Centre for

# Liver Disease and Liver Transplantation

*A New Liver... A New Life*

CETHAR HOSPITALS

*Enhancing life by redefining healthcare*

Thillainagar, Trichy

Dear Doctor,

## Greetings from Cethar Hospitals.

Cethar Hospital was founded in the spirit of Philanthropy and continues to provide the science of specialized medicine to all in need in the centre and southern parts of Tamilnadu. Today, like any other day, Cethar hospital holds fast to its founding spirit of specialized treatment for the underprivileged in the society.

Cethar Hospitals recognized the need for a professional hospital that would offer world-class treatment and act as a **hub** for regional hospitals in the field of Hepatobiliary pancreatic diseases. This recognition led to the opening of a GI bleed centre and centre for Liver disease and Liver Transplantation.

Cethar Hospitals fosters new hope in the human effort to overcome incurable diseases like end stage liver diseases with Liver Transplantation. These achievements were made possible through your continuous referral support with integrated medical examinations by our consultants, innovative treatments, patient support systems and advanced medical treatments available at our hospital.

Organ transplantation, often referred to as the flower and centerpiece of modern medicine, a composite art, or the **Final piece in the puzzle of surgery.** Is where Cethar hospitals determined to achieve successes with outstanding results. To become an expertise in the field of organ transplantation and improving the quality of medical treatment with Cutting-edge Technology, I request your early referral of End stage liver disease patients who needs Liver transplantation.

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**உடல்தானம் செய்வீர்...**
**உயிர் காப்பீர்...**

**The following guidelines on indications of transplantation and outcome will be useful to you to select patients who need Liver transplantation and for early referral to achieve successes against the challenges of managing End stage Liver disease patients**

Liver transplantation has had a profound impact on the care of patients with end-stage liver disease and is the most effective treatment for many patients with acute or chronic liver failure resulting from a variety of causes.

Before transplantation, patients with advanced liver disease usually died within months to years. These patients now have the opportunity for extended survival with excellent quality of life after liver transplantation. Furthermore, the costs of liver transplants have steadily declined in recent years. Most liver transplants are performed using a whole liver from a deceased donor. Transplantation using living donors, only a portion of the donor liver is removed for transplantation.

Liver transplantation is a complex, operation that requires vascular reconstruction of the hepatic artery, the portal vein, and the hepatic venous drainage to the inferior vena cava and biliary reconstruction.

## INDICATIONS FOR LIVER TRANSPLANTATION

Liver transplantation is indicated for acute or chronic liver failure from any cause

### CHRONIC NONCHOLESTATIC LIVER DISORDERS

Chronic hepatitis C
Chronic hepatitis B
Autoimmune hepatitis
Alcoholic liver disease

### CHOLESTATIC LIVER DISORDERS

Primary biliary cirrhosis
Primary sclerosing cholangitis
Biliary atresia
Alagille syndrome
Nonsyndromic paucity of the intrahepatic bile ducts
Cystic fibrosis
Progressive familial intrahepatic cholestasis
Metabolic disorders causing cirrhosis
Alpha-1-antitrypsin deficiency
Wilson disease

### NONALCOHOLIC STEATOHEPATITIS AND CRYPTOGENIC CIRRHOSIS

Hereditary hemochromatosis
Tyrosinemia
Glycogen storage disease type IV
Neonatal hemochromatosis
Metabolic disorders causing severe extra-hepatic morbidity
Amyloidosis
Hyperoxaluria
Urea cycle defects
Disorders of branch chain amino acids

### PRIMARY MALIGNANCIES OF THE LIVER

Hepatocellular carcinoma
Hepatoblastoma
Fibrolamellar hepatocellular carcinoma
Hemangioendothelioma

### FULMINANT HEPATIC FAILURE

Miscellaneous conditions
Budd-Chiari syndrome
Metastatic neuroendocrine tumors
Polycystic disease
Retransplantation

**When Should Evaluation for Transplantation be Considered?**

**The first step** in considering a patient for potential liver transplantation is determining the need for the operation.

