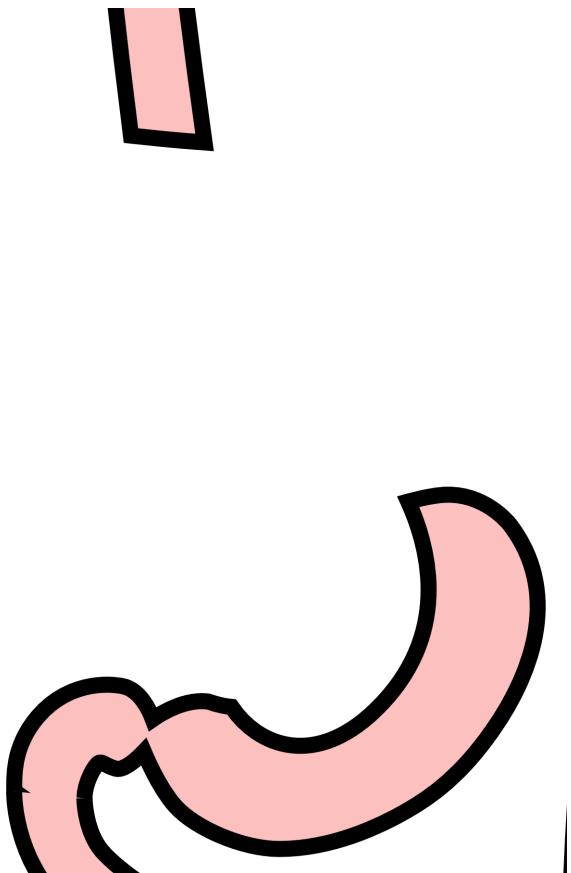
When surgery is then performed...



Preoperative Therapy

When surgery is then performed...

The risk of cancer recurrence is minimized



Chemotherapy + Radiation CROSS Trial

Over 10 years ago, researchers in the Netherlands took 363 patients with esophageal cancer and divided them into two groups. The two groups were treated differently:

Surgery Alone

vs

**Chemotherapy + Radiation → Surgery

Chemotherapy + Radiation CROSS Trial

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.

Chemotherapy + Radiation → Surgery ⇒ Longer Survival

Chemotherapy and radiation were given together over six weeks

Chemotherapy + Radiation CROSS Trial

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

Radiation kills cancer cells, but can also cause irritation of the lining of the esophagus.

This can make swallowing more challenging the last two weeks of therapy.

A feeding tube is sometimes needed to help with hydration and nutrition.

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 Drugs

FLOT

- 5-FU
- Leucovorin
- Oxaliplatin
- Taxotere

FOLFOX

- 5-FU
- Leucovorin
- Oxaliplatin

Adenocarcinoma Treatment Options

Chemo + Radiation

- Chemo + Radiation (6 weeks)
- Surgery

Chemotherapy

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

Chemotherapy

Chemotherapy drugs are administered intravenously.

There are several options for intravenous access:

