Cancer of the Esophagus and Gastroesophageal Junction

## 1 Anatomy

Food moves from the throat

esophagus

stomach

small bowel (jejunum)

## 2 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.

## 3 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**

## 4 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?

## 5 Layers of the Wall of the Esophagus

If we look at the wasll of the esophagus, we see several layers:

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

## 6 Early Stage Cancers

Early-stage cancers are those that are small and have not grown very far into the wall of the esophagus.

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

## 7 Locally-advanced Cancers

Over time, cancers can grow into the muscular wall

Locally-advanced cancers are those that have gorwn through the wall of the esophagus.

## 8 Lymph Nodes

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

If the lymph nodes contain enough cancer cells, they can be seen on CT scans or PET scans

## 9 T Stage

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

T1 tumors are early stage, and T4 tumors more advanced

## 10 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.

## 11 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

## 12 PET scan

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

In some cases, the PET scan is not performed until a CT scans bas been done.

## 13 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.

Endoscopic ultrasound is most helpful in early stage cancers.

## 14 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.

Not all patients with esophageal cancer need a laparoscopy.

In general, laparoscopy is considered for cancers that invade from the esophagus into the stomach.

## 15 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.

## 16 Treatment Plan

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

This table summarizes four different treatment categories:

* Superficial cancers are T1 and can be treated by endoscopic therapy without the need for surgery
* Localized cancers are T1b or T2 and are frequently treated by surgery alone without the need for chemotherapy or radiation
* Locally-advanced cancers are T3 or N1 and are usually treated with some combination of chemotherapy and radiation prior to surgery
* Metastatic cancers are M1 and are treated primary by chemotherapy.

## 17 Locally-advanced cancers

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

## 18 Locally-advanced cancers

If locally-advanced cancers are treated with surgery alone…

## 19 Locally-advanced cancers

If locally-advanced cancers are treated with surgery alone…

There is a risk that cancer cells can be left behind

## 20 Preoperative Therapy for Locally-Advanced Cancers

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

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## 23 Surgery after Preoperative Therapy

When surgery is then performed…

## 24 Preoperative Therapy

When surgery is then performed…

The risk of cancer recurrence is minimized

## 25 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

## 26 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

## 27 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

## 28 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.

## 29 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

## 30 “Sandwich” Chemotherapy Drugs

**FLOT**

* 5-FU
* Leucovorion
* Oxaliplatin
* Taxotere

**FOLFOX**

* 5-FU
* Leucovorin
* Oxaliplatin

## 31 Adenocarcinoma Treatment Options

**Chemo + Radiation**

* Chemo + Radiation (6 weeks)
* Surgery

**Chemotherapy**

* Chemotherapy (8 weeks)
* Surgery
* Chemotherapy (8 weeks)

## 32 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

## 33 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.

## 34 PICC Lines

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

## 35 Central Venous Port

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

## 36 Central Venous Port

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

## 37 Central Venous Port

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

## 38 Restaging

CT or PET scan will be performed after preoperative therapy

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

## 39 Surgery

[Surgery Slideshow](lci_surgery2.htm)