Early-Stage Cancer of the Esophagus and GE Junction

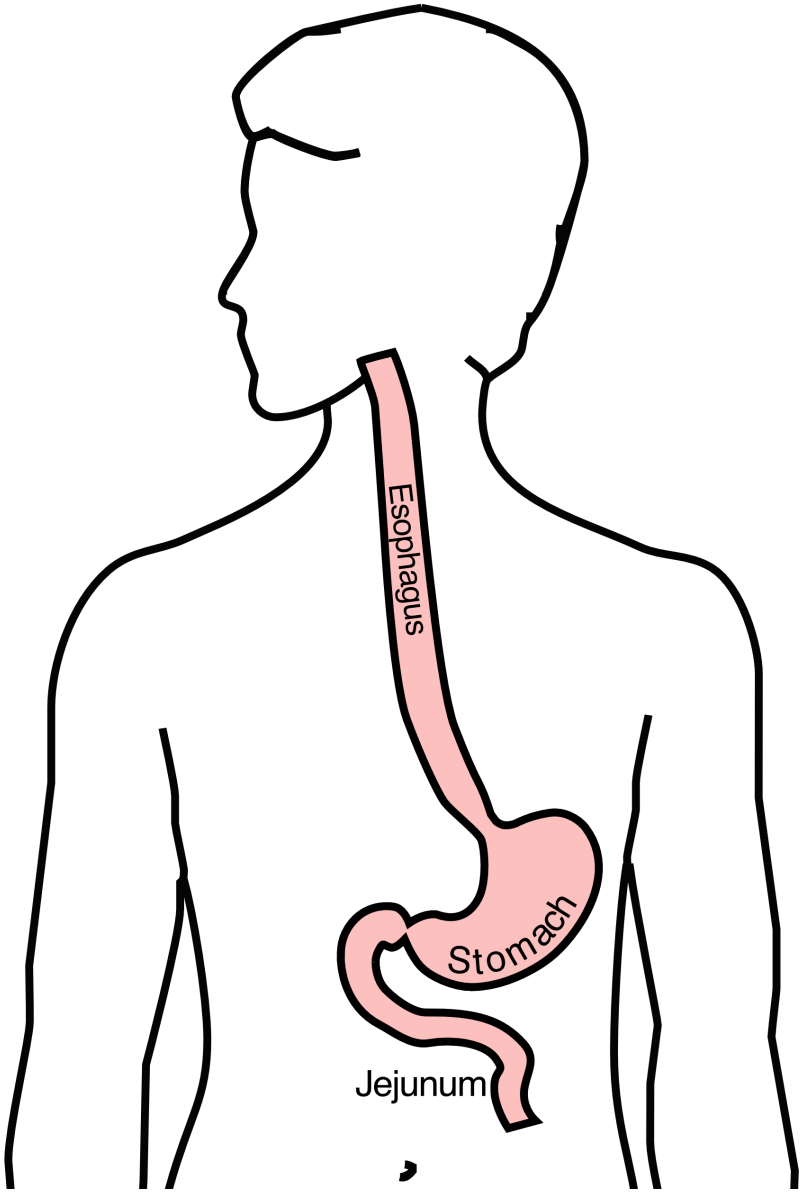
Anatomy

Food moves from the throat

→ esophagus

→ stomach

→ small bowel (jejunum)



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Types of Esophageal Cancer

There are two common types of esophageal cancer

- Adenocarcinoma
- Squamous Cell Carcinoma

In many ways, these to different types of esophageal cancer behave the same.

We will see later in this video, however, that the treatment **can** be different depending upon whether the cancer is adenocarcinoma or 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?

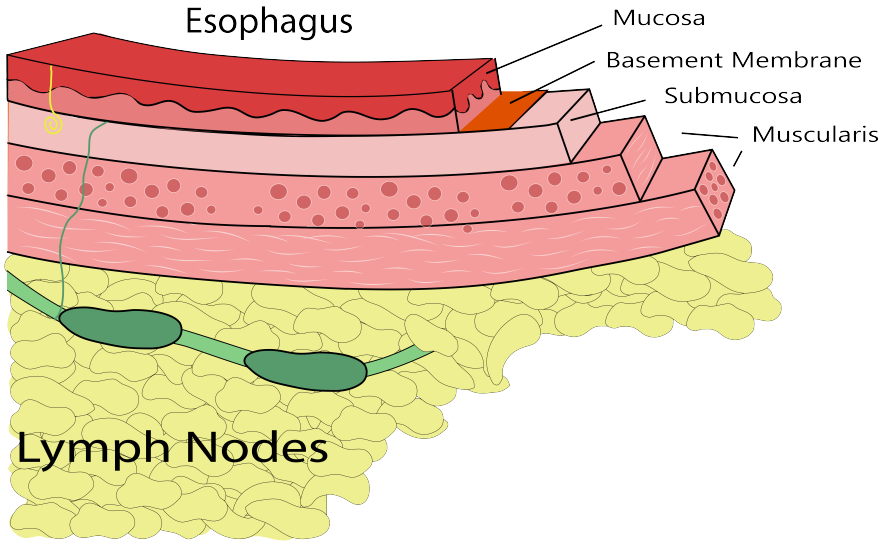
Treatment options depend upont the cancer stage

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?