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

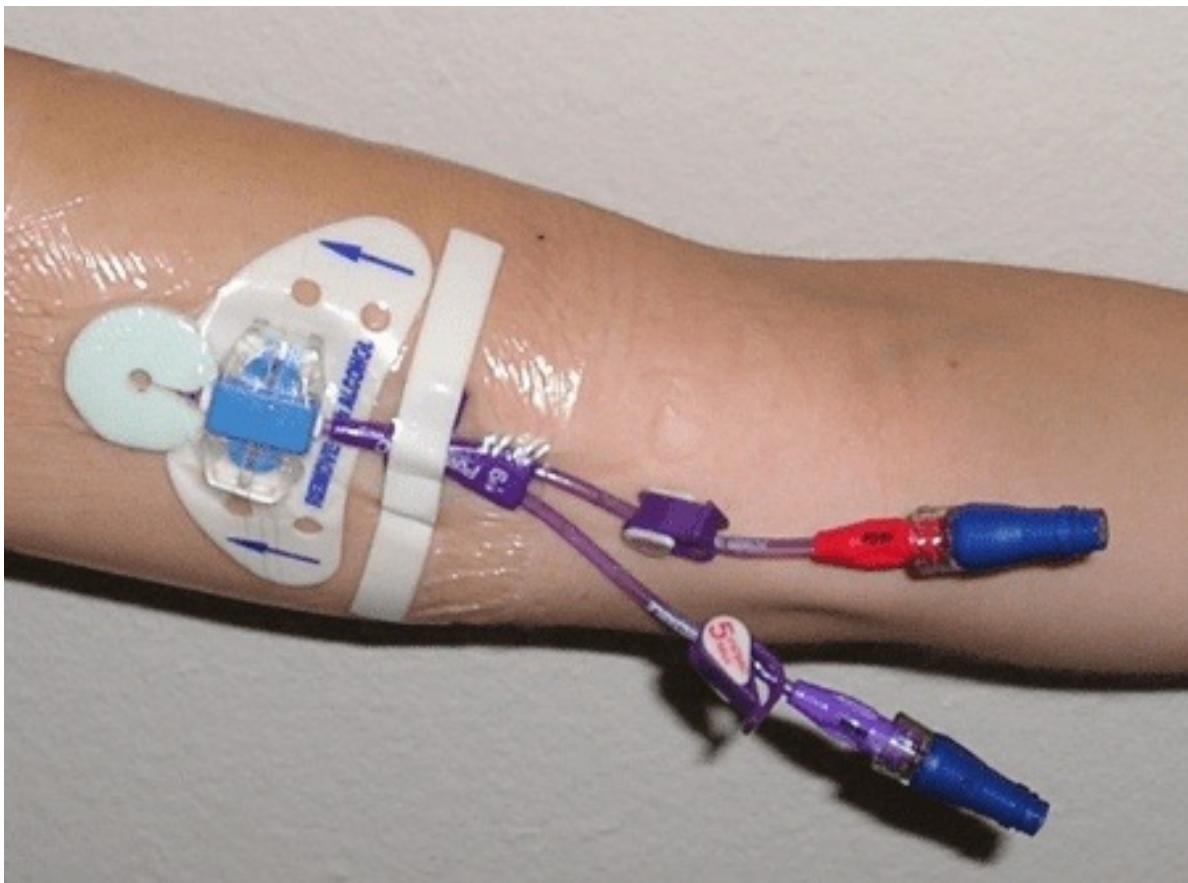
Peripheral IVs

Some patients can be treated with an intravenous line placed in the hand or arm for each dose of chemotherapy. The catheter is placed at the beginning of each dose and removed that day.



