

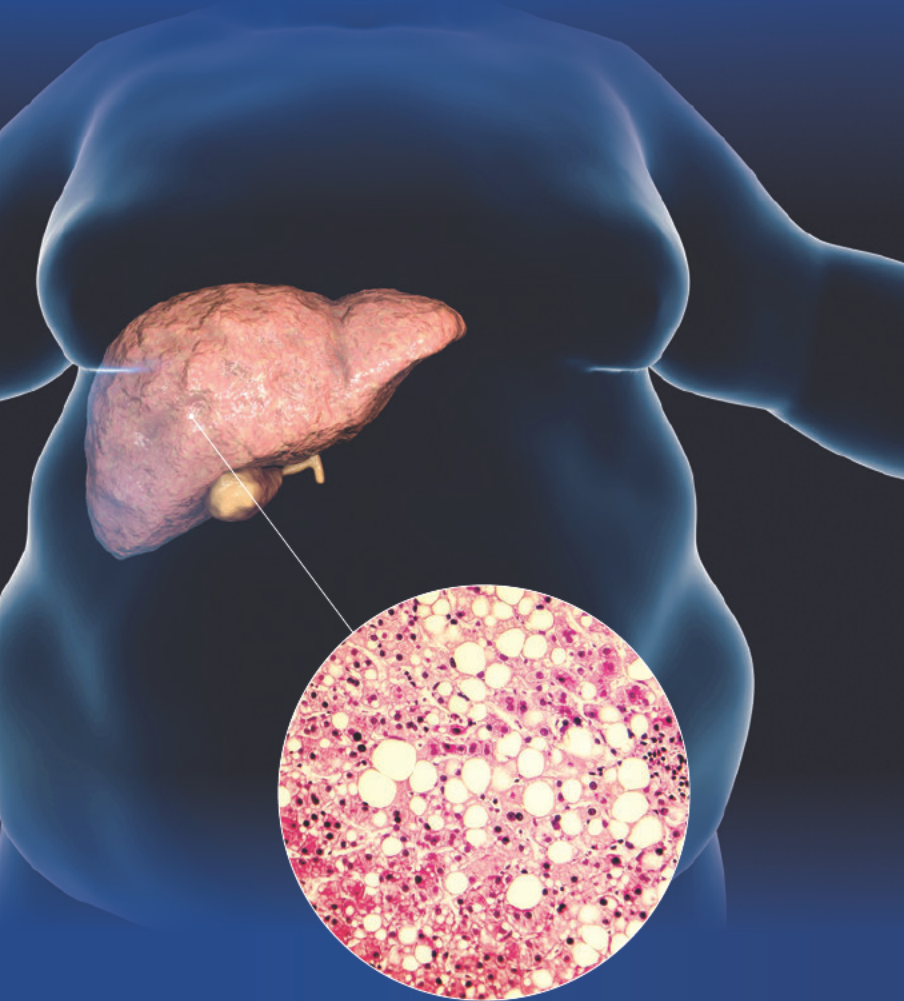
# Fatty Liver

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## Liver Steatosis (Fatty liver)

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Large vacuoles  
of triglyceride  
fat accumulated  
inside liver cells

## The Liver

The liver is the largest organ in the body. It is found high in the right upper abdomen, behind the ribs. It is a very complex organ and has many functions. They include:

- Storing energy in the form of sugar (glucose)
- Storing vitamins, iron, and other minerals
- Making proteins, including blood clotting factors, to keep the body healthy and help it grow
- Processing worn out red blood cells
- Making bile which is needed for food digestion
- Metabolizing or breaking down many medications and alcohol
- Killing germs that enter the body through the intestine

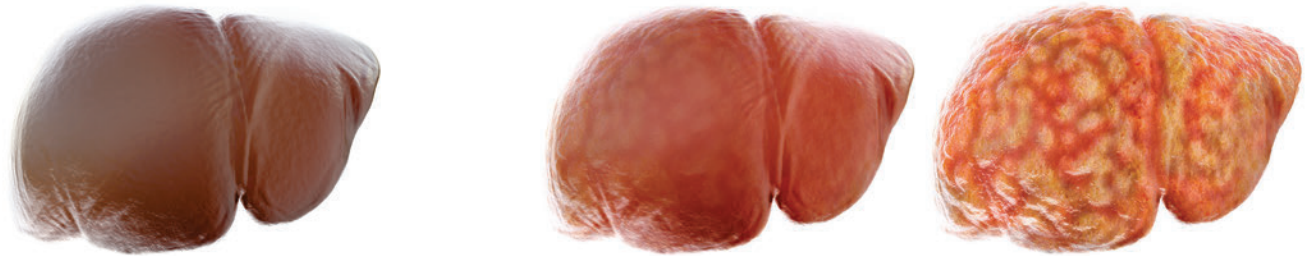
The liver shoulders a heavy workload for the body and almost never complains. It even has a remarkable power to regenerate itself. Still it should not be taken for granted. Certain conditions that develop, such as fatty liver and steatohepatitis, may be signs of liver injury that can lead to permanent liver damage.