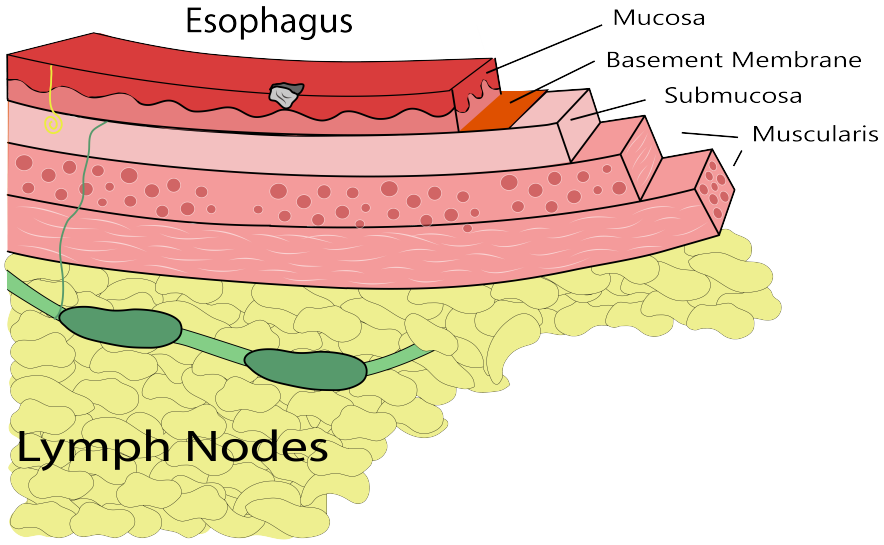
Layers of the Wall of the Esophagus

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



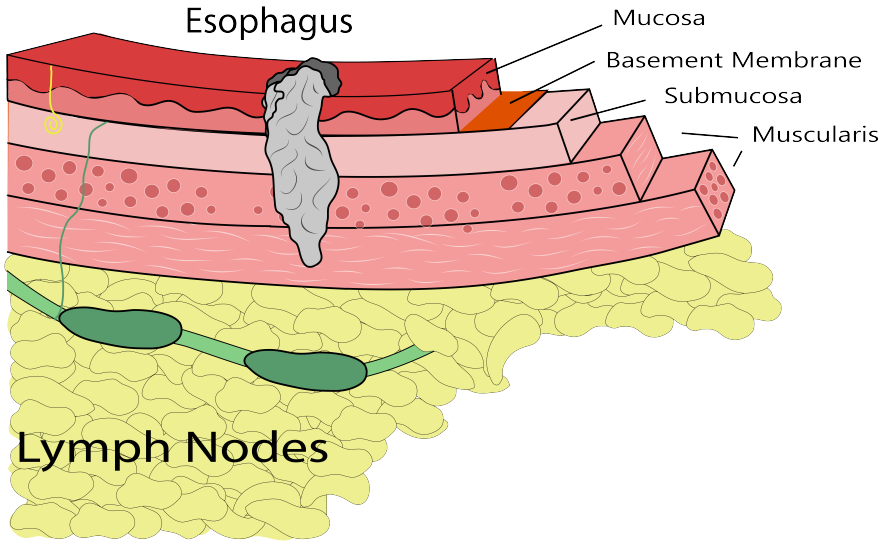
Early Stage Cancers

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



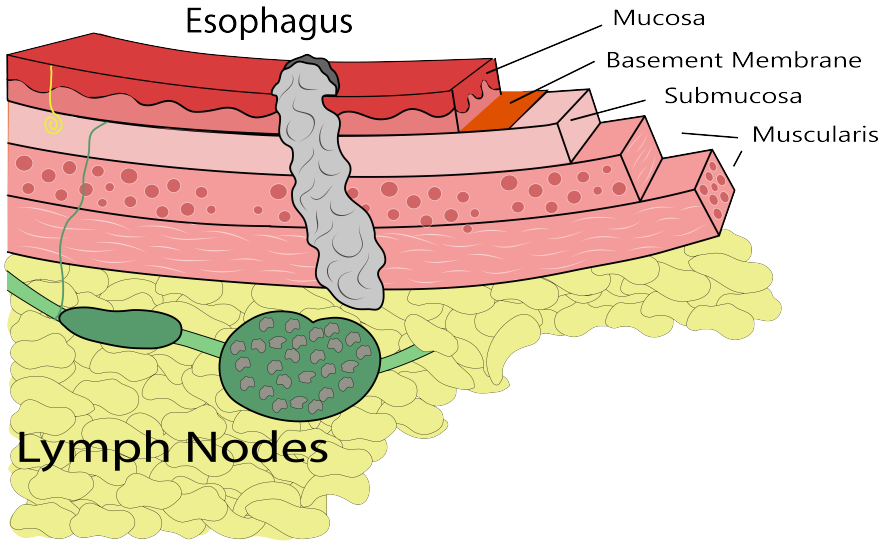
Locally-advanced Cancers

Over time, cancers can grow into the muscular wall



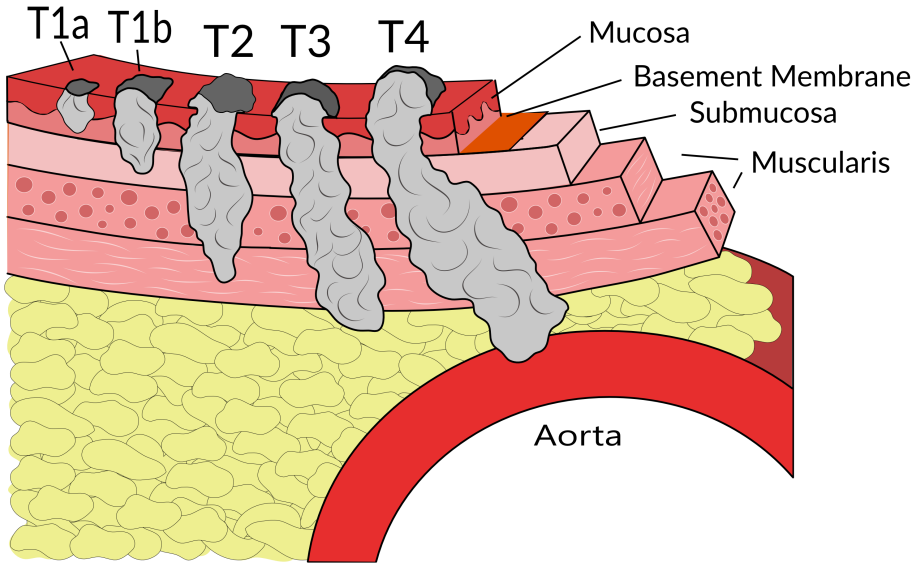
Lymph Nodes

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



T Stage

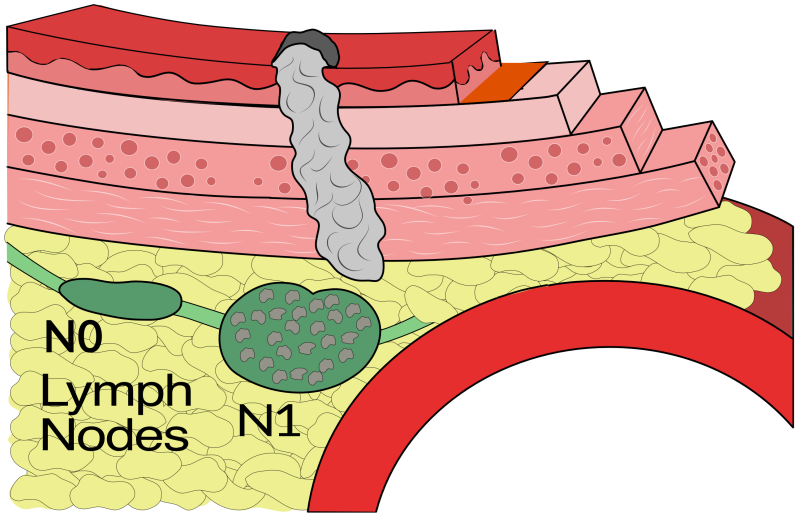
Cancers are categorized based upon the thickness of the tumor, known as the T stage



