Treating Esophagus Cancer

If you've been diagnosed with esophageal cancer, your cancer care team will discuss your treatment options with you. It's important that you think carefully about each of your choices. You will want to weigh the benefits of each treatment option against the possible risks and side effects.

Local treatments

Local treatments treat the tumor in a specific location, without having major effects on the rest of the body. These treatments are more likely to be useful for earlier stage (less advanced) cancers, although they might also be used in some other situations.

- Surgery for Esophageal Cancer
- Radiation Therapy for Esophageal Cancer
- Endoscopic Treatments for Esophageal Cancer

Systemic treatments

Systemic treatments are drugs, which can be given by mouth or directly into the blood. These are called *systemic therapies* because they travel through your whole system, allowing them to reach cancer cells almost anywhere in the body. Depending on the type of esophageal cancer, several different types of drugs might be used.

- Chemotherapy for Esophageal Cancer
- Targeted Drug Therapy for Esophageal Cancer
- Immunotherapy for Esophageal Cancer

Common treatment approaches

Depending on the stage of the cancer and other factors, different types of treatment may be combined at the same time or used after one another.

Some of these treatments can also be used as palliative treatment when all the cancer cannot be removed. Palliative treatment is meant to relieve symptoms, such as pain and trouble swallowing, but it is not expected to cure the cancer.

- Treating Esophageal Cancer by Stage

- Seeking a Second Opinion

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the art cancer treatment. In some cases they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- Clinical Trials

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision.

- Complementary and Integrative Medicine

Help getting through cancer treatment

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all,

you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and can be an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- Palliative Care
- Programs & Services

Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it’s important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- If Cancer Treatments Stop Working

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask your cancer care team any questions you may have about your treatment options.

Surgery for Esophageal Cancer

For some earlier stage cancers, surgery can be used to try to remove the cancer and some of the normal surrounding tissue. In some cases, it might be combined with other treatments, such as chemotherapy[1] and/or radiation therapy[2].

Esophagectomy

Surgery to remove some or most of the esophagus is called an *esophagectomy*. If the cancer has not yet spread far beyond the esophagus, removing the esophagus (and nearby lymph nodes) may cure the cancer. Unfortunately, most esophageal cancers are not found early enough for doctors to cure them with surgery.

Often a small part of the stomach is removed as well. The upper part of the esophagus is then connected to the remaining part of the stomach. Part of the stomach is pulled up into the chest or neck to become the new esophagus.

How much of the esophagus is removed depends upon the stage of the tumor and where it's located:

- If the cancer is in the lower part of the esophagus (near the stomach) or at the place where the esophagus and stomach meet (the gastroesophageal or GE junction), the surgeon will remove part of the stomach, the part of the esophagus containing the cancer, and about 3 to 4 inches (about 7.6 to 10 cm) of normal esophagus above this. Then the stomach is connected to what is left of the esophagus either high in the chest or in the neck.
- If the tumor is in the upper or middle part of the esophagus, most of the esophagus will need to be removed to be sure to get enough tissue above the cancer. The stomach will then be brought up and connected to the esophagus in the neck. If for some reason the stomach can't be pulled up to attach it to the remaining part of the esophagus, the surgeon may use a piece of the intestine to bridge the gap between the two. When a piece of intestine is used, it must be moved without damaging its blood vessels. If the vessels are damaged, not enough blood will get to that piece of intestine, and the tissue will die.

Esophagectomy techniques

Esophagectomy can be done in different ways. No matter which technique is used, esophagectomy is not a simple operation, and it may require a long hospital stay. It is very important to have it done at a center that has a lot of experience treating these cancers and performing these procedures.

Open esophagectomy: In the standard, open technique, the surgeon operates through one or more large incisions (cuts) in the neck, chest, or abdomen (belly).

- If the main incisions are in the neck and abdomen, it is called a *transhiatal esophagectomy*.
- If the main incisions are in the chest and abdomen, it is called a *transthoracic esophagectomy*
- Some procedures might be done through incisions in all three places: the neck, chest, and abdomen.

You and your surgeon should discuss in detail the operation planned for you and what you can expect.

