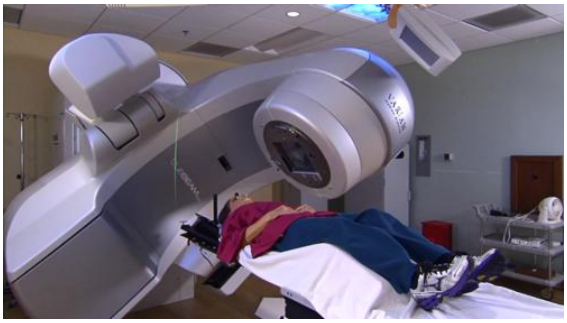
RadiologyInfo.org
For patients

Esophageal Cancer Treatment

What is Esophageal Cancer?



Esophageal cancer develops in the lining of the esophagus (http://www.radiologyinfo.org) . This long, tube-like structure connects the throat and the stomach. As a part of the upper digestive system, it carries swallowed food to the stomach. The wall of the esophagus consists of several layers of tissue.

There are two main types of esophageal cancer:

- squamous cell carcinoma (http://www.radiologyinfo.org) – cancer that develops in the thin, flat squamous cells.
- adenocarcinoma – cancer that develops in glandular (http://www.radiologyinfo.org) cells.

Early-stage esophageal cancer may have no symptoms. Advanced cancer symptoms may include:

- difficulty or pain when swallowing
- weight loss
- pain with swallowing or in the chest
- coughing and regurgitation (http://www.radiologyinfo.org)
- hoarseness
- vomiting blood
- tarry, black stool or blood in stool
- indigestion and heartburn

What are my treatment options?

Treatment options include:

Surgery

Your doctor may use surgery alone for early-stage disease or with other therapies for advanced disease. Sometimes, the tumor is small and does not go beyond the first layer of the lining in the esophagus. If so, the surgeon may remove the tumor and a small amount of surrounding healthy tissue (called a margin (http://www.radiologyinfo.org)).

For more advanced cancer, your doctor may remove part of the esophagus. An esophagectomy (http://www.radiologyinfo.org) removes the cancerous portion of the esophagus and nearby lymph nodes. The surgeon reconnects the remaining esophagus to the stomach or part of your gastrointestinal (GI) (http://www.radiologyinfo.org) tract. An esophagogastrectomy (http://www.radiologyinfo.org) removes the cancerous part of the esophagus, nearby lymph nodes and part of the stomach.

Endoscopic Treatments (http://www.radiologyinfo.org)

Endoscopic treatments treat early and pre-cancers and can provide pain relief (palliative treatment (http://www.radiologyinfo.org)). These include:

- Endoscopic mucosal resection (http://www.radiologyinfo.org) : This procedure inserts a thin tube called an endoscope (http://www.radiologyinfo.org) through the throat to the esophagus. The device has a light, video camera and surgical tools to remove cancerous tissue.

Chemotherapy (http://www.radiologyinfo.org)

This treatment stops cancer cells from dividing and kills them. Your doctor may use it before or after surgery. Chemotherapy also helps relieve symptoms when cancer has spread (metastasized (http://www.radiologyinfo.org)).

Monoclonal Antibody Therapy (http://www.radiologyinfo.org) (*also called targeted therapy*)

A small number of esophageal cancers have too much HER2 protein on the surface of their cells. The monoclonal antibody attaches to the HER2 protein and interferes with the cancer cells' ability to grow. Your doctor may use antibody therapy with chemotherapy.

Immunotherapy (http://www.radiologyinfo.org)

This treatment helps activate the body's own immune system to better identify and kill cancer cells. Your doctor may use it after surgery to reduce the risk of recurrence or to limit the progression of the cancer when it has spread.

Radiation therapy (https://www.radiologyinfo.org/en/info/intro_onco)

This treatment uses radiation to kill cancer cells.

- Esophageal cancer patients may receive external beam therapy (https://www.radiologyinfo.org/en/info/ebt) (EBT). EBT uses a machine to generate beams of high-energy radiation and direct them at the tumor. Doctors use photons (x-rays (http://www.radiologyinfo.org) and gamma rays (http://www.radiologyinfo.org)) and protons (http://www.radiologyinfo.org) (proton therapy (https://www.radiologyinfo.org/en/info/protonthera)) to treat cancer.

Your treatment plan may combine therapies. Patients who are not candidates for surgery receive radiation and chemotherapy. Surgical patients may receive radiation before surgery to help shrink the tumor (neoadjuvant treatment (http://www.radiologyinfo.org)). Or, they may receive it after surgery to destroy any remaining cancer cells (adjuvant therapy (http://www.radiologyinfo.org)). Radiation may also help manage symptoms and complications of advanced disease. These may include tumor growth that prevents food reaching the stomach, tumor bleeding, and pain.

What happens during radiation therapy?

