PROCEDURE

Liver transplant

A liver transplant replaces a severely damaged liver with a healthy donor liver.

PURPOSE
Replace a failing liver and restore essential liver function

PROCEDURE TYPE
Therapeutic; open surgery through an abdominal incision

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General anaesthesia

HOW LONG IT TAKES
Usually 6 to 12 hours

PREPARATION
Evaluation, blood tests, medication planning, then fasting before surgery

RECOVERY
About 1 to 2 weeks in hospital; driving after clearance

MAIN RISKS
Bleeding, infection, rejection, blood clots, bile duct problems

RESULTS
Liver function assessed immediately and through daily blood tests

Overview

A liver transplant is surgery to remove a liver that no longer works well enough and replace it with a healthy donor liver. The donated liver may come from someone who has died or, in some cases, from a living donor who gives part of their liver.

The liver performs many essential jobs. It removes waste from the blood, produces bile for digestion, makes proteins needed for blood clotting, and helps control energy and nutrients.

A transplant is major surgery, not a cure for every liver condition. It requires careful assessment beforehand and lifelong follow-up afterward. You will need medicines that suppress your immune system so it does not attack the donor liver. This immune response is called rejection.

Why the procedure is performed

A transplant may be considered when liver damage is life-threatening and other treatments cannot restore enough liver function.

Reasons include:

Transplant teams consider how urgently you need surgery and whether transplantation is likely to improve your survival and quality of life. For many adults, blood-test results are used to calculate a score that estimates the urgency of transplantation.

- Advanced cirrhosis, meaning permanent scarring that stops the liver working properly
- Acute liver failure, when liver function deteriorates rapidly
- Selected liver cancers that meet transplant criteria
- Certain inherited or metabolic conditions that seriously affect the liver
- Severe complications such as repeated internal bleeding, fluid buildup, confusion, or infections related to advanced liver disease

Who should and should not have it

Liver transplantation may be suitable if you have severe, irreversible liver disease or an eligible liver cancer and are well enough to undergo major surgery. You must also be able to take anti-rejection medicines and attend frequent follow-up appointments.

Assessment usually includes liver, heart, lung, and kidney testing. The team also considers nutrition, physical strength, emotional health, substance use, practical support, and your ability to follow a complex treatment plan.

Transplantation may be avoided or delayed because of:

Some issues can be improved before reassessment. Requirements concerning alcohol or other substance use are individualized; there is not one waiting period that applies to everyone.

A living donor must undergo a separate assessment. The donor's safety comes first, and they may decide not to proceed at any time.

- An active, uncontrolled infection
- Cancer that has spread or does not meet transplant criteria
- Severe heart, lung, or other disease that makes surgery unacceptably risky
- Uncontrolled substance use that would make treatment unsafe

- Inability to take medicines or attend follow-up despite available support
- Severe frailty or poor nutrition that needs treatment first

How to prepare

Your treating facility's own instructions take priority because transplant programs use detailed plans based on your health and donor circumstances.

Before surgery, you may have blood tests, scans, heart and lung tests, cancer screening, and consultations with several members of the transplant team. Ask which medicines to take or stop. Do not stop blood thinners like warfarin or apixaban , diabetes medicines, or other prescribed treatments unless the team tells you to.

If you are waiting for a deceased-donor liver, keep your contact information current and have a travel plan. When a liver becomes available, the transplant team will tell you when to stop eating and drinking. Surgery can still be cancelled if final testing shows that the donor liver is unsuitable.

A planned living-donor transplant has a scheduled date. You will receive instructions about fasting, admission, medicines, washing, and what to bring.

What happens during the procedure

You receive general anaesthesia, so you are unconscious and do not feel the surgery. An anaesthesia team monitors your breathing, blood pressure, heart function, and other vital signs.

The surgeon makes an incision across the upper abdomen. The damaged liver is separated from its blood vessels and bile duct and removed. The donor liver is placed in the abdomen, and its blood vessels are connected to restore blood flow. The surgeon then connects the bile duct, which carries bile from the liver to the intestine.

For a living-donor transplant, only part of the donor liver is transplanted. Both the transplanted portion and the donor's remaining liver can grow over time.

You may have tubes to drain fluid, deliver medicines, monitor blood pressure, or help with breathing. After surgery, you usually go to an intensive care or specialist transplant unit.

Recovery and what to expect afterward

Pain is expected around the incision. Your team will provide pain relief and adjust it if you remain uncomfortable. Tell them if pain suddenly becomes worse or feels different.

You initially receive fluids through a vein. You can usually begin drinking and then eating as your bowel function returns. A dietitian may help you meet increased protein and energy needs while healing.

You will be encouraged to sit up, breathe deeply, and begin walking with help. These steps reduce muscle loss and the risks of chest infections and blood clots. Heavy lifting and strenuous exercise remain restricted until the incision and abdominal muscles have healed.

