LEARN ABOUT LIVER CANCER AND YOUR OPTIONS TO TREAT IT
The liver is the second largest organ in your body. It helps your body digest food and absorb nutrients. The liver produces bile, a substance your body needs to absorb vitamins.

Equally important, the liver filters drugs, alcohol, chemicals, and environmental toxins from your blood. It can filter up to 1 1/2 quarts of blood each day. Its role as a blood filter makes the liver susceptible to secondary (metastatic) cancers. These are cancers whose cells can spread to the liver through the bloodstream from other parts of the body.

**Legend**

1. Right lobe of liver
2. Left lobe of liver
3. Gallbladder
4. Stomach
5. Superior mesenteric artery
6. Superior mesenteric vein
7. Duodenum
8. Pancreas
Primary liver cancer starts in the liver

Primary liver cancer originates in the liver. The most common form is hepatocellular carcinoma (HCC).[^1] HCC can start as a single tumor in the liver. It then grows and spreads to other parts of the liver. HCC can also start as many small tumors throughout the liver. When HCC is found only in the liver, it’s called “localized.” HCC can spread outside the liver to the lymph nodes or to other organs in the body. If this happens, the cancer has reached a “regional” or “distant” stage. The most common risk factors for HCC are hepatitis B, hepatitis C, cirrhosis, nonalcoholic fatty liver disease, or exposure to aflatoxins. Long-term hepatitis B or C infections are two of the main causes of HCC.[^1]

Secondary liver cancer spreads to the liver

Secondary (or metastatic) liver cancer originates in another part of the body and spreads to the liver. In most cases, the metastatic liver tumor grows from cells that have spread from cancer in the colon or rectum. Cancers in the breast, esophagus, stomach, pancreas, lungs, kidney, and skin can also spread to the liver. Secondary liver cancer is more common than primary liver cancer in the United States and Europe.[^1]

LIVER CANCER DEMANDS ATTENTION

- Liver cancer is the tenth most common cancer in the U.S. It’s the fifth most common cause of cancer death in men and the eighth most common cause of cancer death in women.[^8]
- Primary liver cancer is the second leading cause of cancer-related deaths worldwide.[^2][^9]
- While many cancers are on the decline, the incidence of liver cancer is growing by an average rate of 6.5% annually.[^5]
- By 2030, liver cancer is projected to be the third leading cause of cancer-related deaths in the U.S.[^6]
- The liver is a very common site of metastases (tumors spread from other parts of the body).[^7]
SIGNS AND SYMPTOMS OF LIVER CANCER

If you visit your doctor when you first notice symptoms, your cancer might be diagnosed earlier – when treatment is most likely to help. Symptoms do not necessarily mean you have cancer. However, most liver cancer patients experience signs or symptoms such as these:

- Loss of weight (without trying).
- Loss of appetite.
- A feeling of being very full (even after a small meal)
- Nausea or vomiting.
- Swelling under the ribs on the right side (enlarged liver).
- Swelling under the ribs on the left side (enlarged spleen).
- Swelling or buildup of fluid in the abdomen
- Pain in the abdomen or near the right shoulder blade.
- Itching or yellowing of the skin and eyes (jaundice).

Liver cancer can cause other symptoms too. These include fever, enlarged veins on the belly that can be seen through the skin, abnormal bruising, or bleeding.

METHODS TO DIAGNOSE LIVER CANCER

**AFP Blood Exam**
The AFP blood test checks for high levels of alpha-fetoprotein (AFP), which can indicate the presence of liver cancer. It is not a perfect diagnostic method. Some people with early HCC may have normal levels of AFP, while others who have high levels of AFP do not have HCC.¹

**Ultrasound**
Ultrasound produces sound waves to create images of soft tissues. It can help the doctor tell if an abnormal tissue is a tumor or a cyst filled with fluid. Ultrasound images are not as detailed as those produced by computed tomography (CT) or magnetic resonance imaging (MRI). The doctor can do an ultrasound exam quickly without exposing you to radiation. Once the exam is completed, the doctor will biopsy the abnormal tissue to make a diagnosis.

**Magnetic Resonance Imaging (MRI)**
MRI uses magnets and radio waves to make images of soft tissues wherein location makes them harder to detect by other methods. An MRI scan requires that you lie still in a tubular, enclosed space. If you have a pacemaker or other metallic implant, check beforehand if you can have an MRI and at what strength. Once the MRI scan is done, the doctor will biopsy the abnormal tissue to make a diagnosis.