### What is Fatty Liver?

Fatty liver is just what its name suggests: the build up of fat in the liver cells. Although this is not a normal condition, fat in the liver usually causes no damage by itself. On some occasions it can be a sign that other more harmful conditions are at work. Fatty liver may be associated with or may lead to inflammation of the liver. This can cause scarring and hardening of the liver. When scarring becomes extensive, it is called cirrhosis, and this is a very serious condition. Therefore, it is important that a physician thoroughly examine a patient with fat in the liver.

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*Progression of steatosis of the liver (fatty liver)*



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## Cause

As it would seem logical that eating fatty foods would cause a fatty liver, but this is not the case. Fat accumulates in the liver with a number of conditions. The most common is obesity. Fatty Liver is also associated with diabetes mellitus, high blood triglycerides, and the heavy use of alcohol. It may occur with certain illnesses such as tuberculosis and malnutrition, intestinal bypass surgery for obesity, excess vitamin A in the body, or the use of certain drugs such as valproic acid (trade names: Depakene/Depakote) and corticosteroids (cortisone, prednisone).

Sometimes fatty liver occurs as a complication of pregnancy.

## Symptoms and Diagnosis

There are usually no symptoms that are noticeable to the patient. In fact, fatty liver is frequently uncovered during a routine physical examination. There may be a rise in certain liver enzymes found in the blood, and sometimes the liver is slightly enlarged. Fatty liver may also be discovered while the physician is evaluating a patient for other illnesses. For example, an ultrasound exam of the abdomen done for other reasons may show fat in the liver. To be certain of a diagnosis of fatty liver, the physician may recommend a liver biopsy. Under local anesthesia, a

slender needle is inserted through the right lower chest. A small piece of liver tissue is taken out with the needle and examined under a microscope.

## What is Steatohepatitis

The term hepatitis means inflammation of and damage to the liver cells. Steato (pronounced stee at' toe) refers to fat. Therefore, steatohepatitis is inflammation of the liver related to fat accumulation. Heavy alcohol use can lead to fatty liver and inflammation, usually called alcoholic hepatitis. Steatohepatitis resembles alcoholic hepatitis, but it can and does occur in people who seldom or never drink alcohol. In this instance, it is often called nonalcoholic steatohepatitis or NASH. Both alcoholic hepatitis and steatohepatitis can lead to serious liver damage and cirrhosis.

Studies have shown that many people who are significantly overweight have developed, or will develop, steatohepatitis. It can also occur with rapid weight loss. Steatohepatitis has been connected to estrogen hormones in some women. In the case of diabetes mellitus, researchers believe steatohepatitis may develop only in those patients whose diabetes is not properly controlled.



*Treatment may include controlling diabetes, eating healthy, and exercising.*



*Liver transplant*



*Medical research*

## Treatment

In most instances, treatment of fatty liver and steatohepatitis requires control of the underlying conditions. This may include reduction of high blood triglycerides, good control of diabetes, or not drinking alcohol. In some cases, surgical reversal of intestinal bypass for obesity is required.

Since being overweight is by far the most critical factor, weight loss is the key to ridding the liver of fat. This is especially necessary if damage to the liver is occurring, and early signs of scarring are present on biopsy. High blood triglycerides and diabetes are also worse with obesity. When steatohepatitis is present with these conditions, people gain even greater benefits from losing weight.

Losing weight can be difficult, however, it must be done because the alternative may be eventual cirrhosis and the need for a liver transplant. Currently, studies are underway on certain drugs such as Actigall. This drug appears to reduce liver damage in cases of steatohepatitis. At this time, it is not certain how helpful these drugs will be. To repeat the point, losing weight is by far the most important treatment.

## Liver Transplantation

Liver transplantation is now an accepted form of treatment for chronic, severe liver damage. Advances in surgical techniques and the use of new drugs to suppress rejection have dramatically improved the success rate. Steatohepatitis is one of the more uncommon reasons for a liver transplant. However, every transplant center does a few each year as a result of this disease. Survival rates at transplant centers are well over 90% with a good quality of life after recovery.

## Summary

Fatty liver is simply the build up of fat in the liver. Fat in the liver usually does not cause liver damage. However, certain other conditions and diseases can be associated with the development of fatty liver. Research is ongoing to uncover what processes may take place to trigger fat build up in the liver. This condition is usually reversible when the underlying causes are treated or removed. Patients who follow the advice of their physicians can expect to reverse and control a fatty liver or steatohepatitis.

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