

Article 882

## **Overview**

In liver transplantation, a healthy liver is removed from a donor who is brain dead and implanted into a person whose own liver is failing. In most cases, liver failure is a long-term condition that results from disease or injury. There are rare cases of sudden liver failure due to viral infection, toxins, or medication reactions. In most cases, the recipient's own failed liver is removed. In a few cases, however, a person will receive part of a liver from a living or brain dead donor and the diseased liver is not removed.

## **Who is a candidate for the procedure?**

Liver transplantation is only offered to persons with severe liver failure. The reasons for liver transplantation include:

- » cirrhosis, a chronic disease of the liver
- » biliary atresia, an obstruction of the bile ducts caused by their failure to develop normally before birth
- » certain metabolic disorders such as Wilson disease, an inherited disorder in which the body has too much copper
- » viral hepatitis (B, C, D)
- » cancerous tumors of the liver or bile duct
- » noncancerous tumors of the liver
- » sudden liver failure
- » problems with the major blood vessels that supply the liver
- » drug-induced liver injury

A person is evaluated by a team of healthcare professionals to see if he or she is a good candidate for a liver transplant. This team includes surgeons, liver specialists known as hepatologists, social workers, nurses, and transplant coordinators. A few conditions would disqualify a person from receiving a liver transplant. These include:

- » cancer within the past five years
- » certain infections, such as tuberculosis or osteomyelitis, a bone infection
- » severe lung or kidney problems that would make the operation too risky
- » alcoholic liver disease, especially if there is active abuse

A candidate for a liver transplant needs to know that he or she will need to take medications to keep the body from "rejecting" the transplant. That is, the body's immune system would normally attack the new liver because it is something foreign. Immunosuppressants are medications that keep the immune system from attacking the new liver. These medications need to be taken for as long as the new liver functions. The person will also need lifelong follow-up with doctors. If a person is found to be a good candidate for the transplant, the person's name is placed on a waiting list. It can sometimes take years for a recipient to receive a liver from a donor, and there is much more need for liver transplants than we have donors. There are currently 14,000 people in the US waiting for a liver transplant.

### How is the procedure performed?

Usually many organs (heart, lungs, kidneys, pancreas, and liver) are being removed from the brain dead donor. There may be two or three teams who operate on the donor at the same time. After the organs are removed, they are packed for transport to the recipient. The donor's chest and abdomen are sewn up and normal preparations for a funeral take place. The liver can be preserved safely for up to 12 to 18 hours. The transplant surgery needs to take place within this timeframe. The recipient is given general anesthesia. The transplant operation consists of three major parts.

- » The diseased liver is cut away from the structures and blood vessels that hold it in place in the abdomen. This part of the operation may be very difficult and may result in a lot of bleeding.
- » The new healthy liver is then put in place. The 4 major blood vessels are reconnected. These include the suprahepatic vena cava, infrahepatic vena cava, portal vein, and hepatic artery.
- » Blood flow is restored to the liver. The surgeon checks carefully to see if there is major bleeding and if the liver is getting an adequate supply of blood.

The final connection is made to the bile duct. This small tube carries bile made in the liver to the intestines. Once the connections are complete, the incision is closed and the recipient is taken to the intensive care unit for recovery.

### What happens right after the procedure?

The liver transplant recipient will usually be in the hospital between 7 and 21 days. The person will probably be on a ventilator, or artificial breathing machine, for a day or two. On the second or third day, the person may be well enough to move out of the intensive care unit. Immunosuppressant medications are given right before or during the surgery. Blood tests will be done in the first few weeks after transplantation to be sure that the correct dosage of the medication is being given. The recipient will continue to take these medications for the rest of his life. Before leaving the hospital, the person will be given instructions including:

- » how to care for the transplant
- » how to take the medications
- » what side effects to expect
- » how to take care of the surgical scar
- » early signs and symptoms of rejection of the liver

### What happens later at home?

At home, the recipient can expect a slow but steady recovery. Walking is encouraged to help prevent pneumonia and other lung complications. Walking also helps the person to regain strength. Heavy lifting and straining should be avoided for several weeks. Driving is permitted once the incision heals.

### What are the potential complications after the procedure?

There are several complications that can affect a recipient of a liver transplant. Some of these can occur right after the surgery and others can occur at any time for the rest of the person's life. Complications include:

- » **Infection.** Taking immunosuppressant medications makes a person more susceptible to infection.
- » **Major bleeding.** This is common after transplantation because the new liver hasn't had enough time to make enough blood clotting proteins. Most liver transplant recipients need a blood transfusion along with their operation. Some may need a second operation within 24 to 48 hours to control major bleeding.
- » **Clotting of major vessels.** Sometimes the major vessels that supply blood to the liver become blocked, or clot off. This can lead to sudden liver failure and the need for another liver transplant.
- » **Bile duct problems.** Sometimes the connection between the bile duct and the intestine doesn't heal properly and bile leaks out. Or, sometimes scar tissue blocks the bile duct and bile is unable to flow.
- » **Rejection.** The body's normal response to a transplanted organ is to reject it. Even though they take medications to prevent rejection, most recipients will have one or more episodes of rejection. These are treated by increasing the dose of the medication or switching to a different medication.
- » **Cancer.** This is another long-term problem with immunosuppressant medications. The most common cancers that develop are skin cancer and lymphoma, a cancer of the white blood cells.