Before starting radiation therapy, patients who cannot swallow may have a tube inserted into their esophagus. This tube (esophageal stent) allows the esophagus to remain open.

EBT begins with simulation and treatment planning. Simulation will determine your position on the treatment table. The treatment team will make devices to help you maintain that position. They may make body molds, head masks, or other devices to help you stay still during treatment. The team may also apply temporary skin marks or tattoos to help precisely position you for each treatment session.

Your doctor will use computed tomography (CT), position emission tomography (PET) and magnetic resonance imaging (MRI) to map the location of the cancer and healthy tissues nearby. Using these images and treatment planning tools, the team – dosimetrist (http://www.radiologyinfo.org) , radiation physicist (http://www.radiologyinfo.org) and radiation

oncologist (http://www.radiologyinfo.org) – will create a treatment plan. The plan guides the team in delivering the right amount of radiation to the tumor while minimizing exposure to surrounding normal tissues.

After simulation and planning, treatment can begin.

EBT often uses high energy x-rays from a machine called a linear accelerator (https://www.radiologyinfo.org/en/info/linac) . Different EBT techniques include three-dimensional conformal radiation therapy (3D-CRT) (http://www.radiologyinfo.org) , intensity modulated radiation therapy (IMRT) (https://www.radiologyinfo.org/en/info/imrt) and image-guided radiation therapy (IGRT) (https://www.radiologyinfo.org/en/info/igrt) .

- 3D-CRT focuses the radiation beams on the tumor with greater precision. This allows safe delivery of a high radiation dose.
- IMRT uses special devices called collimators to regulate the intensity of the radiation beams. This allows the doctor to deliver different radiation doses to different areas of the tumor and nearby tissues.
- Using IGRT with IMRT helps ensure precise delivery of radiation to the same location with each dose.

You may need to change into a gown before each treatment. You will lie on the treatment couch in the same position as the simulation using the immobilization devices. The therapist leaves the room and turns on the linear accelerator from outside.

You will have a series of outpatient treatment sessions over several weeks. Your diagnosis will determine how long treatment will take. Each session lasts less than an hour. Getting into the correct position on the treatment table occupies most of this time.

What are possible side effects of radiation therapy?

Radiation treatment can cause side effects. These problems may result from the treatment itself or from radiation damage to healthy cells in the treatment area.

The type of radiation, dose, and body part under treatment will all affect the number and severity of side effects. Talk to your doctor and/or nurse so they can help manage them.

Radiation may cause early or acute side effects during treatment. You may also have chronic or late side effects months or years after treatment. These side effects vary and may depend on your general health and the body area under treatment. They may also depend on daily radiation dose, total treatment dose, and other treatments (such as chemotherapy) you may have at the same time.

EBT patients typically have difficulty swallowing and pain soon after starting treatment. This is because the radiation is killing the cells in the lining of the esophagus. It causes a reaction like a sunburn. Make sure you drink plenty of water and maintain good nutrition during this time. If you do not, your doctor may insert a feeding tube before or during treatment until you can swallow again. After treatment is complete, the pain usually subsides within a few weeks.

Other common side effects include:

- fatigue
- skin changes, including dryness, itching, peeling, and blistering
- diarrhea
- dry mouth and other mouth problems
- fatigue
- nausea (especially if the abdomen is treated)
- inflammation (http://www.radiologyinfo.org) from radiation to the chest, which may lead to difficulty swallowing, cough, or feeling short of breath
- pain with or difficulty swallowing
- lower blood counts, which can lead to increased fatigue and risk of infection and bruising

- loss of hair in the treatment area

Most of these side effects go away within two months after treatment.

You may have late or long-term side effects six or more months after treatment. This depends on the body area under treatment, the treatment itself, and individual risk factors. Radiation therapy may cause a stricture (http://www.radiologyinfo.org) (narrowing) in the esophagus. This may require further treatment. Other possible long-term side effects include:

- fibrosis (scar tissue replaces normal tissue and restricts movement of the affected area)
- damage to the bowels, causing diarrhea and bleeding
- heart or lung damage from radiation to the chest, leading to possible problems breathing and shortness of breath
- thyroid problems or irritation of the esophagus from radiation to the neck
- developing another (secondary) cancer later in life.

There is a very rare risk of developing cancer from radiation therapy. After treatment, your radiation oncologist will regularly check you for complications and recurrent or new cancers.

Talk to your doctor before and during treatment about what side effects to expect and ways you can minimize them.

Are there any new developments in treating my disease?

- New imaging methods, such as endoscopic ultrasound, PET-CT, and probe-based confocal laser endomicroscopy, are improving esophageal cancer detection. Endomicroscopy provides real-time microscopic views of the esophagus.
- Advances in surgical resection techniques for esophageal cancer offer improved outcomes. Minimally invasive techniques, such as endoscopic mucosal resection, are improving survival rates.

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