

# Surgery

## LIVER TRANSPLANTATION

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### What is a Liver Transplantation?

A liver transplant is a surgery to replace a diseased liver with a healthy liver from a donor. The liver is an important organ that helps with digestion, removing toxins from the blood, controlling bleeding and making proteins.

### Why Do People Need Liver Transplants?

People need liver transplants when their liver is not working properly. This can happen due to both acute and chronic diseases like cirrhosis, liver cancer or hepatitis. A liver transplant can save lives by giving patients a new healthy liver, removing cancer and controlling the pressure in veins in the stomach and intestines.

### Your Transplant Coordinator

A transplant coordinator is a healthcare professional who plays a crucial role in the organ transplant process. They serve as the main point of contact for patients, families and medical teams, ensuring a smooth and efficient transplant experience. The coordinator will be your guide in the transplant listing and waiting processes, the transplant evaluation and all your lab work and testing and office visits. They will collaborate with all teams before and after surgery to be sure you receive comprehensive care. You'll receive a large amount of detailed information from them on all these processes. Please be sure to read through it with your loved ones to make your transplant journey as smooth as possible.

### Before Surgery

**Evaluation:** Your healthcare team will evaluate you to see if you're a good candidate for a liver transplant. This includes blood tests, imaging tests like CT scans or MRIs and discussions about your medical and social history. They'll also evaluate your social support, ability to obtain necessary medications and willingness to follow instructions closely.

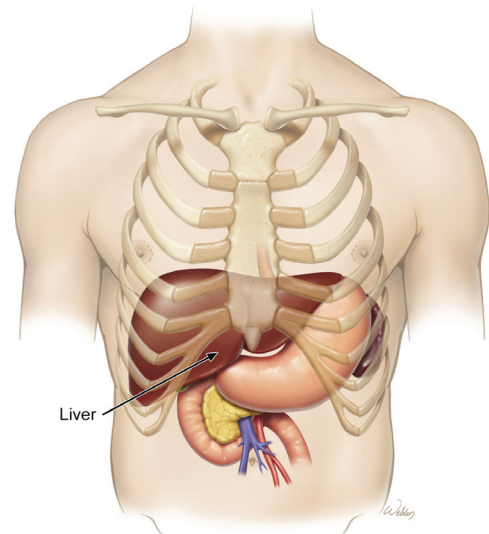
**Waiting List:** If you're approved, you'll be placed on a waiting list for a liver from a donor based on how urgent your need is. This can take some time, depending on your blood type and how urgent your need is.

**Preparing for Surgery:** You will need to discontinue any alcohol and tobacco use. You will be given an exercise program to follow in preparation for your transplant.

**Surgery Day:** Once a liver is available, you'll need to go to the hospital quickly. You'll receive instructions on what to eat and drink before the surgery.

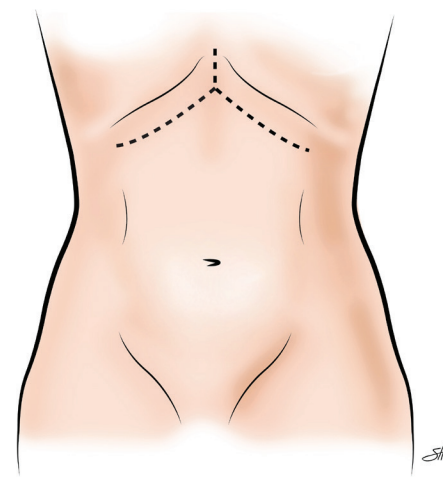
### During Surgery

1. You will be given general anesthesia, so you will be completely asleep.
2. Through an IV, you will receive fluids and other medicine like antibiotics during the surgery.
3. After you are completely asleep, a breathing tube will be placed into your windpipe through your mouth to help you breathe. During the surgery this tube will be connected to a breathing machine.
4. You will have a tube placed into your bladder to drain your urine. This will be removed once you can get up and move around comfortably after surgery.



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5. Incision: The surgeon will make an incision on your abdomen to reach the liver.
6. Removing the diseased liver: The surgeon will carefully remove your damaged liver.
7. Placing the new liver: The new liver is then placed inside your body. The surgeon will connect the blood vessels and bile ducts from the new liver to your body.
8. Closing the incision: The surgeon will close the incision with sutures and staples.