Minimally invasive esophagectomy: For some early (small) cancers, the esophagus can be removed through several small incisions instead of large incisions. The surgeon puts a laparoscope[3] (a thin flexible tube with a light) through one of the incisions to see everything during the operation. Then the surgical instruments go in through other small incisions. To do this type of procedure well, the surgeon needs to be highly skilled and have a lot of experience removing the esophagus this way. Because it uses smaller incisions, minimally invasive esophagectomy may allow the patient to leave the hospital sooner, have less blood loss, and recover faster.

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Possible risks of esophagectomy

Like most serious operations, surgery of the esophagus has some risks.

- Short-term risks include reactions to anesthesia, more bleeding than expected, blood clots in the lungs or elsewhere, and infections. Most people will have at least some pain after the operation, which can usually be helped with pain medicines.
- Lung complications are common. Pneumonia may develop, leading to a longer hospital stay, and sometimes even death.
- Some people might have voice changes after the surgery.
- There may be a leak at the place where the stomach (or intestine) is connected to the esophagus, which might require another operation to fix. This is not as common as it used to be because of improvements in surgical techniques.
- Strictures(narrowing) can form where the esophagus is surgically connected to the stomach, which can cause problems swallowing for some patients. To relieve this symptom, these strictures can be expanded during an upper endoscopy[4] procedure.
- After surgery, the stomach may empty too slowly because the nerves that cause it to contract can be damaged by surgery. This can sometimes lead to frequent nausea and vomiting.
- After surgery, bile and stomach contents can back up into the esophagus because the ring-shaped muscle that normally keeps them inside the stomach (the lower esophageal sphincter) is often removed or changed by the surgery. This can cause symptoms such as heartburn. Sometimes antacids or motility drugs can help these symptoms.

Some complications from this surgery can be life threatening. The risk of dying from this operation is related to the doctor’s experience with these procedures. In general, the best outcomes are achieved with surgeons and hospitals that have the most experience. This is why patients should ask the surgeon about their experience: how often theyht d ask thestomach (f s, which might 0 oo ny. s or thest

place a feeding tube directly into the stomach or small intestine in people who need help getting enough nutrition. This is discussed in Palliative Therapy for Esophageal Cancer[5].

More information about Surgery

For more general information about surgery as a treatment for cancer, see Cancer Surgery[6].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[7].

Hyperlinks

1. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/laparoscopy.html
2. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/upper-endoscopy.html
3. www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html
4. www.cancer.org/cancer/managing-cancer/side-effects.html

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Radiation Therapy for Esophageal Cancer

Radiation therapy uses high-energy rays (such as x-rays) or particles to destroy cancer cells. It is often combined with other types of treatment, such as chemotherapy[1] (chemo) and/or surgery[2], to treat esophageal cancer. Chemotherapy can make radiation therapy more effective against some esophagus cancers. Using these 2 treatments together is called *chemoradiation*.

When is radiation therapy used for esophagus cancer?

Radiation therapy may be used:

As part of the main treatment of esophageal cancer in some patients, typically along with chemo (*chemoradiation*). This 306 gs (g with ce patienAond whor in't haveg 1 0 0 1 95

trouble swallowing. This is called *palliative therapy*[3].

Types of radiation therapy

There are 2 main types of radiation therapy used to treat esophageal cancer.

External-beam radiation therapy (EBRT) is the type of radiation therapy used most often for people with esophageal cancer. The radiation is focused on the cancer from a machine outside the body. It is much like getting an x-ray, but the radiation is more intense. How often and how long the radiation treatments are delivered depends on the reason the radiation is being given and other factors. It can last anywhere from a few days to weeks.

Internal radiation therapy (brachytherapy) is a type of radiation where the doctor passes an endoscope (a long, flexible tube) down the throat to place radioactive material very close to the cancer. The radiation travels only a short distance, so it reaches the tumor but has little effect on nearby normal tissues. This usually means fewer side effects than with external beam radiation. The radioactive source is removed a short time later.

Brachytherapy is not used often to treat esophageal cancer, but might be helpful with more advanced esophageal cancers to shrink tumors so a patient can swallow more easily. This technique cannot be used to treat a very large area, so it is better used as a way to relieve symptoms (and not to try to cure the cancer).