**Computed Tomography (CT)**
CT delivers radiation (like an x-ray) to take a series of images of your body from different angles. The CT scan requires that you lie still on a flat table. During the scan, the table slides back and forth inside the doughnut-shaped opening of the scanner. When the CT scan is done, the doctor will biopsy the abnormal tissue to make a diagnosis.
OPTION TO TREAT LIVER CANCER

**ABLACTION**
Ablation is a minimally-invasive outpatient procedure in which the doctor uses targeted heat (or extreme cold) to destroy a tumor.

**SURGICAL REMOVAL**
In a procedure called a partial hepatectomy, the surgeon removes the part of the liver containing the tumor. Surgery is generally considered only for healthy patients with a single tumor.

**RADIATION TREATMENT**
This treatment uses radiation targeted to the liver to destroy or shrink tumors.

**TRANSPLANT**
The doctor may consider a liver transplant for you if the cancer cannot be removed with surgery. However, transplant opportunities are limited due to a long nationwide wait list.

**CHEMOTHERAPY**
Chemotherapy involves delivering drugs throughout the body to destroy as much of the cancer as possible.

**EMBOLIZATION**
This minimally-invasive technique destroys the tumor by placing substances inside the tumor to cut off the blood supply to the cancer cells. The substances may also include chemotherapy drugs or radiation therapy agents.

**WATCHFUL WAITING**
The doctor may choose to monitor the tumor carefully over time to see if it is growing or causing liver damage.

**CLINICAL TRIALS**
There may be opportunities for you to participate in studies investigating new kinds of treatment. The doctor may recommend this option if other treatment methods are not appropriate.
Your doctor will consider many factors in determining the right option to treat your liver cancer. Here are some of those factors:

- Number, size and location of tumor(s) in your liver.
- Health and functioning of your liver.
- Your overall health.
- Whether you have primary or secondary (metastatic) liver cancer.
- Whether your liver cancer has spread outside the liver.
- Your current stage of liver cancer.

NOTE: Your doctor may consult the European Association for the Study of the Liver (EASL) Clinical Practice Guidelines (CPG) to determine your treatment. These guidelines define the use of diagnostic, therapeutic and preventive methods to manage patients with various liver diseases. They also define invasive and noninvasive procedures.
Notes from your doctor:
Ablation is a minimally-invasive alternative.

Ablation allows the doctor to destroy the tumor(s) in a minimally-invasive way — using few or very small incisions. Ultrasound, CT, or MRI images allow the doctor to see the liver in real time while performing the ablation procedure.

Guided by images of the liver, the doctor places the ablation antenna into the center of the tumor. There the antenna delivers heat energy to destroy the tumor and some of the surrounding tissue.

You will receive ablation treatment as an outpatient. Your doctor will work with you to develop a treatment plan appropriate for you.
GUIDELINES FOR CHOOSING ABLATION

For some patients, ablation may be used in addition to chemotherapy, radiation, or other therapies.

Not all liver cancer patients respond to treatments like chemotherapy. Studies show that ablation is a good alternative therapy when the tumor(s) cannot be removed surgically or when the patient is waiting for a liver transplant.

Doctors generally make a decision to use ablation based on certain guidelines. For example, the tumor and surrounding normal tissues need to be located where the doctor can reach them in a minimally-invasive procedure. Also, ablation is generally more effective when used on tumors that are less than 1.18 inches (3 centimeters) in size.

Your doctor will discuss with you the reasons for recommending ablation to treat your liver cancer.
Ablation targets the tumor
While you are under sedation or anesthesia, the doctor will place a thin, needle-like ablation antenna through your skin. The doctor will guide the antenna into the center of the tumor.

The tumor is destroyed
The ablation antenna produces heat energy that surrounds the tumor. The heat destroys the tumor and some of the surrounding tissue.

Your tissues will heal
The dead tumor cells are gradually replaced by scar tissue that shrinks over time.
WHAT TO EXPECT ABOUT YOUR ABLATION PROCEDURE

Ablation is a minimally-invasive outpatient procedure that is performed in a hospital operating room. Here are some things to know before you have your ablation procedure:

- It is typically performed under sedation or general anesthesia.
- Before your procedure, your healthcare team will determine the appropriate sedation for you.
- The length of the procedure varies from patient to patient.
- After the procedure, you will go to recovery where you will be monitored by doctors.
- The doctors will use imaging scans to help them monitor the area of ablation.
- Your doctor will discuss the results of the procedure with you. If necessary, the doctor will help you determine any further steps to take.
- Serious complications occur infrequently. These include bleeding and infection. Your doctor will discuss your risk for specific complications.
- Pain is the complication most commonly experienced by patients undergoing ablation.
- Please consult with your doctor for a complete list of indications, warnings, precautions, adverse events, clinical results and other important medical information about ablation therapy.
REFERENCES