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## After Surgery

### RECOVERY - WHAT TO EXPECT

After surgery, your anesthesiology and surgery team will accompany you to the Cardiovascular Critical Care (CVCC) unit. The next day, you will be moved to the surgical ICU, where you'll stay for at least two to three days for close monitoring. After that, you'll be moved to the transplant floor for the rest of your stay.

You'll likely stay in the hospital for at least 14 days after your transplant. Doctors and nurses will monitor your recovery, checking to make sure the new liver is working properly and that you are recovering appropriately.

#### Breathing tube

For your safety, your breathing tube will still be in place in your mouth when you wake up. This can be frightening, because you won't be able to speak and it may feel uncomfortable. Try to relax, breathe normally and let the breathing machine (ventilator) do the work and breathe for you. Your doctor will have the tube removed once you can breathe well on your own.

After the breathing tube is removed, you may feel groggy and disoriented. If you feel chilly or like your stomach is upset, ask your nurse to help you get comfortable.

#### Other tubes and wires

You will notice the following:

- EKG wires on your chest to record the activity of your heart
- A monitor on your finger to measure the oxygen in your blood
- IV lines for pain medication and fluids, and a special IV in your neck to measure heart function
- Catheter in your bladder
- Nasogastric (NG) tube in your nose to allow your stomach to rest
- Possibly another smaller feeding in your nose for extra nutrition
- Possibly straps to restrain your arms or pads on your hands (if you were pulling at your tubes and cords while waking up)

#### Pain

It is normal to experience pain after the anesthesia wears off. Your surgery team will use various pain medications to make sure your pain is controlled while in the hospital. These will be used to minimize your pain and decrease inflammation.

#### Walking

It is very important that you are up and walking in the hospital halls immediately after surgery. On the first day after surgery, you will do three laps around the nursing station in the halls in the morning, afternoon and evening. This is one of the most important thing you can do for your recovery!

Walking prevents blood clots in your legs, helps prevent lung problems, keeps you from getting weak and wakes up your bowels from surgery. It also boosts your immune system and your mood. Continue walking frequently after you go home.

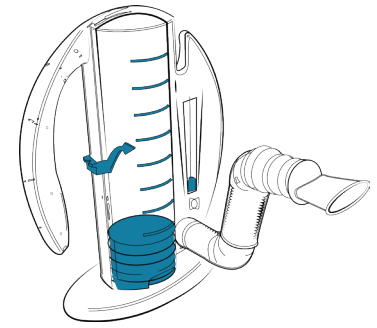
#### Deep breathing

Your lungs may be weak after surgery, so it's important to get them back in shape. To do this, you may be asked to: Take deep breaths, cough a lot and press a pillow against your abdomen as you cough so your incision hurts less.

An incentive spirometer will also be given to you to help guide you take deep breaths. This helps expand your lungs after surgery and prevents infection and fluid from building up in your lungs. You will also take this home with you and continue to use it after surgery. This device helps you in a very important part of your recovery.

To use:

1. Put the mouthpiece in your mouth.
2. Breathe in slowly and as deep as you can.
3. Hold the breath for as long as you can.
4. Let the air out.
5. Do this 10 times every hour.



### Bathing

- It is safe to shower and get the incision wet with running water once you get home. You may get tired easily and may need the assistance of a shower chair to sit or take a break.
- Use a gentle, unscented soap (baby shampoo, CeraVe, Aquaphor, Aveno). Avoid the use of perfumed lotions or soaps. Pat the incision dry gently.
- Do not soak the incision underwater until your doctor says it's okay (six weeks minimal).
- Do not go swimming or take baths until your doctor says it's okay.

### Swelling

It is normal to have swelling of your body after a liver transplant as your body adjusts and recovers. Your surgical team will monitor any swelling closely and may give you a medication that helps eliminate extra fluid by urinating more. In men, it is common for the scrotal area to also become swollen. The best way to reduce this is by elevating it using a towel or blanket. Sometimes the swelling can last up to a few months after liver transplant.

### Smoking, Alcohol, Illegal Drugs

Avoid smoking and illegal drugs, including areas where there is smoke. Smoking and drug use make your heart work harder, can make other health conditions worse and can cause cancer. If you need help in quitting smoking, ask your physician. Alcohol cannot be consumed after liver transplantation.

### Medications

You'll need to take medicines called immunosuppressants to prevent your body from rejecting the new liver for the rest of your life. These are called immunosuppressants. Your transplant coordinator will educate you on the importance of these and how to take them. You'll also receive a comprehensive binder that reviews these medications from your coordinator.