Brachytherapy can be given 2 ways:

- For *high-dose rate (HDR) brachytherapy*, the doctor leaves the radioactive material near the tumor for a few minutes at a time, which may require several treatments.
- In *low-dose rate (LDR) brachytherapy*, a lower dose of radiation is put near the tumor for longer periods (1 or 2 days) at a time. The patient needs to stay in the hospital during this treatment, but it can usually be completed in only 1 or 2 sessions.

Other types of radiation, such as IMRT (a type of EBRT) as well as proton therapy, are being studied to treat esophageal cancer.

Side effects of radiation therapy

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Chemotherapy for Esophageal Cancer

Chemotherapy (chemo) is anti-cancer drugs that may be given intravenously (injected into your vein) or by mouth. The drugs travel through the bloodstream to reach cancer cells in most parts of the body.

By itself, chemo rarely cures esophageal cancer so it is often given with radiation therapy[1] (called **chemoradiation**).

When is chemotherapy used for esophageal cancer?

Chemo may be used at different times during treatment for esophageal cancer.

- **After surgery (adjuvant chemotherapy):** Adjuvantchemo might be given (often with radiation) to kill any cancer cells that might have been left behind or have spread but are too small to see on imaging tests. If these cells were allowed to grow, they could form new tumors in other places in the body. It isn't clear that adjuvant chemoradiation is as helpful as giving it before surgery.
- **Before surgery (neoadjuvant chemotherapy):** For some cancers, neoadjuvant chemo might be given (often with radiation) to try to shrink the cancer so it can be removed with less extensive surgery. This can lower the chance of the cancer coming back and help people live longer than using surgery alone.

- ECF: epirubicin (Ellence), cisplatin, and 5-FU (especially for gastroesophageal junction tumors)
- DCF: docetaxel (Taxotere), cisplatin, and 5-FU
- Trifluridine and tipiracil (Lonsurf), a combination drug in pill form

For some esophagus cancers, chemo may be used along with the targeted drug trastuzumab (Herceptin) or ramucirumab (Cyramza). For more information on these drugs, see Targeted Therapy for Esophageal Cancer[2].

How is chemotherapy given?

Chemo drugs for esophageal cancer are typically given into a vein (IV), either as an injection over a few minutes or as an infusion over a longer period of time. Some drugs you take by mouth. All of these drugs enter your bloodstream and reach most areas of your body. These drugs can be given in a doctor's office, infusion center, or in a hospital.

Often, a slightly larger and sturdier IV called a *central venus catheter (CVC)* is needed to administer chemo. It might also be called a *central venous access device (CVAD)*, or *central line*. Once put in place, a CVC can stay in as long as you're getting treatment so you won't need to be stuck with a needle in the arms or hands each time to put in an IV catheter. It can be used to put medicines, blood products, nutrients, or fluids right into your blood. It can also be used to take out blood for testing. There are many different kinds of CVCs. The most common types are the port and the PICC line.

Chemo is given in cycles, followed by a rest period to give you time to recover from the effects of the drugs. Cycles are most often 2 or 3 weeks long. The schedule varies depending on the drugs used. For example, with some drugs, the chemo is given only on the first day of the cycle. With others, it is given for a few days in a row, or once a week. Then, at the end of the cycle, the chemo schedule repeats to start the next cycle.

Adjuvant or neoadjuvant chemo is often given for a total of 3 to 6 months, depending on the drugs used. The length of treatment for advanced esophageal cancer depends on how well it is working and what side effects you might have.

Possible side effects of chemotherapy

Chemo drugs can cause side effects. These depend on the type and dose of drugs given, and the length of treatment. Some of the most common side effects of chemo include:

- Nausea and vomiting
- Loss of appetite
- Hair loss
- Mouth sores
- Diarrhea or constipation

Chemo can also affect the blood-forming cells of the bone marrow, which can lead to:

- Increased chance of infection (from having too few white blood cells)
- Easy bleeding or bruising (from having too few blood platelets)
- Fatigue (from having too few red blood cells and other reasons)

Other side effects are also possible. Some of these are more common with certain chemo drugs. For example:

- **Hand-foot syndrome.** During treatment with capecitabine or 5-FU (when given as an infusion), this can start out as redness in the hands and feet, and then progress to pain and sensitivity in the palms and soles. If it worsens, blistering or skin peeling can occur, sometimes leading to painful sores. It's important to tell your doctor right away about any early symptoms, such as redness or sensitivity, so that steps can be taken to keep things from getting worse.
- **Neuropathy (nerve damage).** This is a common side effect of oxaliplatin, cisplatin, docetaxel, and paclitaxel. Symptoms include numbness, tingling, and even pain in the hands and feet. Oxaliplatin can also cause intense sensitivity to cold in the throat and esophagus (the tube connecting the throat to the stomach) and the palms of the hands. This can cause problems swallowing liquids or holding a cold glass. If you will be getting oxaliplatin, talk with your doctor about side effects, and let them know right away if you develop numbness and tingling or other side effects.
- **Allergic or sensitivity reactions.** Some people can have reactions while getting the drug oxaliplatin. Symptoms can include skin rash, chest tightness and trouble breathing, back pain, or feeling dizzy, lightheaded, or weak. Be sure to tell your nurse right away if you notice any of these symptoms while you are getting chemo.
  Diarrhea. This is a common side effect with many of these drugs, but can be particularly bad with irinotecan. It needs to be treated right away — at the first loose stool — to prevent severe dehydr7.6 72 Tfyl8ly baan inu develop numbness and tinglistering or sk

them to control this symptom.

Weight loss. People with esophageal cancer often have already lost weight before the cancer was found. Treatments such as chemo, radiation, or both can make it hard to eat well enough to get good nutrition, making weight loss worse. Depending on your situation, the cancer care team might recommend placement of a feeding tube to keep up your nutrition and weight during treatment. This feeding tube may be used short-term (during treatment and a bit afterwards) or it may be permanent depending on your cancer. To learn more, see Supportive Care for Esophageal Cancer

drugs work differently from standard chemotherapy[1] drugs. They sometimes work when standard chemo drugs don't, and they often have different side effects. They can be used either along with chemo or by themselves.

Drugs that target HER2

Some esophagus cancers have too much of the HER2 protein on the surface of their cells, which can help cancer cells grow. Having too much of this protein is caused by having too many copies of the *HER2* gene. Cancers with increased levels of HER2 are called **HER2-positive**. Drugs that target the HER2 protein can often be helpful in treating HER2-positive cancers.

Trastuzumab (Herceptin, others)

Trastuzumab is a monoclonal antibody[2], a man-made version of an immune system protein, which targets HER2. It can be used to help treat some HER2-positive cancers of the gastroesophageal (GE) junction (the place where the esophagus and stomach meet).

If you have a GE junction cancer and can't have surgery, your doctor may have your tumor tested for the HER2 protein or gene. People whose cancers have normal amounts of HER2 are very unlikely to be helped by this drug.

Trastuzumab is given into a vein (IV), typically once every 3 weeks, along with chemo.

Herceptin was the original brand name for trastuzumab, but several similar versions (called biosimilars[3]) are now available as well, including Ogivri, Herzuma, Ontruzant, Trazimera, and Kanjinti.

Possible side effects of trastuzumab

Most of the side effects of trastuzumab are relatively mild and can include fever and chills, cough, and headache. These occur less often after the first dose.

This drug can also sometimes cause **heart damage**, leading to the heart muscle becoming weak. This drug is not given with certain chemo drugs called *anthracyclines*, such as epirubicin (Ellence) or doxorubicin (Adriamycin), because it can further increase the risk of heart damage if they are given together. Before starting treatment with this drug, your doctor may test your heart function with an echocardiogram or a MUGA scan.

Possible side effects of ramucirumab

The most common side effects of this drug are high blood pressure, swelling of the arms or legs, protein in the urine, and fatigue. Rare but possibly serious side effects include blood clots, severe bleeding, holes forming in the stomach or intestines (called *perforations*), and problems with wound healing. If a hole forms in the stomach or intestine it can lead to severe infection and may require surgery to correct.

Entrectinib and larotrectinib

In some cancers, the cells have genes that join together. The fusion of one of these genes, called *NTRK*, with another gene can lead to abnormal cell growth.

Drugs that target this abnormal gene fusion, called **TRK inhibitors**, include entrectinib (Rozlytrek) and larotrectinib (Vitrakvi). One of these drugs might be used to treat esophageal cancer with an *NTRK* gene fusion if the cancer cannot be removed with surgery or has spread to other parts of the body, and if it has grown despite other treatments.