N Stage

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

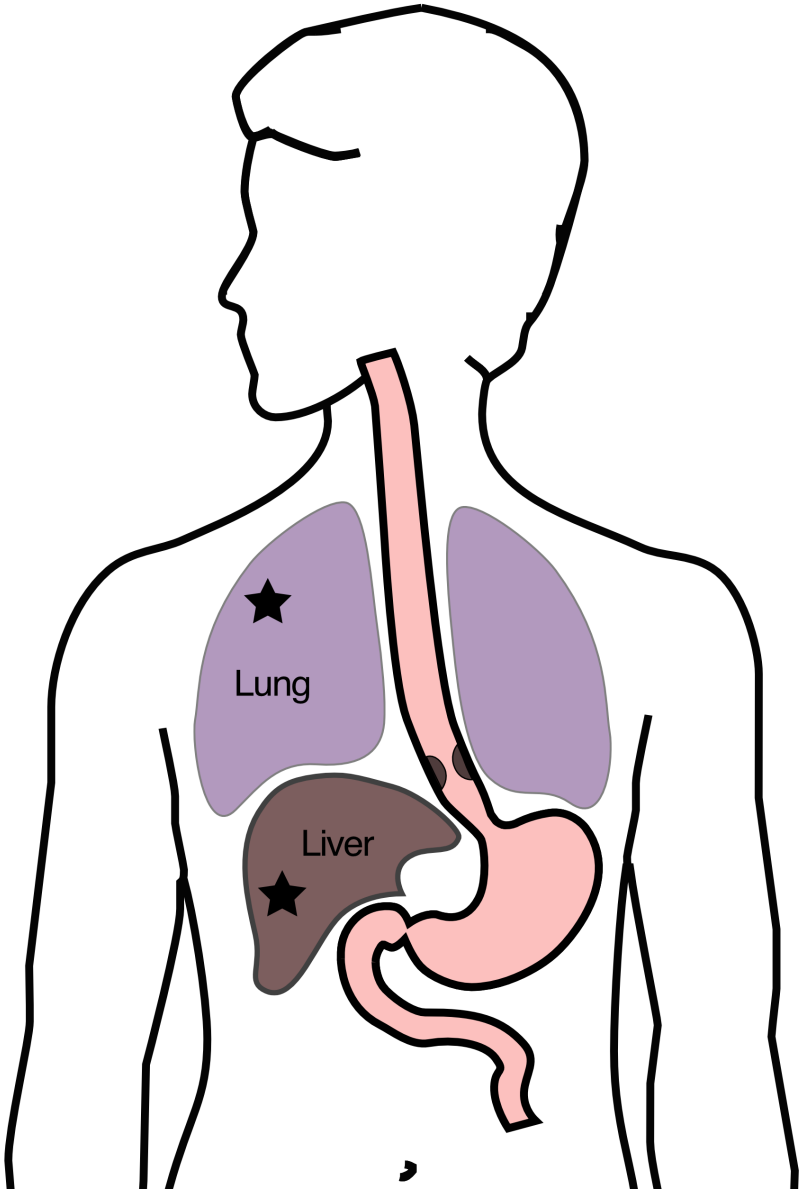
- **N0** cancers have not spread to the lymph nodes
- **N1** cancers have spread to the lymph nodes.



M Stage

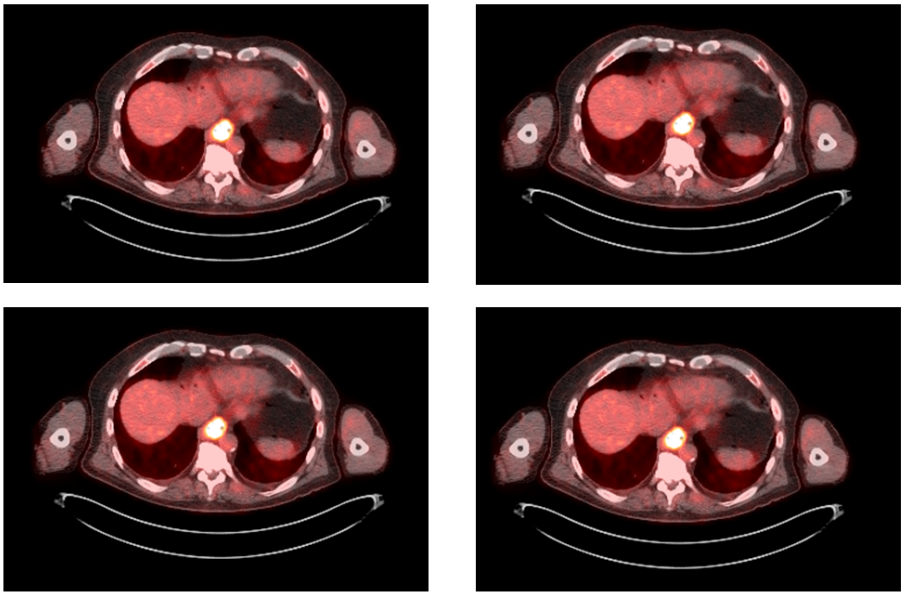
Some cancers can also spread from the esophagus to the lungs or liver

- **M0** cancers have not spread to other parts of the body
- **N1** cancers have spread to other parts of the body such as lungs or liver