**The second step** is to confirm that all other effective treatments have been attempted.

**Finally**, the patients likelihood of being an appropriate candidate for transplantation should be carefully assessed by a transplantation center.

## DETERMINING THE NEED FOR LIVER TRANSPLANTATION

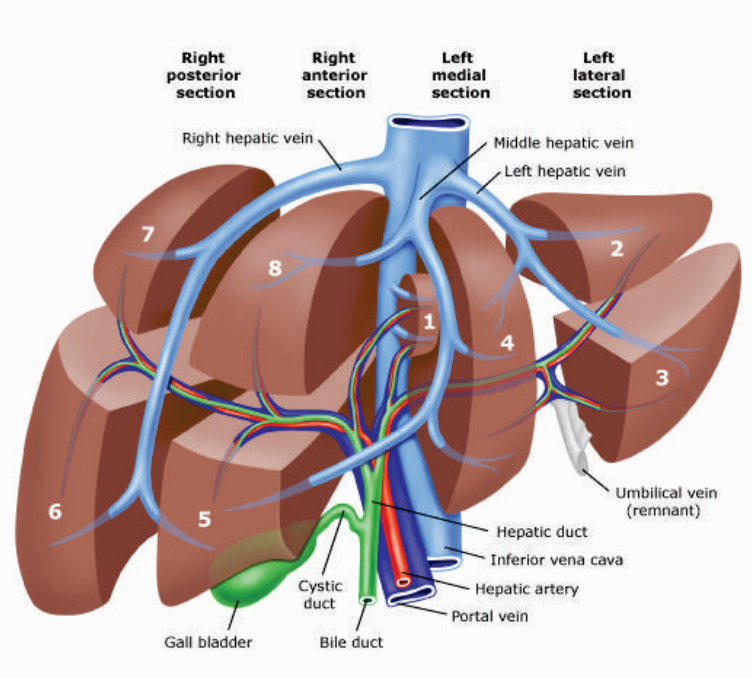
The natural history of the patients disease must be carefully compared with the anticipated survival after liver transplantation. The clinical tools most widely used to determine prognosis in patients with chronic liver diseases are the Child-Turcotte-Pugh(CTP) classification, the prognostic model for end-stage liver disease (MELD), as well as the impact of specific complications of cirrhosis on patient survival.

The MELD using, Serum Bilirubin, international normalized ratio of Prothrombin time (INR),Serum Creatinine seemed to be the best predictors of survival. Using the MELD model, patients are assigned a score in a continuous scale from 6 to 40, which equates to estimated 3-month survival rates from **90% to 7%**,.The modified MELD score has been shown useful both in predicting short-term survival in groups of patients on the waiting list for liver transplantation as well as the risk of postoperative mortality. The development **of ascites, variceal bleeding, hepatic encephalopathy, spontaneous bacterial peritonitis, or hepatorenal syndrome** also has a significant impact on the prognosis of patients with cirrhosis. The 5-year survival rate of individuals in whom any of these complications develop is only 20% to 50% of patients with compensated cirrhosis.

The natural history of disease should be compared with the expected survival after liver transplantation. **Current survival rates 1, 3, and 5 years after liver transplantation in are 88%, 80%, and 75%** , respectively. Because complete evaluation for transplantation can take weeks to months and patients must wait for variable periods of time before receiving a deceased donor organ, **referral before the patients anticipated mortality exceeds that of the estimated postoperative survival is important.**

**Patients with cirrhosis should be referred for transplantation when they develop evidence of hepatic dysfunction (CTP > 7 and MELD > 10) or when they experience their first major complication (ascites, variceal bleeding, or hepatic encephalopathy)**

**Children with chronic liver disease should be referred when they deviate from normal growth curves or develop evidence of hepatic dysfunction or portal hypertension**



## RECIPIENT EVALUATION AT THE TRANSPLANT CENTER

The typical evaluation of potential transplant recipients performed at our transplant centers includes:

I. A careful history and physical examination;

II. Cardiopulmonary assessment, including cardiac echocardiography, pulmonary function tests, dobutaminestress testing, and cardiac catheterization in selected patients.