These drugs are given as pills daily.

Possible side effects of entrectinib and larotrectinib

The most common side effects are fatigue, nausea, vomiting, dizziness, cough, diarrhea, and constipation. Other more serious, but less common, side effects include liver problems and confusion.

More information about targeted therapy

To learn more about how targeted drugs are used to treat cancer, see Targeted Cancer Therapy[5].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[6].

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy/monoclonal-antibodies.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/biosimilar-drugs.html
3. www.cancer.org/cancer/managing-cancer/treatment-types/immunotherapy/monoclonal-antibodies.html
4. www.cancer.org/cancer/managing-cancer/treatment-types/targeted-therapy.html
5. www.cancer.org/cancer/managing-cancer/side-effects.html

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Immunotherapy for Esophageal Cancer

Immunotherapy is the use of medicines that help a person's own immune system find and destroy cancer cells more effectively. It can be used to treat some people with esophagus cancer.

Immune checkpoint inhibitors

An important part of the immune system is its ability to keep itself from attacking normal cells in the body. To do this, it uses "checkpoint" proteins on immune cells, which act like switches that need to be turned on (or off) to start an immune response. Cancer cells sometimes use these checkpoints to avoid being attacked by the immune system.

Drugs called **immune checkpoint inhibitors** target these checkpoint proteins, which can help restore the immune response against esophagus cancer cells.

PD-1 inhibitors

Pembrolizumab (Keytruda) and **nivolumab (Opdivo)** are drugs that target PD-1, a protein on T cells (a type of immune system cell). The PD-1 protein normally helps keep T cells from attacking other cells in the body. By blocking PD-1, these drugs boost the immune response against cancer cells. This can shrink some tumors or slow their growth.

Pembrolizumab can be used to treat some advanced cancers of the esophagus or gastroesophageal junction (GEJ), typically when treatments such as surgery[1] and chemoradiation (chemotherapy[2] plus radiation therapy[3]) can't be done. Pembrolizumab might be given by itself or along with chemotherapy (and possibly the targeted drug[4] trastuzumab, if the cancer tests positive for HER2[5]), depending on the situation.

In certain cases when no other treatment options are available, this drug can be used for people whose cancer has tested positive for specific gene changes, such as a high level of **microsatellite instability (MSI-H)**, defects in one of the **mismatch repair**

genes (dMMR), or a high **tumor mutational burden (TMB-H)**.

This drug is given as an intravenous (IV) infusion, typically every 3 or 6 weeks.

Nivolumab can be used in different situations:

- It can be used in people with cancer of the esophagus or gastroesophageal junction (GEJ) who got chemotherapy and radiation (chemoradiation) before surgery, if lab tests after surgery show that some cancer may have been left behind.
- It can be used by itself in people with advanced squamous cell cancer of the esophagus, typically after chemotherapy has been tried.
- It can be used along with chemotherapy as a first treatment in people with advanced squamous cell cancer of the esophagus. When given this way, it can help some people live longer.
- It can be used along with ipilimumab as a first treatment in people with advanced squamous cell cancer of the esophagus. When given this way, it can help some people live longer.
- It can be used along with chemo in people with advanced adenocarcinoma of the esophagus or with advanced cancer of the gastroesophageal junction (GEJ).

This drug is given as an intravenous (IV) infusion, usually once every 2, 3, or 4 weeks.

CTLA-4 inhibitor

Ipilimumab (Yervoy) is another drug that boosts the immune response, but it has a different target. It blocks CTLA-4, another protein on T cells that normally helps keep them in check.

It can be used along with nivolumab as the first option to treat advanced squamous cell cancer of the esophagus that can't be removed by surgery or that has spread to other parts of the body.

This drug is given as an intravenous (IV) infusion, usually once every 6 weeks when given in combination with nivolumab.

Possible side effects of immune checkpoint inhibitors

Common side effects of these drugs can include fatigue, cough, nausea, skin rash, poor appetite, constipation, muscle or joint pain, itching, fever, and diarrhea.