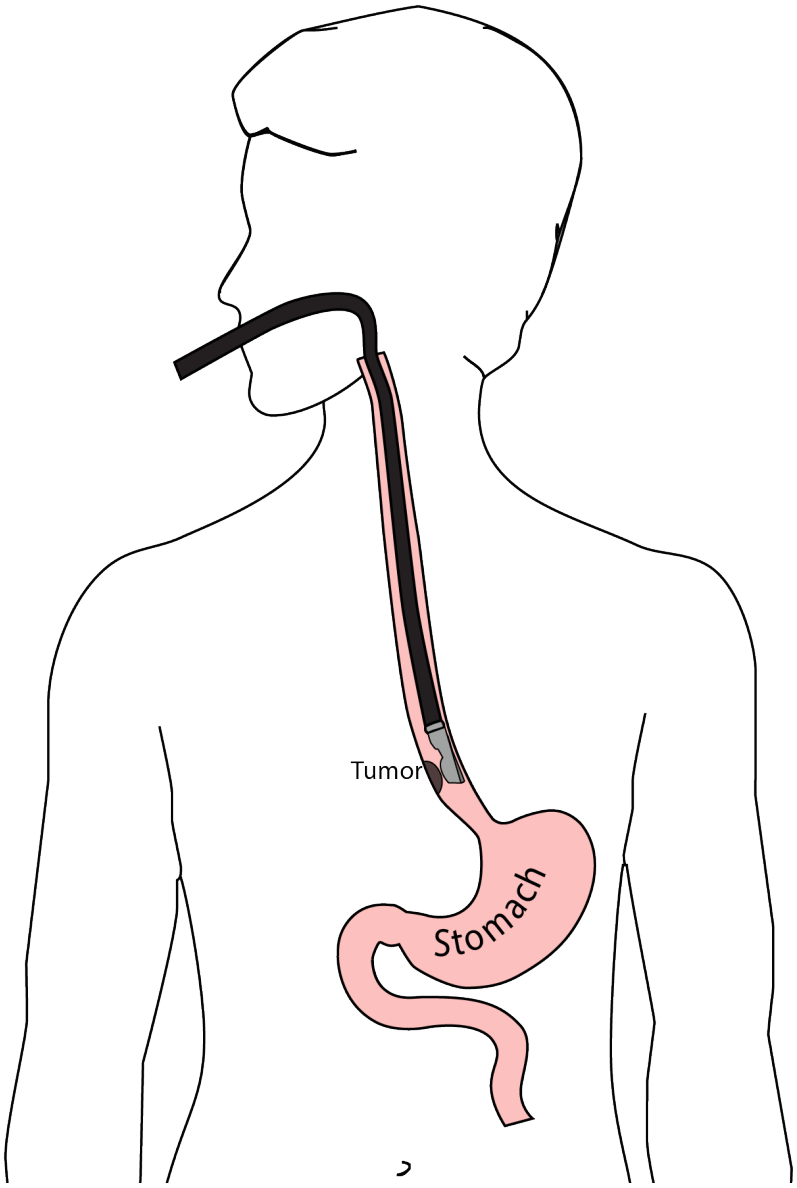
PET scan

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



Endoscopic Ultrasound

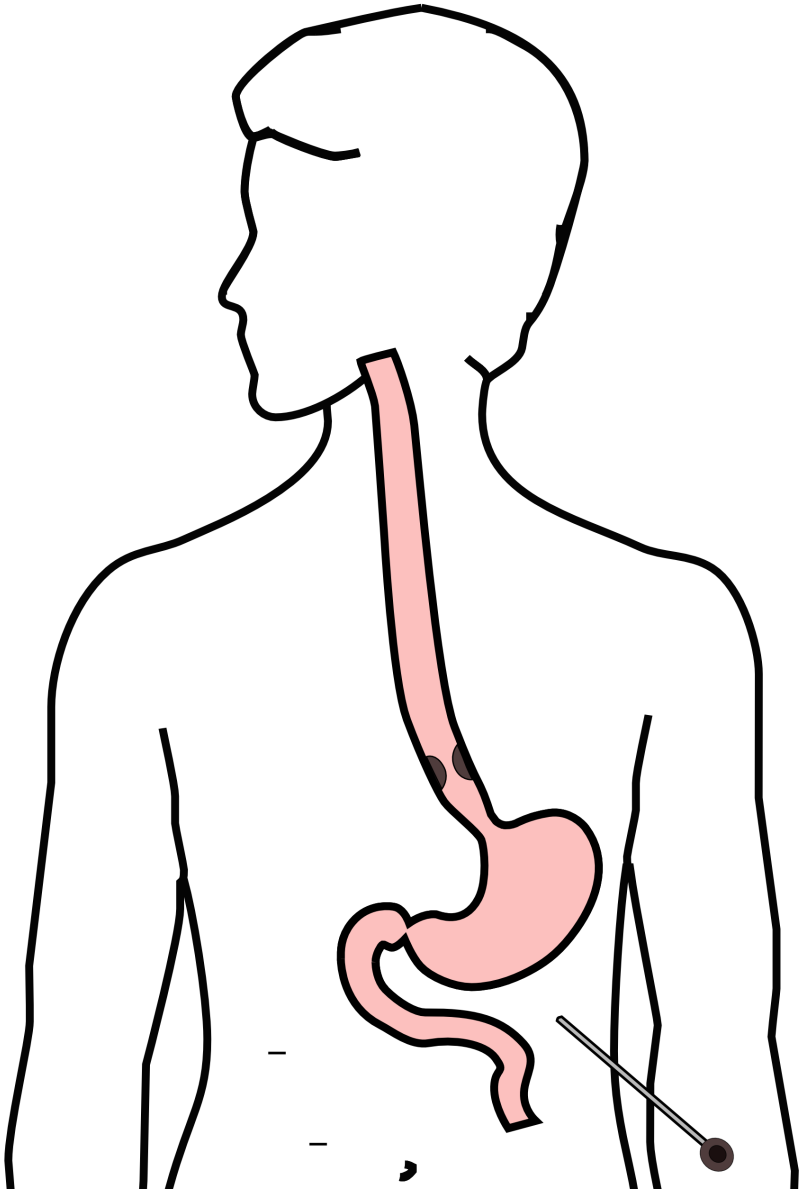
Endoscopic ultrasound (EUS) is a procedure similar to upper endoscopy (EGD) which has an ultrasound probe at the bottom of the scope. This allows measuring the thickness of the cancer. Endoscopic ultrasound can help determine the T stage of the cancer.



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.

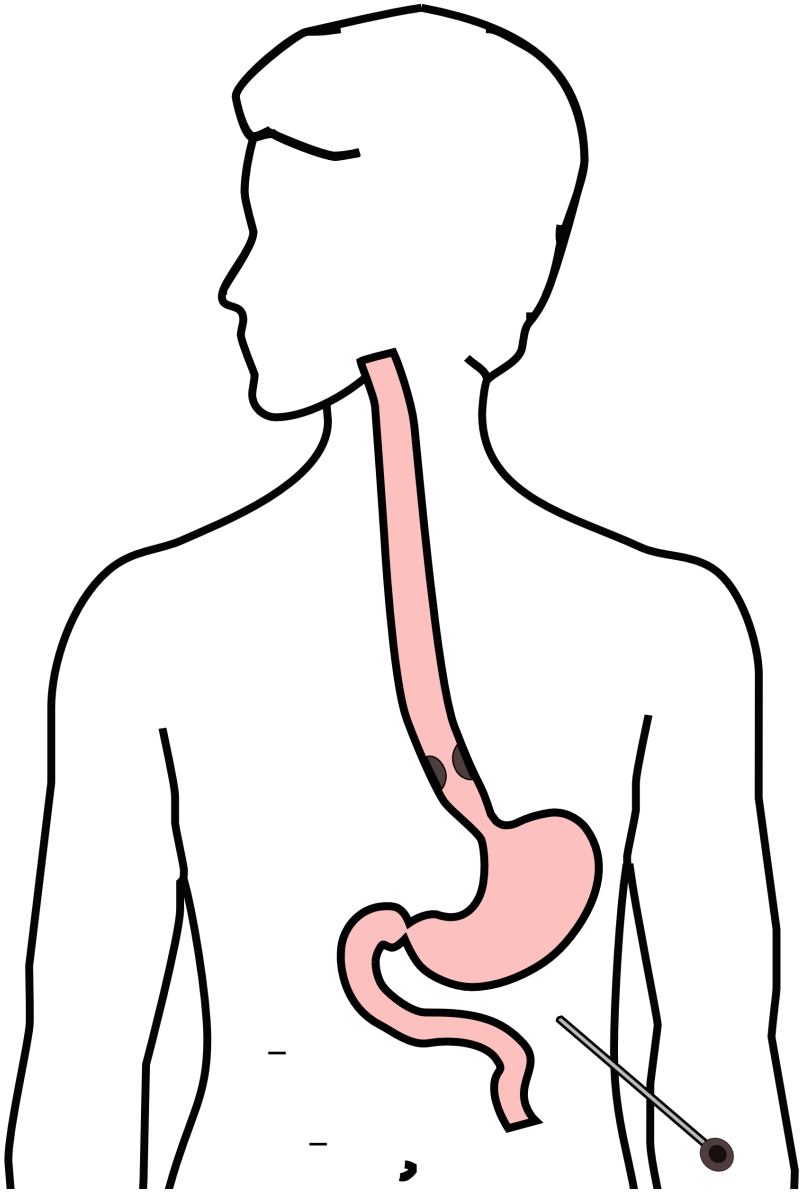
In order to detect spread within the abdominal cavity, a proceduce called a laparoscopy can be performed in some some patients.