Do not drive home. You should not drive while taking medicines that make you drowsy or until your transplant team confirms that your strength, movement, and concentration are safe for driving.

Hospital recovery is commonly around one to two weeks, but it may be longer after complications or severe illness before surgery. Returning to work can take several months. Timing depends on your recovery and whether your work is physical.

Risks and possible complications

Liver transplantation has important short- and long-term risks. These include:

Anti-rejection medicines reduce immune activity. This increases susceptibility to infections and, over time, certain cancers. These medicines may also contribute to kidney disease, diabetes, high blood pressure, or high cholesterol.

Rejection can occur without clear symptoms and may first appear in blood tests. It can often be treated, especially when found early. Never change or stop an anti-rejection medicine without instructions from the transplant team.

- Bleeding or the need for further surgery
- Infection
- Blood clots in the liver's blood vessels
- Bile leaks or narrowing of a bile duct
- The donor liver not working adequately
- Rejection of the donor liver
- Kidney problems
- Side effects from anti-rejection medicines

- Return of the original liver disease in some people

Results and follow up

The team begins checking the donor liver immediately. Blood tests show how well it is processing waste, making proteins, and supporting bile flow. Ultrasound may be used to check blood flow through the new liver.

If the removed liver requires laboratory examination, including assessment of a known or suspected cancer, those findings usually take several days.

After discharge, you will have frequent appointments and blood tests. Visits generally become less frequent as your condition stabilizes, but transplant follow-up continues for life. Your team may adjust anti-rejection medicines based on blood levels, liver function, kidney function, side effects, and signs of rejection.

Routine care also includes infection prevention, vaccinations recommended for transplant recipients, cancer screening, and management of blood pressure, blood sugar, cholesterol, bone health, and kidney health.

Alternatives

There is no treatment that fully replaces a liver that has permanently lost its function. However, alternatives may control complications, treat a specific cancer, or provide more time before transplantation.

Medicines can manage fluid buildup, itching, confusion, infections, or other complications. They avoid major surgery but cannot reverse advanced liver scarring.

Endoscopic procedures can treat enlarged veins that may bleed. A procedure called TIPS can reduce high pressure in the liver's circulation. It may control bleeding or fluid buildup but can worsen confusion and does not restore normal liver function.

Selected liver cancers may be treated with surgical removal, ablation using heat, treatment delivered through the liver's arteries, radiation, or systemic medicines. These options may be less extensive than transplantation, but suitability depends on the cancer and the health of the remaining liver.

Supportive or palliative care can treat symptoms and help with planning when transplantation is not suitable or is not wanted. It can be provided alongside other liver treatments.

When to call your healthcare team

Contact your transplant team promptly for a fever at or above the threshold they gave you, worsening abdominal pain, vomiting that prevents you taking medicines, new jaundice, reduced urine, increasing swelling, confusion, wound redness or drainage, or an anti-rejection dose that was missed or vomited.

Routine questions about mild medicine side effects, diet, activity, appointments, or returning to work can usually wait for normal clinic hours unless your team has advised otherwise.

Seek emergency help for severe difficulty breathing, chest pain, fainting, uncontrolled bleeding, a seizure, sudden severe confusion, or loss of consciousness. Use your local emergency number rather than waiting for the transplant clinic to respond.

Common questions

Will I be asleep?

Yes. Liver transplantation is performed under general anaesthesia. You will be unconscious throughout the operation and may remain on a breathing machine for a period afterward.

Can I drive home?

No. Someone else must drive you when you leave hospital. Resume driving only after the transplant team clears you and you are no longer taking medicines that impair alertness.

How painful is a liver transplant?

You can expect incision pain and abdominal soreness, especially when moving or coughing. Pain relief, positioning, and gradual movement usually help. Report pain that is severe, sudden, or worsening.

When will I know if the transplant worked?

The team assesses liver function immediately through blood tests, bile production, and blood-flow checks. Recovery continues over weeks to months, and ongoing tests are needed because problems can develop later.

How long will I take anti-rejection medicine?

Most recipients need anti-rejection medicine for life. The combination and amount may change, but stopping it without medical direction can cause rejection.

Sources

- National Institute of Diabetes and Digestive and Kidney Diseases. Liver Transplantation
- NHS. Liver transplant
- American Association for the Study of Liver Diseases and American Society of Transplantation. Evaluation for Liver Transplantation in Adults: 2013 Practice Guideline . Hepatology . 2014;59(3):1144-1165
- European Association for the Study of the Liver. EASL Clinical Practice Guidelines: Liver transplantation . Journal of Hepatology . 2016;64(2):433-485
- Organ Procurement and Transplantation Network. The transplant process
- American Association for the Study of Liver Diseases and American Society of Transplantation. Long-Term Management of the Successful Adult Liver Transplant . Hepatology . 2012;56(1):1-23