Other, more serious side effects happen less often. These can include:

Infusion reactions: Some people might have an infusion reaction while getting one of these drugs. This is like an allergic reaction, and can include fever, chills, flushing of the face, rash, itchy skin, feeling dizzy, wheezing, and trouble breathing. It's important to tell your doctor or nurse right away if you have any of these symptoms while getting one of these drugs.

Autoimmune reactions: These drugs work by basically removing one of the safeguards on the body's immune system. Sometimes the immune system starts attacking other parts of the body, which can cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, kidneys, skin, or other organs.

It's very important to report any new side effects to your health care team promptly. If serious side effects do occur, treatment may need to be stopped and you may get high doses of corticosteroids to suppress your immune system.

More information about immunotherapy

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Endoscopic Treatments for Esophageal Cancer

instruments passed down the endoscope. After the abnormal tissue is removed, patients take drugs called *proton pump inhibitors* to suppress acid production in the stomach. This can help keep the disease from returning.

The most common side effect of EMR is bleeding in the esophagus, which is usually not serious. Less common but more serious side effects can include esophageal strictures (areas of narrowing) that might need to be treated by with dilation, and puncture (perforation) of the wall of the esophagus which would need surgery.

Photodynamic therapy

Photodynamic therapy(PDT) is not used often but can be used to treat Barrett's esophagus, esophageal pre-cancers (dysplasia), and some very early stage esophageal cancers. It might also be used to treat large cancers that are blocking the esophagus. In this situation, PDT is not meant to destroy all the cancer, but to kill enough of the cancer to improve a person's ability to swallow.

For this technique, a light-activated drug called porfimer sodium (Photofrin) is injected into a vein. Over the next couple of days, the drug is more likely to collect in cancer cells than in normal cells. A special type of laser light is then focused on the cancer through an endoscope. This light changes the drug into a new chemical that can kill the cancer

that the cancer hasn't spread into deeper layers of the esophagus. Since the light used in PDT can only reach those cancer cells near the surface of the esophagus, cells of deeper cancers could be left behind, and grow into a new tumor. People getting this treatment need to have follow-up endoscopies to make sure the cancer hasn't grown back. They also need to stay on a drug called a proton pump inhibitor to stop stomach acid production.

For more information on this technique, see Photodynamic Therapy[1].

Radiofrequency ablation (RFA)

This procedure can be used to treat dysplasia in areas of Barrett's esophagus. It may lower the chance of cancer developing in that area.

A balloon containing many small electrodes is passed into an area of Barrett's esophagus through an endoscope. The balloon is then inflated so that the electrodes are in contact with the inner lining of the esophagus. Then an electrical current is passed through it, which kills the cells in the lining by heating them.

Over time, normal cells will grow in to replace the Barrett's cells. People getting this treatment need to stay on drugs to block stomach acid production after the procedure. Endoscopy (with biopsies) is then done regularly to watch for any further changes in the lining of the esophagus. Rarely, RFA can cause strictures (narrowing) or bleeding in the esophagus.

Treatments to help keep the esophagus open

Laser ablation

This technique can be used to help open the esophagus when it is blocked by an advanced cancer. This can help people with problems swallowing.

A laser beam is aimed at the cancer through the tip of an endoscope to destroy the cancer. The laser is called a *neodymium: yttrium-aluminum-garnet (Nd:YAG) laser*. Laser endoscopy can be helpful, but the cancer often grows back, so the procedure may need to be repeated.

Argon plasma coagulation

This technique is like laser ablation, but it uses argon gas and a high-voltage spark

delivered through the tip of an endoscope. The spark causes the gas to reach very high temperatures, which can then be aimed at the tumor. This approach is used to help unblock the esophagus for people who have trouble swallowing.

Electrocoagulation (electrofulguration)

For this treatment, a probe is passed down into the esophagus through an endoscope to burn the tumor off with electric current. In some cases, this treatment can help relieve esophageal blockage.

Esophageal stent

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Treating Esophageal Cancer by Stage

The type of treatment(s) your doctor recommends will depend on the stage[1] of the cancer and on your overall health. This section sums up the options usually considered for each stage of esophageal cancer.