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.

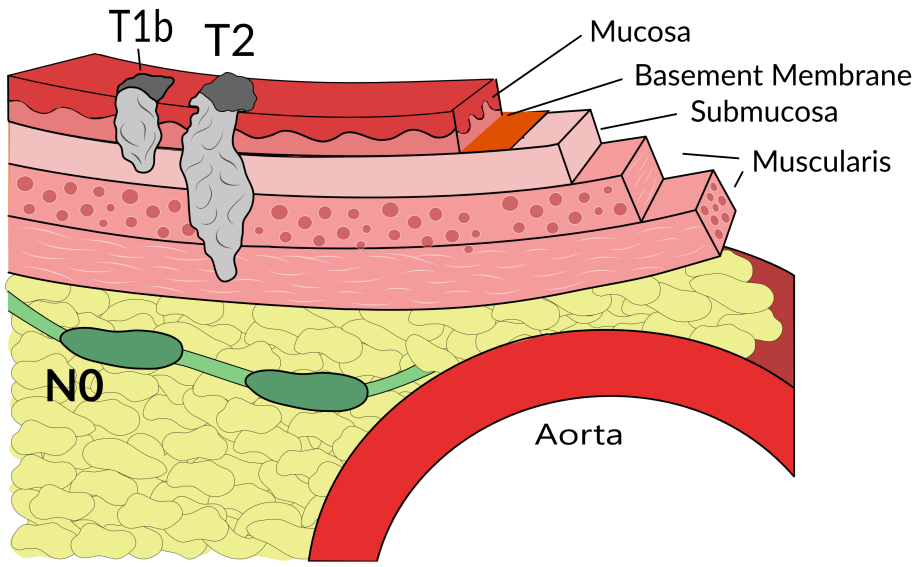


Treatment Plans

- Superficial (T1) ⇒ Endoscopic Therapy
- Localized (T1b/T2) ⇒ Surgery
- Locally-advanced (T3/N1) ⇒ Chemo ± Radiation →Surgery
- Metastatic (M1) ⇒ Chemotherapy

Localized Cancers

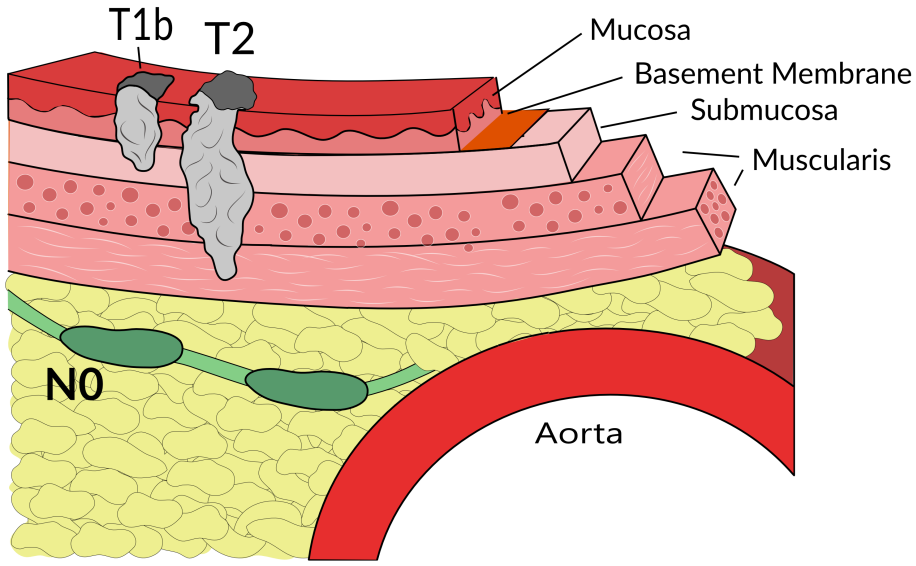
Patients with locally-advanced esophageal cancer have smaller tumors which have not invaded all the way throug the muscle wall and are too large to remove by endoscopic therapy



Localized Cancers

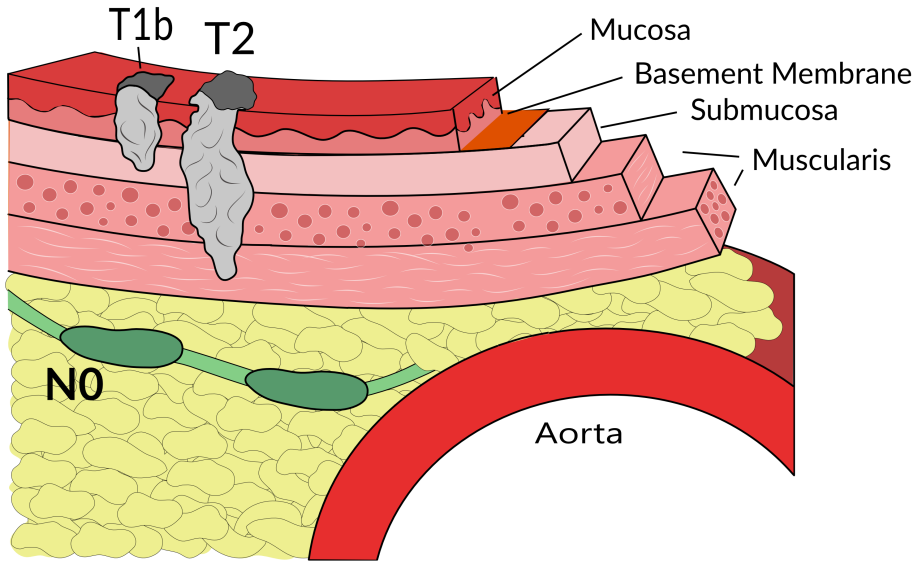
Localized cancers rarely spread to the lymph nodes, which means that surgery alone can often remove the cancer completely.