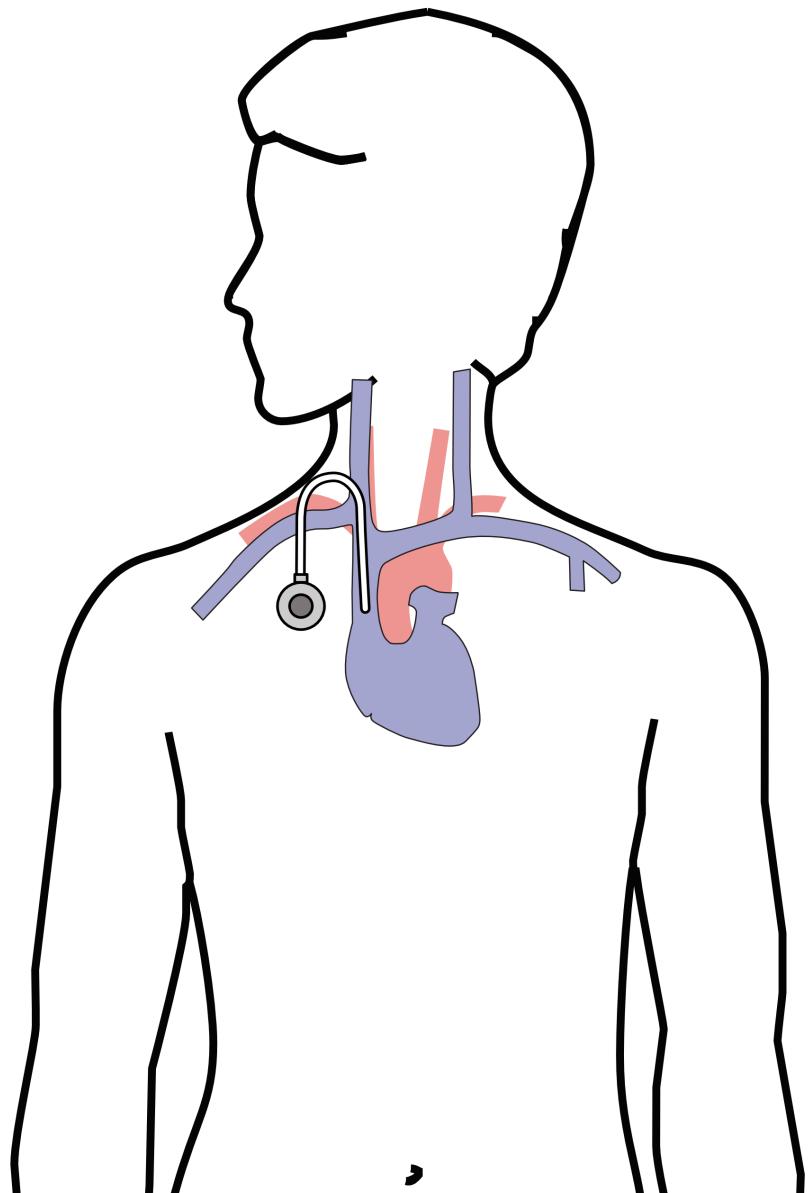
PICC Lines

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



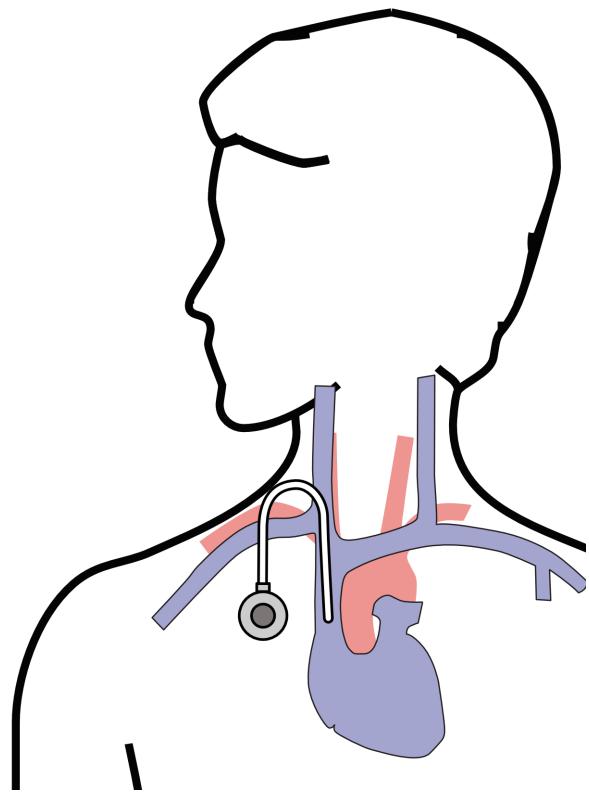
Central Venous Port

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



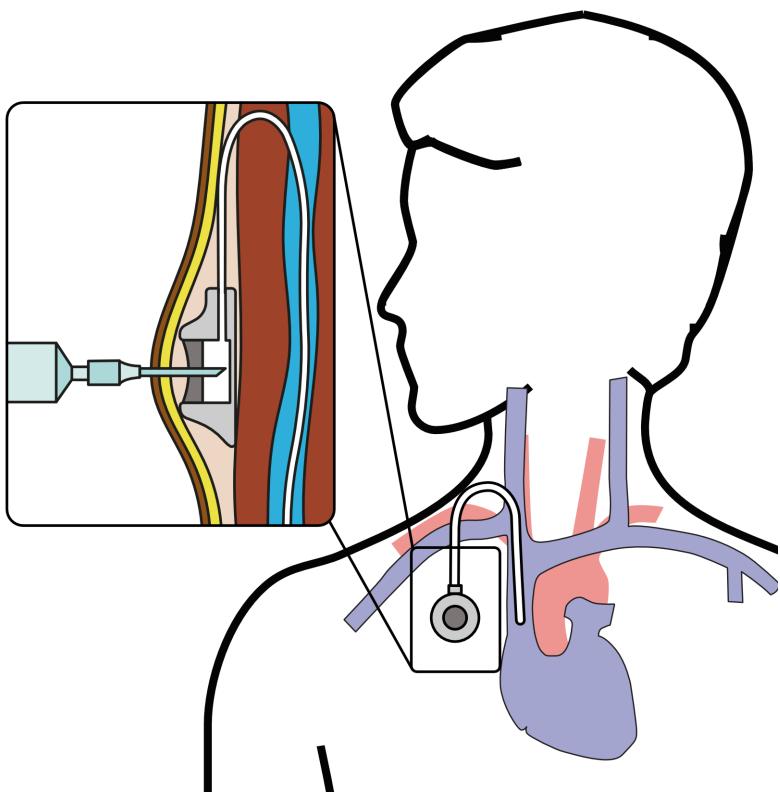
Central Venous Port

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

CT or PET scan will be performed after preoperative therapy

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