Treating stage 0 esophagus cancer

A stage 0 tumor contains abnormal cells called *high-grade dysplasia* and is a type of pre-cancer. The abnormal cells look like cancer cells, but they are only found in the inner layer of cells lining the esophagus (the epithelium). They have not grown into

deeper layers of the esophagus. This stage is often diagnosed when someone with Barrett's esophagus has a routine biopsy.

Options for treatment typically include endoscopic treatments[2] such as photodynamic therapy (PDT), radiofrequency ablation (RFA), or endoscopic mucosal resection (EMR). Long-term follow-up with frequent upper endoscopy is very important after endoscopic treatment to continue to look for pre-cancer (or cancer) cells in the esophagus.

Another option is to have the abnormal part of the esophagus removed with an esophagectomy[3]. This is a major operation, but one advantage of this approach is that it doesn't require lifelong follow-up with endoscopy.

Treating stage I esophagus cancer

In this stage the cancer has grown into some of the deeper layers of the esophagus wall (past the innermost layer of cells) but has not reached the lymph nodes or other organs.

T1 cancers: Some very early stage I cancers that are only in a small area of the mucosa and haven't grown into the submucosa (T1a tumors) can be treated with EMR, sometimes followed by another type of endoscopic procedure[4], like ablation, to destroy any remaining abnormal areas in the esophagus lining. Other times, ablation alone is enough treatment.

But most patients with T1 cancers who are healthy enough will have surgery[5] (esophagectomy) to remove the part of their esophagus that contains the cancer. Chemotherapy[6] and radiation therapy[7] given at the same time (chemoradiation) may be recommended after surgery if there are signs that all of the cancer may not have been removed.

T2 cancers: For patients with cancers that have invaded the muscularis propia (T2 tumors), treatment with chemoradiation is often given before surgery. Surgery alone may be an option for smaller tumors (less than 2 cm). If the cancer is in the part of the esophagus near the stomach, chemo without radiation may be given before surgery.

If the cancer is in the upper part of the esophagus (in the neck), chemoradiation may be recommended as the main treatment instead of surgery. For some patients, this may cure the cancer. Close follow-up with endoscopy is very important in looking for possible signs of cancer returning.

People with stage I cancers who can't have surgery because they have other serious health problems, or who don't want surgery, may be treated with EMR and endoscopic

ablation, chemo, radiation therapy, or both together (chemoradiation).

Treating stages II and III cancer of the esophagus

Stage II includes cancers that have grown into the main muscle layer of the esophagus or into the connective tissue on the outside of the esophagus. This stage also includes some cancers that have spread to 1 or 2 nearby lymph nodes.

Stage III includes some cancers that have grown through the wall of the esophagus to the outer layer, as well as cancers that have grown into nearby organs or tissues. It also includes most cancers that have spread to nearby lymph nodes.

For people who are healthy enough, treatment for these cancers is most often chemoradiation (chemotherapy[8] plus radiation therapy[9]) followed by surgery[10]. Patients with adenocarcinoma at the place where the stomach and esophagus meet (the gastroesophageal junction) are sometimes treated with chemo (without radiation) followed by surgery. Surgery alone may be an option for some small tumors.

If surgery is the first treatment, chemoradiation may be recommended afterward, especially if the cancer is an adenocarcinoma or if there are signs that some cancer may have been left behind.

In some instances (especially for cancers in the upper part of the esophagus), chemoradiation may be recommended as the main treatment instead of surgery. Patients who do not have surgery need close follow-up with endoscopy to look for possible signs of remaining cancer. Unfortunately, even when cancer cannot be seen, it can still be present below the inner lining of the esophagus, so close follow-up is very important.

People **who cannot have surgery** because they have other serious health problems or the cancer is too large to remove are usually treated with chemoradiation. If chemoradiation isn't an option, chemotherapy, immunotherapy[11], or a combination of the two might be used. Sometimes, two immunotherapy drugs might be used together. For people with gastroesophageal junction cancers that are HER2 positive[12], immunotherapy with pembrolizumab, plus chemotherapy and the targeted drug trastuzumab[13] might be an option as the first treatment.

Treating stage IV cancer of the esophagus

Stage IV esophageal cancer has spread to distant lymph nodes or to other distant organs.

options for local recurrence after surgery might include more surgery or other treatments to help prevent or relieve symptoms.