III. Laboratory studies to confirm the etiology andseverity of liver disease;

IV. Creatinine clearance;

V. Laboratory studies to determine the status of current or previous hepatitis B virus (HBV), hepatitis C virus (HCV), Epstein-Barr virus, cytomegalovirus, and human immunodeficiency virus (HIV) infection;

VI. Abdominal imaging to determine hepatic arteryand portal vein anatomy and the presence of hepatocellular carcinoma (HCC).

## SPECIFIC INDICATIONS FOR LIVER TRANSPLANTATION

### Chronic Noncholestatic Liver Disorders

Cirrhosis secondary to chronic noncholestatic disordersis the most common indication for liver transplantation in adults, accounting for more than 60% of all transplants performed annually. Included among this group are patients with end-stage liver disease secondary to chronic viral hepatitis, autoimmune hepatitis, and alcoholiccirrhosis.

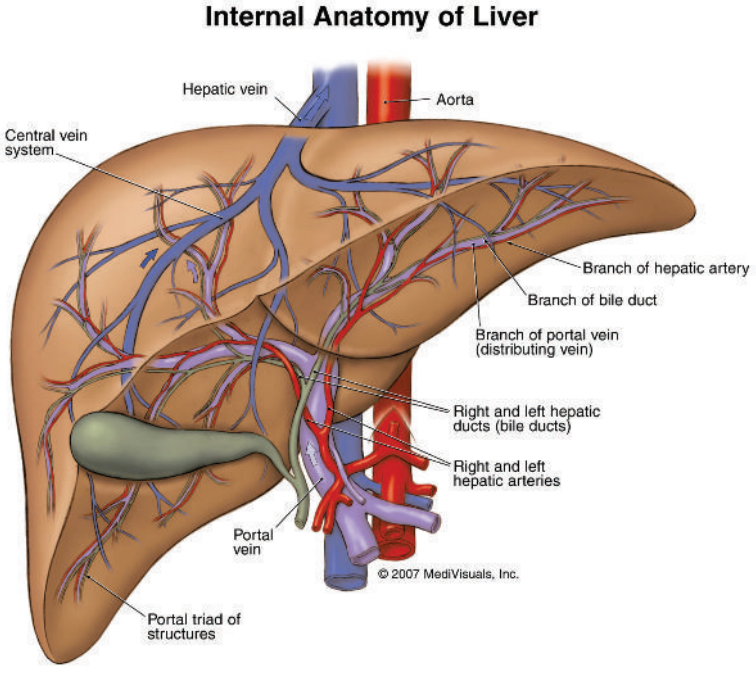
### CHRONIC HEPATITIS C

It is estimated that 15% to 20% of patients with chronic HCV infection develop cirrhosis within 20 years of disease onset. 5-year survival is less than 50% after complications develop. Patients with cirrhosis secondary to chronic hepatitis C also have a 2% to 8% annual risk of developing HCC.

Patients with clinically decompensate cirrhosis from chronic hepatitis C infection should be referred for consideration of liver transplantation Antiviral therapy should be considered in patients who have been accepted as candidates for liver transplantation.

### CHRONIC HEPATITIS B

An estimated 350 million persons worldwide are infected with HBV. HBV carriers, particularly those who acquire the disease at birth or in early childhood, are at risk for the development of cirrhosis and HCC. HBV carriers with compensated cirrhosis have an 84% 5-year survival rate and a 68% 10-year Survival rate; however, patients with decompensated cirrhosis have a 5-year survival rate of only 14%.



Patients with decompensate cirrhosis secondary to chronic hepatitis B should be considered for treatment with antiviral therapy in coordination with the transplant center.

**AUTOIMMUNE HEPATITIS**

Liver transplantation should be considered in decompensated patients with autoimmune hepatitis who are unable to undergo or be salvaged by medical Therapy. Patients with autoimmune hepatitis may require more immunosuppression.