Localized cancers are less likely to need chemotherapy or radiation because the cancer is localized to the wall of the esophagus.



Localized Cancers

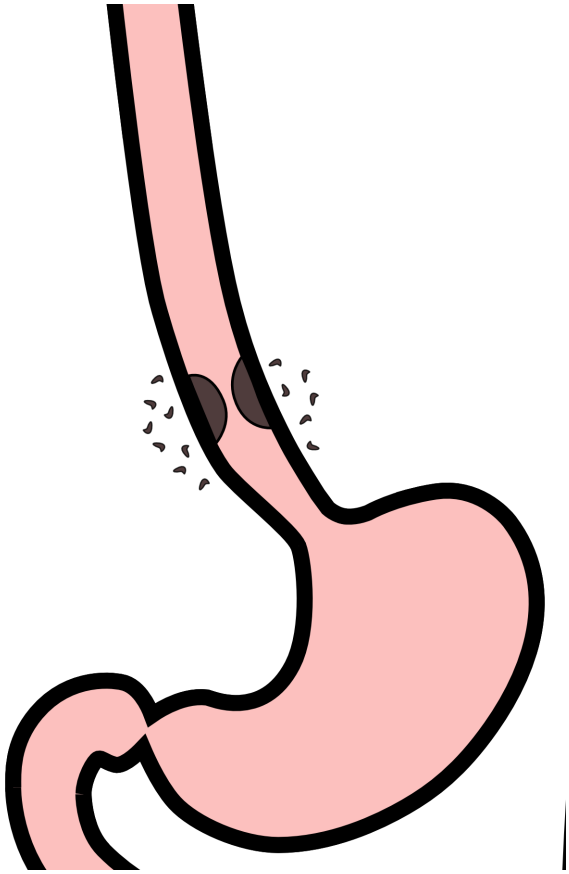
Localized cancers are not very common, because most people don't know that they have esophageal cancer until they have difficulty eating. The majority of patients who have difficulty eating have a T3 tumor *and* usually need either chemotherapy and/or radiation to prevent recurrences



Diagnosis

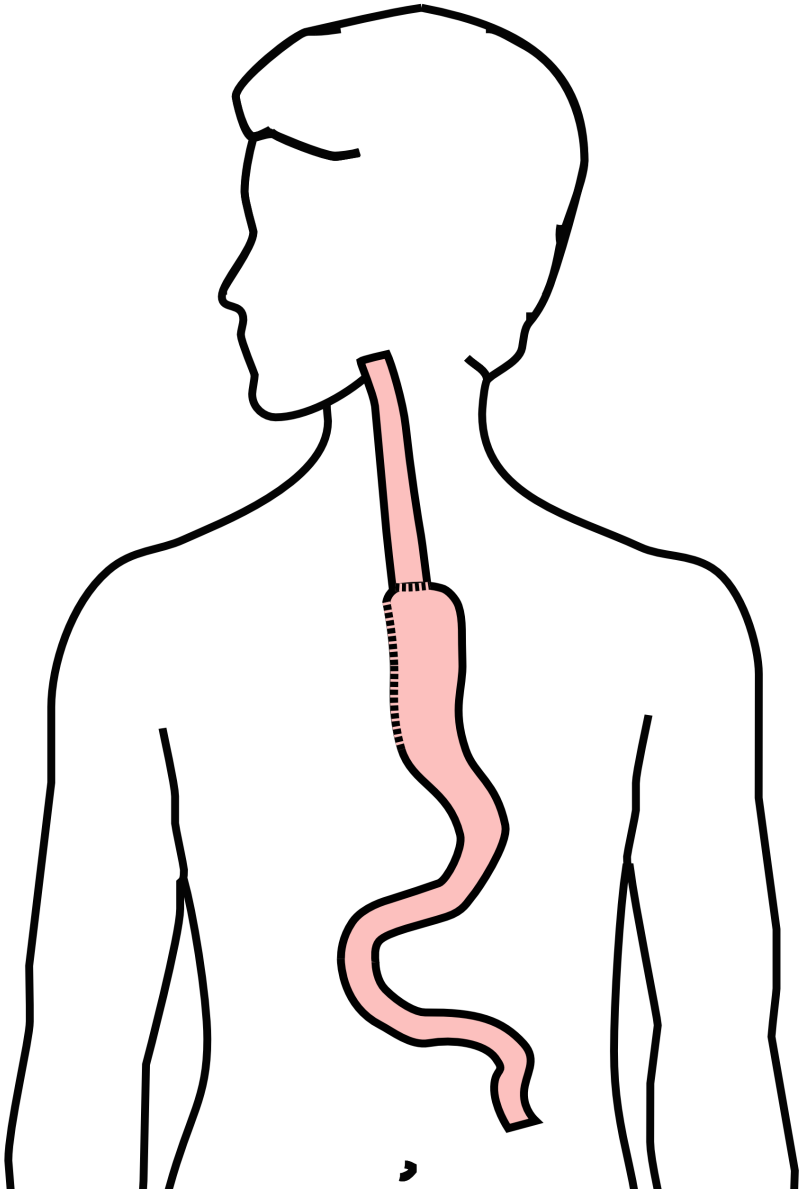
Localized cancers are generally diagnosed with a combination of endoscopic ultrasound and PET scan.

- Endoscopic ultrasound can determine the T stage
- PET scan can look at the nearby lymph nodes



Surgery

Surgery to remove the esophagus is frequently done for localized esophageal cancers



Surgery for Localized Esophageal Cancer

If surgery is performed, the cancer in the esophagus is examined by the pathologist to confirm the precise thickness of the tumor and its T stage

About 25% of the time, the pathologist finds that the tumor is actually T3 or N1, in which case chemotherapy and/or radiation is needed after surgery.

On the other hand, in 75% of cases surgery is all the therapy that is required and there is no need for chemotherapy and/or radiation

Chemotherapy + Radiation for Localized Esophageal Cancer

An alternative to surgery is to start with a combination of chemotherapy and radiation therapy.

We know that in some cases, chemotherapy + radiation can be curative for esophageal cancer without the need for surgery.