- Do not stop taking your medications, take any new medications (including those bought over the counter) or change your dosages of any medications without consulting your transplant coordinator.
- You may take acetaminophen (Tylenol) for minor pain and/or headaches. Do not take more than two grams total daily. Do not take any ibuprofen (Motrin, Advil) or naproxyn (Aleve).
- Always keep 1 week's supply of your immunosuppressant medications on hand.

## Recovery at Home

### Activity

Don't go home and go to bed. You need to be as active as you can.

- Increase your activity gradually. Take short walks on a level surface.
- Don't overexert yourself to the point of fatigue. If you become tired, rest.
- Limit stair climbing to once or twice a day. Climb slowly and stop to rest every few steps.
- Do not lift anything heavier than five to ten pounds the first six to eight weeks.
- No pulling or pushing for six to eight weeks.
- Discuss driving, swimming and sexual activity with your coordinator.
- Do not get in the water in Galveston Bay.

### Diet

For the first two days, you will not be able to eat or drink anything. Your team will keep you hydrated through your IV. On the second day after surgery, you'll be allowed to drink liquids only. Your transplant team will slowly allow you to eat more solid food as you continue to heal. If you experienced nutritional challenges before surgery that made you lose weight, you may have an extra feeding tube placed in your nose during the transplant. You will then receive extra nutrition through that tube. It will usually be removed before you leave the hospital.

- Limit Sodium – The sodium in your diet should be limited to 2,000 to 3,000 mg/day.
- Do not add salt to your food. One teaspoon is 2400 mg of sodium.

- Avoid fast foods, canned foods, and prepackaged foods.
- ]If you are taking insulin, you will need a diabetic diet.
- You must avoid raw fish, meat, chicken, eggs and unclean vegetables and fruits.
- Wash (and peel) fruits and vegetables before eating.
- Don't eat or drink juices made from grapefruit, cranberry or pomegranate. These can interfere with your immunosuppressants.
- You need to stay well hydrated if you are not on fluid restrictions.
- Minimize bananas, potatoes and lima beans.

### **Skin Care**

Wear sunscreen (SPF 30 or greater) and hat or long sleeves to protect your skin from the sun. Do not get in the water in Galveston Bay.

### **Gardening, Pets and Plants**

Avoid gardening for three months. After three months, wear gloves when working in the yard/garden. Do not bring any new live plants or flowers in the house for the first three months. Discuss new plants with your coordinator after the first three months. Avoid changing a cat litter box. Avoid pet's bodily fluids. Avoid reptiles (lizards, turtles or snakes), birds, rabbits and exotic animals. Report any skin injuries caused by an animal.

### **Preventing Infection**

You are more at risk for infection because of the medications you need after liver transplant. Do the following to prevent an infection:

- Wash your hands with soap and water for 20 seconds.
- Have all visitors wash hands upon arriving.
- Avoid sick people and crowds.
- Wear a mask when near large crowds or sick people.
- Call your coordinator for any signs of infection: redness and drainage, fever, swelling, pain, sore throat or colored (green or yellow) phlegm.

### **Follow-Up Care**

Your transplant coordinator will set up all your clinic visits and tests, such as lab work. You will come back to the transplant clinic for follow-up visits once a week for the first month after leaving the hospital. Your comprehensive care team will see you that day to make sure you are recovering well. This will include your transplant coordinator, your surgeon, a pharmacist and possibly a nurse practitioner.

You will also need to have labs drawn two times every week for the first month after going home. On the morning before your lab work, you may take ALL of your medications EXCEPT for immunosuppression medications (Prograf/sirolimus). You should take these medications immediately after your labs have been drawn. Regular check-ups with your doctor will be necessary to ensure your liver stays healthy. You'll also need to follow a healthy lifestyle, including eating a balanced diet, exercising and avoiding alcohol and tobacco use.

### **Weight and Vital Signs**

Weigh yourself each day when you wake up. Your weight may be the first sign your body is retaining water. If your weight increases by 2-4 pounds in a day or 3-5 pounds in 2 days, call your coordinator. Take blood pressure, temperature and heart rate twice per day. Blood glucose should be checked before each meal and at bedtime or as instructed by your coordinator. Please bring your vital sign and blood glucose logs with you to each clinic appointment.

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