



LIVING DONOR
LIVER TRANSPLANT

*Bringing the glimpse
of life for others*

Contents

Introduction	3
Why is living donor liver transplant done?.....	4
Overview of procedure.....	5
Who can be considered as a living donor?	6
What are your concerns as a living donor?	7
Points of consideration	8
Evaluation Process	9
• Stage 1 – Preliminary Assessment.....	10
• Stage 2 – Liver Imaging Assessment	11
• Stage 3 – Other Imaging Assessment.....	12
• Stage 4 – Specialist Visits.....	13
• Stage 5 – Transplant Ethics Committee	14
About the surgery.....	16
Discharge	17
Symptoms that require immediate medical attention.....	19
Moving on.....	20
Appointment schedule	21

Introduction

- You have been informed that your loved one will need a liver transplant.
- The patient, his/her family and friends can consider the Living Donor Liver Transplant option.
- We understand that this may be a difficult time for you and your family.
- This booklet provides a simple yet comprehensive explanation to help the donor understand the process.
- Donation is **TOTALLY VOLUNTARY** and one will have to consider carefully before taking the step forward.

CONTACT US

You can reach our SGH Liver Transplant Coordinators at 8123 2934 (Monday – Friday, 8:00am to 6:00pm) or email us at liver.transplant@sgh.com.sg



Why is living donor liver transplant done?

Organs for transplantation are typically obtained from deceased donors. However, there are not enough deceased donor organs available in Singapore. This has resulted in the number of patients on the transplant waiting list to continue to grow.

Due to this organ shortage, patients waiting for a liver may die before they get the chance to be transplanted or become unfit to undergo transplantation.

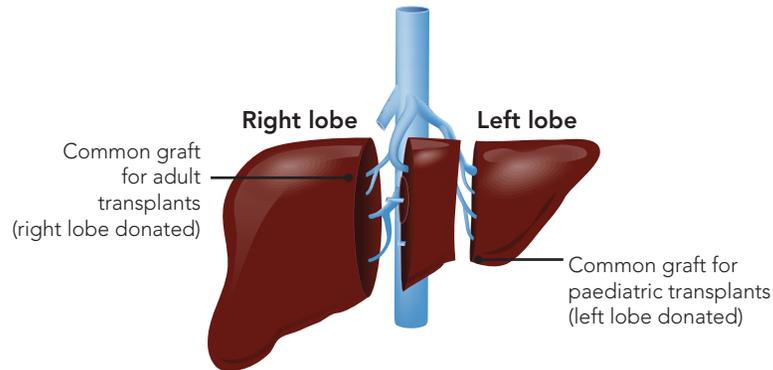
Living donor liver transplantation (LDLT) can be an important alternative for patients. A patient can receive a part of a liver from a family or friend, and therefore need not wait for a deceased donor organ.

Furthermore, LDLT can be performed before the recipient's health severely worsens, and may allow for a faster recovery.

Overview of procedure

About 60 percent of an adult donor's liver is taken. If too much is removed, the donor is at risk for liver failure and death. The liver is the only organ able to regenerate, or make itself whole again. Regeneration takes about two months.

- The size and age of the recipient determines how much, and which part, of the liver is donated.



Who can be considered as a living donor?

- ▶ 21 years old and above[^]
- ▶ Both blood group compatible and incompatible
- ▶ Healthy with no pre-existing medical conditions
- ▶ Related and Non-related e.g. emotionally related and altruistic
- ▶ Sound mind
- ▶ Voluntary

If you have blood type*	You can normally RECEIVE a liver from blood type:	You can normally DONATE to a person with blood type:
O	O	O, A, B, AB
A	A, O	A, AB
B	B, O	B, AB
AB	O, A, B, AB	AB

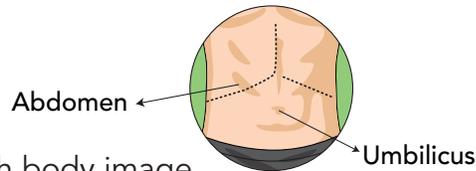
[^] Donor below 21 years old will require parental consent.

*A donor can donate even if he/she is not a blood type match for the intended recipient. This is considered on a case-by-case basis.

What are your concerns as a living donor?