For adenocarcicnoma, about 25% of cases are cured with chemotherapy + radiation

For squmaous cell carcinoma, about 40% of cases are cured with chemotherapy + radiation

Followup after Chemotherapy + Radiation

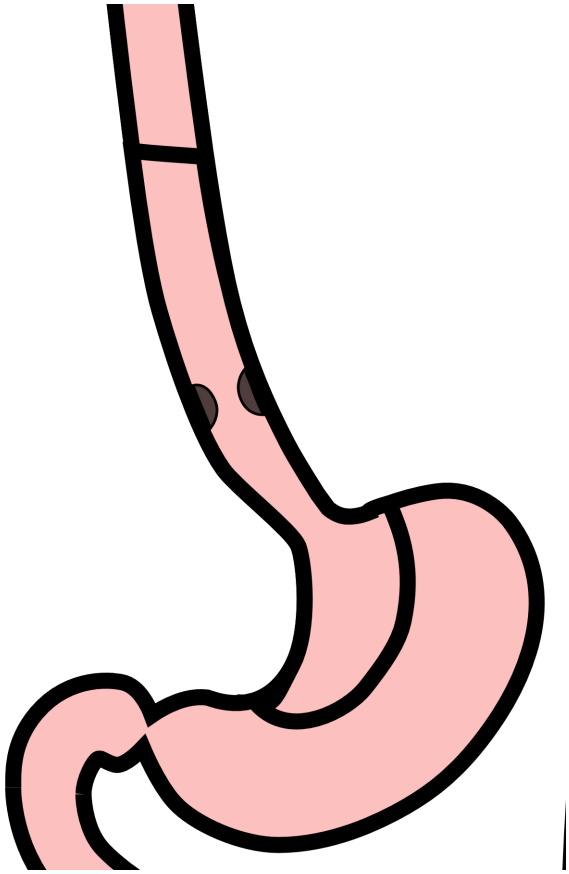
The challenge here is that it's difficult to know right away whether chemotherapy + radiation has been effective for esophageal cancer.

In most cases, scans and upper endoscopy performed after chemotherapy + radiation show no signs of cancer, but only a minority of cases are actually cured.

In can take up to two years to know with certainty whether or not an esophageal cancer has been cured by chemotherapy + radiation.

Surgery after Preoperative Therapy

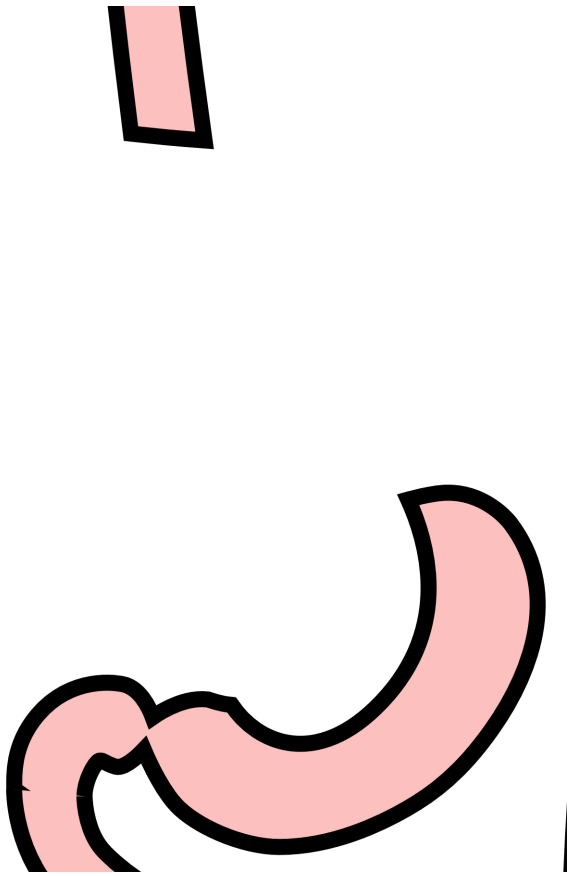
When surgery is then performed…



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 a 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
- Leucovorion
- 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:

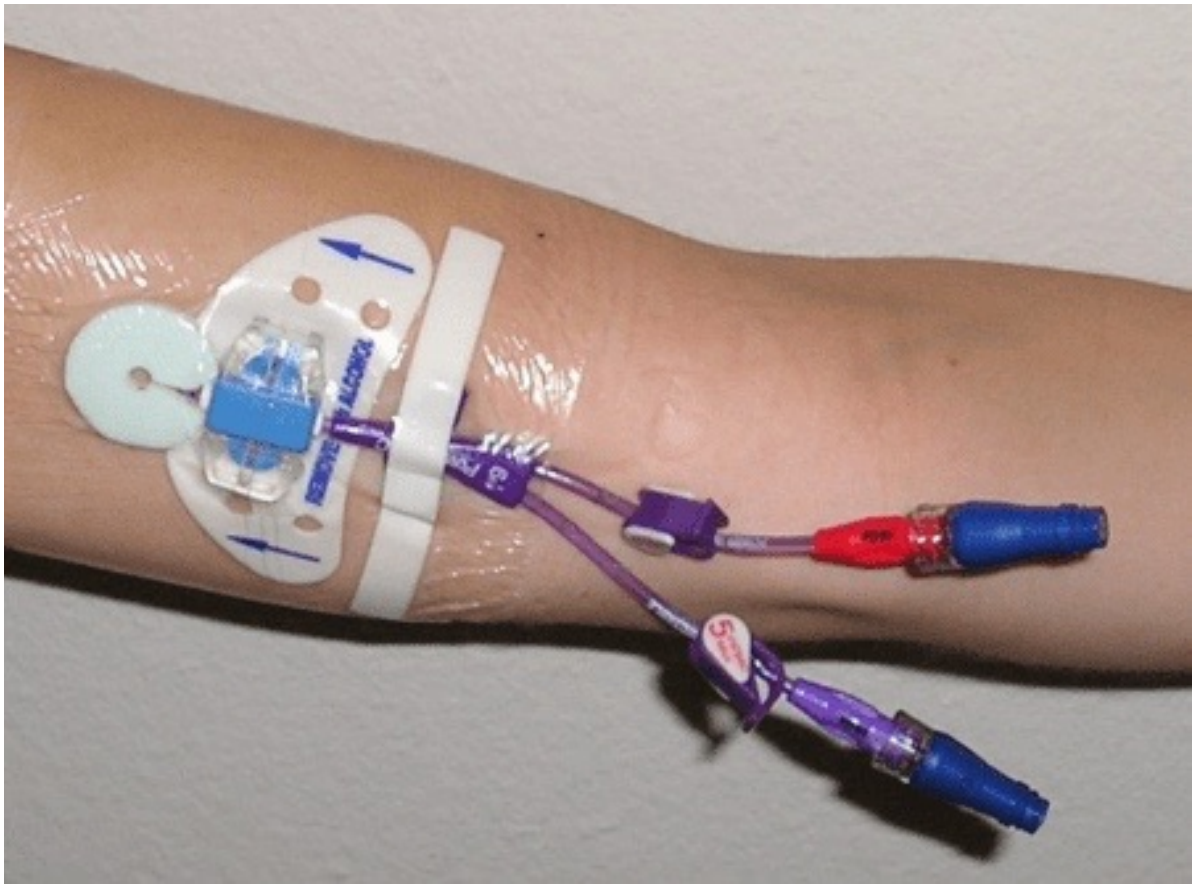
- Peripheral IVs in the hand
- PICC line (Peripheral Inserted Central Catheter)
- Central Venous Port

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.