If the cancer recurs locally after chemoradiation (without surgery), esophagectomy might be an option if the person is healthy enough. If surgery is not possible, treatment options might include chemotherapy or other treatments to help prevent or relieve symptoms.

Distant recurrence

Esophageal cancer that recurs in distant parts of the body is treated like a stage IV cancer.

Your options depend on which, if any, drugs you received before the cancer came back and how long ago you received them, as well as on your health. Radiation therapy may be an option to relieve symptoms as well.

Recurrent cancers can often be hard to treat, so you might also want to ask your doctor if you might be eligible for clinical trials[21] involving newer treatments.

Managing symptoms of recurrent esophageal cancer

Some people prefer not to have treatments that have serious side effects and choose to receive only treatments that will help keep them comfortable and add to their quality of life. For more information on treatments that ece72 e0.90196 0.90196 rg 416.15 348.93 122 0 0 r6e7 1

4. www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.html

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Supportive Therapy for Esophageal Cancer

Supportive therapy is treatment aimed at preventing or relieving symptoms instead of trying to cure the cancer. The main purpose of this type of treatment is to improve the comfort and quality of life for someone diagnosed with cancer no matter what stage the cancer or the goal of treatment might be. You might also hear supportive care referred to as palliative care, symptom management, or comfort care.

Several types of treatment can be used to help prevent or relieve symptoms of esophageal cancer. In some cases, they are given along with other treatments that are intended to cure the cancer. In other cases, supportive or palliative treatments are given when a cure is not possible.

Feeding tube

People with esophageal cancer often have already lost weight before the cancer was found. Treatments such as chemo, radiation, and chemoradiation can cause painful sores in the mouth and throat. These can make it hard to eat well enough to get good nutrition, making weight loss worse.

Some people with esophageal cancer may need to have a feeding tube, usually called a *jejunostomy tube* (or J-tube), put in place before treatment. This is done through a small hole in the skin over the abdomen during a minor operation. A J-tube lets liquid nutrition be put directly into the small intestine to prevent further weight loss and improve nutrition. This can make treatment easier to tolerate. Less often, the tube is placed into the stomach instead. This is known as a *gastrostomy tube* or G-tube.

A feeding tube can easily be removed when it's no longer needed.

Esophageal dilation

This procedure is used to stretch out an area of the esophagus that is narrowed or blocked to allow better swallowing.

A small balloon-like device or a device shaped like a pipe is passed down the throat and pushed through the narrowed area to stretch it out. This can be repeated if needed. Before the procedure, your doctor may give you a sedative to help you relax and may numb your throat by spraying it with a local anesthetic.

There is a small risk of bleeding or tearing a hole in the esophagus (called a *perforation*) with this procedure, which could require surgery or other treatments to fix. The esophagus typically stays open only a few weeks after dilation, so this is often followed by other treatments (such as placing an expandable stent) to help keep the esophagus open.

Other endoscopic procedures

Several types of endoscopic procedures can be used to help keep the esophagus open in people who are having trouble swallowing. These techniques are described in more detail in Endoscopic Treatments for Esophageal Cancer[1]. Procedures that may be used include:

- Esophageal stent placement
- Photodynamic therapy
- Electrocoagulation
- Laser ablation
- Argon plasma coagulation

Radiation therapy

External-beam radiation can often help relieve some of the symptoms from advanced esophageal cancer, including pain and problems swallowing. Radiation is often used for cancer that has spread to the brain or spine, but it is also useful in treating problems with swallowing from a narrowed or blocked esophagus.

If an area had been treated with external beam radiation therapy earlier, it might not be able to be treated that way again. In that case, brachytherapy may be an option. Brachytherapy is especially useful in helping to relieve a blocked esophagus. See

Radiation Therapy for Esophageal Cancer[2] for more details.

Chemotherapy and targeted therapy

When used to help treat advanced esophageal cancer, chemotherapy[3] and targeted therapy[4] can both be considered a type of palliative or supportive therapy because they are intended to help slow the growth of the cancer and relieve symptoms from the cancer, as opposed to trying to cure it.

Pain management

Pain control is an important concern for people with cancer. There are many ways to treat cancer pain. People with cancer should let their cancer care team know right away if they are in pain. The cancer care team can provide medicines and other supportive

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