Medical

- Surgical complications e.g. death, bleeding, infection, bile leakage
- Organ failure – may require organ transplant in the future
- Medical complications e.g. hernia, narrowing of bile duct
- Scars, pain and fatigue
- Abdominal/bowel symptoms e.g. bloating, nausea, vomiting, constipation



Psychosocial

- Problems with body image
- Post surgery adjustment problems
- Possibility of recipient rejection and the need for re-transplant
- Possibility of recipient recurrence of disease
- Possibility of recipient death
- Potential impact on lifestyle

Finance

- Personal expenses travel, housing, lost wages might not be reimbursed
- Child care costs
- Possible loss of employment
- Potential impact on the ability to obtain insurance
- Change in health status - possibility of more doctor visits

Points of consideration

- Donor assessments do not start until the recipient has been deemed eligible for living donor liver transplantation.
- Intended recipient must agree to donation.
- If potential recipient is also deemed suitable for a deceased donor organ, he/she will remain on the deceased donor waitlist while living donor evaluation is in progress.
- Potential donors have responsibility to report any and all health concerns and issues that might affect their suitability or pose health risks to the recipient.
- Duration of donor assessment is determined by availability of resources, donor's schedule and the complexity of the donor's health issues.
- Donation will not be offered if medical/surgical team believes that there is potential physical, emotional and social harm.
- Final decision to perform living donor transplant lies on donor's healthcare team.

Evaluation process

- All done as outpatient and in stages.
- It comprises of investigations and physician consultations.
- Donors are to expect about 10 different appointments.
- Donor assessment can take 1 – 2 months to complete.
- There is strict donor confidentiality. The team does not give information to third parties (family, friends, recipient etc).
- Donor workup can be halted at any point of time based on donor's discretion.
- For urgent cases, these tests may have to be carried out within 48 to 72 hours.
- Before undergoing evaluation, donors should consider the possibility that previously undiagnosed medical conditions may be uncovered during this medical assessment. The new diagnosis could affect your suitability as a donor, or cause emotional distress.



Donor safety is our first priority.

Stage 1 - Preliminary Assessment

01

Meet up with surgeon and transplant coordinators
◦ Explain donation process, surgical risks, get evaluation consent

02

Blood Tests
◦ Full blood works to check liver function, kidney function, tumor markers, and infectious diseases (e.g. Hepatitis A, B, C, HIV screen)

03

Urine Pregnancy Test for Female

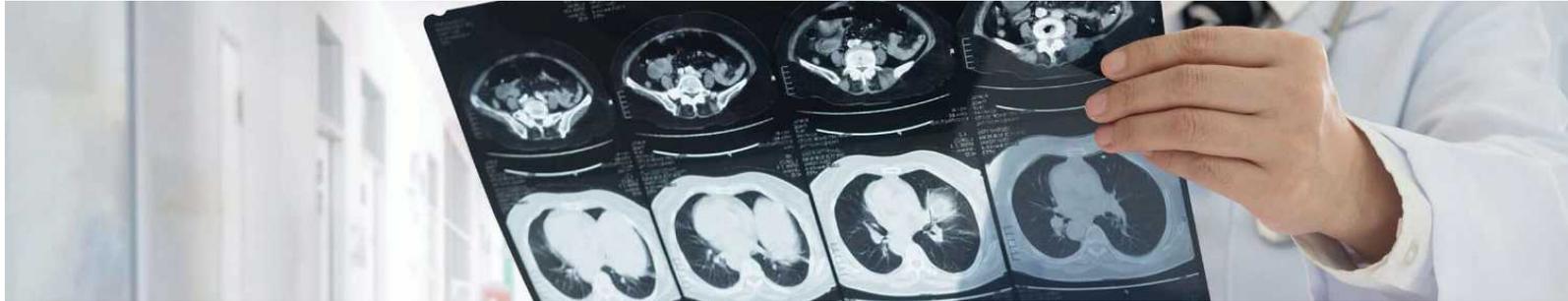
04

Electrocardiogram
◦ Check for heart rhythm abnormalities

05

Chest X-Ray
◦ Check for lung abnormalities

Stage 2 - Liver Imaging Assessment



1

Computed Tomography (CT) Liver

To assess liver fats, abnormalities and anatomy of blood vessels in liver.

2

MEVIS

Scans will be sent to Germany to provide technical visualizations for surgical assessment of liver volume and vessels.

3

Magnetic Resonance Cholangiopancreatography (MRCP)

Detailed images of the hepatobiliary and pancreatic systems, including the liver, gallbladder, bile ducts, pancreas and pancreatic duct.

Stage 3 - Other Imaging Assessment

Two-Dimensional Echocardiogram (2D Echo)

A test in which ultrasound is used to check functionality and abnormalities of the heart.

Stress Echo/ Myocardial perfusion scan (MIBI scan)

Exercise stress test to check how well your heart muscle is supplied with blood.

CT Coronary

Imaging test that looks at the arteries that supply blood to your heart.

Lung Function Test

For age > 50 years old and/or has history of asthma. To measure how much air you can inhale and exhale.

	2D Echo	Stress Echo	MIBI	CT Coronary
Low Risk Donor - Female - < 40 years old - Normal Blood Lipids		√		
High Risk Donor - Male - > 40 years old - Abnormal Blood Lipids - Smoker	√		√	√

Stage 4 - Specialist Visits



▶ **Medical Social Worker Interview**

One to one interview session to find out social background, willingness to donate, emotional support and financial matters.