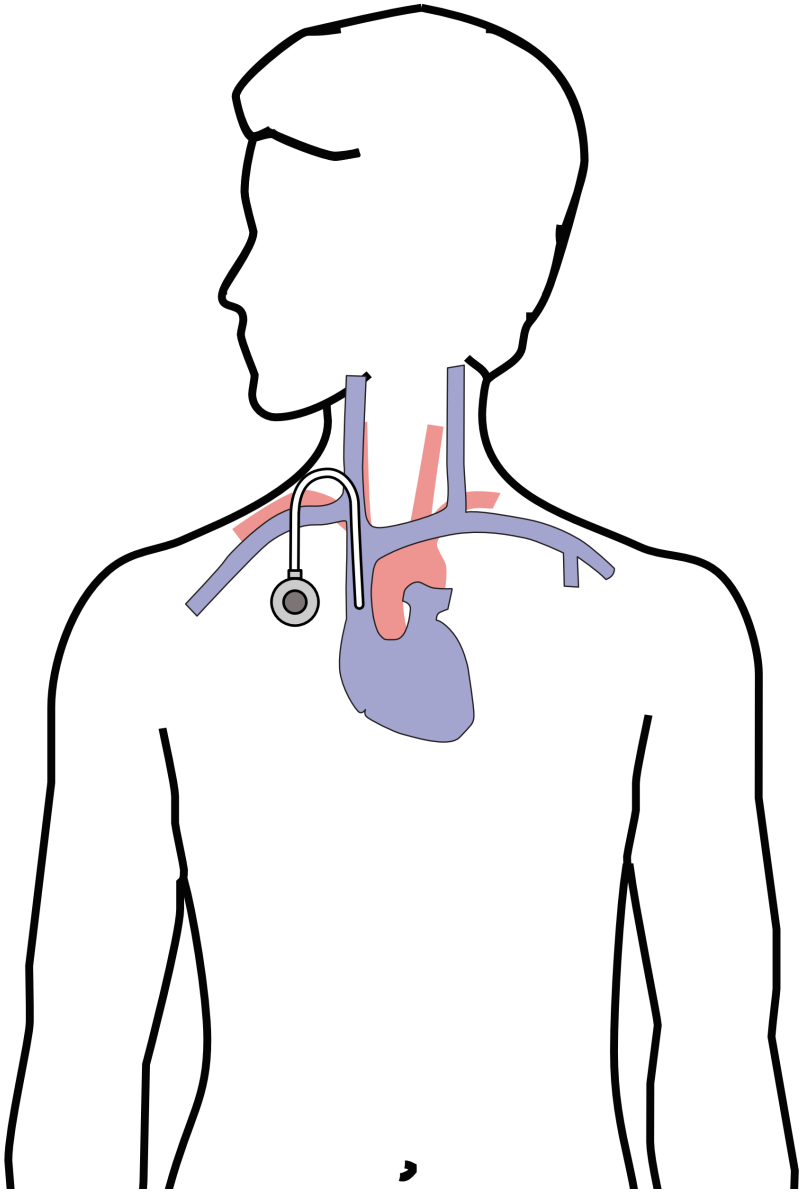
PICC Lines

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



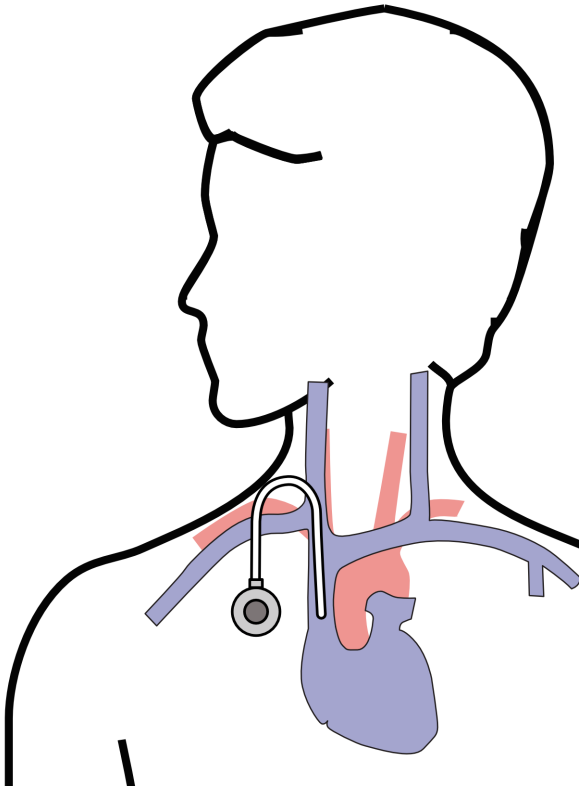
Central Venous Port

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



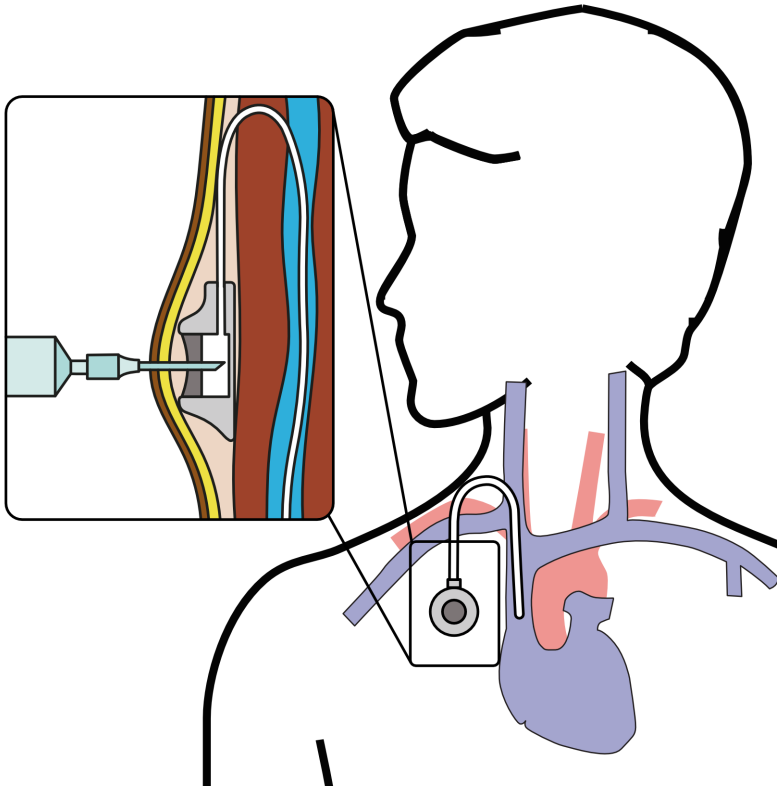
Central Venous Port

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 performed after restating, and the timing depends upon recovery from therapy.

Surgery

Surgery Slideshow