▶ **Psychiatrist**

Assess donor's ability to make sound decision, understanding of surgical risks and possible complications.

▶ **Independent Physician**

Medical practitioner that is not part of the liver transplant team to assess donor medical suitability and to protect your interests if you have any concerns.

▶ **Specialist Surgical Nurse**

Education on post-surgery care and expectation.

▶ **Surgical Risk Consultation**

Review of surgical procedure and risks, consent for donation surgery and Transplant Ethics Committee documents.

▶ **Liver biopsy (if needed)**

Fatty liver, abnormal liver enzymes.

Stage 5 - Transplant Ethics Committee

- All living donor liver transplant cases in Singapore have to be presented to the Transplant Ethics Committee (TEC) for approval to proceed with the transplant operation.
- Purpose of the TEC is for ethical considerations, and to review intention of donation.
- It is to ensure donation is entirely voluntary, no coercion, no external pressure and monetary exchange.
- The Committee will conduct interviews with the donor and the recipient separately.
- Before presenting to the Committee, all documents to prove kinship will have to be submitted to the Transplant Coordinators.
- Transplant Coordinators will inform donor and recipient of the date and time of the meeting.

What's Next?

- Transplant Coordinators will inform the recipient, living donor and family on the tentative date of transplant surgery and is subject to change.
- Both the patient and the donor have to be fit for surgery. If the patient or the donor is having an infection or medically unsuitable, the operation will have to be rescheduled.
- **REMEMBER, THE DONATION IS TOTALLY VOLUNTARY AND YOU CAN RECONSIDER AT ANY POINT OF TIME.**
- To protect the confidentiality of the donor, recipients are not given the information on why a donor is unsuitable.

About the surgery

PRE-SURGERY

- You will be admitted to the surgical ward one day before the operation.
- Pre-operation tests will be conducted to prepare you for the operation.
- You will be reviewed by the Surgeons and Anesthetists to discuss about the operation process and pain management.

SURGERY

- You will be sent to the operating theatre in the morning.
- The operation may take about 6 to 8 hours.
- After the operation you will be monitored in the Surgical Intensive Care Unit for a day or two.
- Intravenous and arterial lines, nasogastric tube, bladder catheter will be inserted.

POST-SURGERY

- You have to be proactive in your recovery process – be cooperative with the primary care team, nurses, physiotherapist and pain team.
- During your admission, liver function blood tests and ultrasound will be done to monitor your progression.
- Most donors are discharged from hospital about 7-10 days after operation.

Discharge



- Once you are fit for discharge, you have to come back for your follow up with the surgical team to ensure that you are well.
- The follow up will be life-long and it is your responsibility to ensure that you keep up with the appointments at least once a year.

Activity:

- For the first 6 weeks, you can do light exercises and have normal sexual activity when it is comfortable.
- For the first 12 weeks, do not lift anything heavy or perform strenuous exercise.
- After which you can gradually resume full activities.



Return to Work:

- You can return to work within 6-8 weeks if your work does not require heavy lifting or strenuous exertion.

Diet:

- Eat a normal healthy diet.
- Maintain ideal body weight by taking a low fat diet.
- Eat foods with high fiber e.g. fruits and vegetables.
- There is no life long medication. Only short term analgesia is given if necessary.

Symptoms that require immediate medical attention



- Fever greater than 38°C
- Yellowing of eyes or skin
- Shortness of breath
- Uncontrolled pain
- New abdominal pain
- Redness or swelling around your wound site



Donors must contact the Transplant Coordinators immediately if you develop any of the above symptoms.

Moving on...



- Hope this information is helpful to assist you in making your decision to be a donor.
- Do discuss this with your immediate family members as you will need their support too.
- It is indeed a magnanimous act and the greatest gift of life!
- Do not hesitate to contact the Liver Transplant Coordinators if you require further assistance and information.

Appointment schedule

Evaluation	Date/Time	Venue	Remarks
Meeting with Surgeon			
Blood Tests + ECG + Chest X Ray		Transplant Centre SGH Block 7 Level 1	
CT Liver Imaging		Radiology Department SGH Block 2 Level 1	
MRI Scan		Radiology Department SGH Block 2 Level 2	
2D Echo / Stress Echo		National Heart Centre Clinic 5B Level 5	
MIBI		National Heart Centre Clinic 4A Level 4	

Appointment schedule

Evaluation	Date/Time	Venue	Remarks
Independent Physician			
Psychiatrist			
Medical Social Worker			
Specialist Nurse			
Transplant Ethics Committee			
Transplant Operation			
Others			

Notes

Address : Singapore General Hospital
Transplant Centre
Block 7 Level 1
Outram Road
Singapore 169608

General Enquiries : 6222 3322

Appointments : 6321 4377

Website : <https://www.singhealth.com.sg/Transplant/Pages/Home.aspx>

Reg. No: 198703907Z

Information correct as at April 2018



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