**ALCOHOLIC CIRRHOSIS**

Alcoholic liver disease is the most common cause ofcirrhosis and accounts for 40% of deaths from cirrhosis. The outcome after liver transplantation for alcoholicliver disease is comparable to that of patients transplanted for most other conditions, with Rejection, graft failure, and the need for Re-transplantation all are less common in patients with alcoholic liver disease.

To be considered for transplantation, potential candidates with alcoholic liver disease should have careful assessment by a health care professional experienced in the management of patients with addictive behavior.It is prudent to **delay transplantation for a minimum of 3 to 6 months of abstinence from alcohol to avoid exposing patients** who may not need transplantation to the risk of unnecessary surgery.

**CHOLESTATIC LIVER DISORDERS**

Liver transplantation is the only effective treatment for adults with end-stage liver disease secondary to PBC and PSC. Biliary atresia is the most common indication for liver transplantation in children, accounting for 60% to 70% of all procedures performed.
Liver transplantation is the only effective treatment for liver failure secondary to primary biliary cirrhosis.

Primary Sclerosing Cholangitis
Liver transplantation is the only effective treatmentfor decompensated cirrhosis secondary to primary sclerosing cholangitis. Because of the high incidence of colon cancer, regularly scheduled colonoscopies should be performed both before and after transplantation in all patients who have inflammatory bowel disease

**CHILDHOOD CHOLESTATIC DISEASES**

Liver transplantation is indicated in appropriately selected children with biliary atresia if portoenterostomy is unsuccessful, or if intractable portal hypertension or liver failure develops despite successful portoenterostomy.

Liver transplantation should be considered for its ability to significantly prolong survival and improve quality of life by reducing pruritus in syndromic and nonsyndromic forms of intrahepatic cholestasis in children.

## ANTITRYPSIN DISEASE

Liver transplantation is the only effective treatment for decompensated cirrhosis secondary to antitrypsin deficiency.Careful assessment for lung disease should be performed before transplantation in patients with cirrhosis secondary to antitrypsin deficiency, although coexistent disease in uncommon.

## WILSON DISEASE

Urgent liver transplantation is the only effective option for patients with fulminant hepatic failure resulting from Wilson disease. Liver transplantation also is indicated for patients with decompensated chronic disease who fail to respond to medical therapy.

Nonalcoholic Steatohepatitis and Cryptogenic Cirrhosis Liver transplantation should be considered for selected patients with decompensated cirrhosis secondary to nonalcoholic steatohepatitis (NASH). The posttransplantation care of these patients should include metabolic monitoring.

Liver transplantation should be considered for selected patients with decompensated cryptogenic cirrhosis. These patients should be screened for metabolic dysregulation because of the possibility of underlying nonalcoholic steatohepatitis.

## HEPATOCELLULAR CARCINOMA (HCC)

Liver transplantation should be viewed as the treatment of choice for selected patients with hepatocellular carcinoma who are not candidates for surgical resection and in whom malignancy is confined to the liver.

Optimal results following transplantation are achieved in patients with a single lesion 2 cm or larger and less than 5 cm, or no more than three lesions, the largest of which is less than 3 cm, and no radiographic evidence of extrahepatic disease.

For ideal outcomes, patients who meet these criteria should receive a donor organ within 6 months of listing for transplantation.

## FIBROLAMELLAR HEPATOCELLULAR CARCINOMA AND HEMANGIOENDOTHELIOMA

When the tumor is not resectable, liver transplantation should be considered for patients with fibrolamellar HCC, if there is no evidence of extrahepatic disease. Transplantation should be considered for patients with epithelioid hemangioendothelioma

## METASTATIC NEUROENDOCRINE TUMORS

Liver transplantation for metastatic neuroendocrine tumors should be confined to highly selected patients who are not candidates for surgical resection in whom symptoms have persisted despite optimal medical therapy.

**Modular Liver Transplantation Suite**

## CENTRE FOR LIVER TRANSPLANTATION & HEPATOBILLIARY PANCREATIC SURGERY

### LIVER TRANSPLANTATION FOR

- END STAGE LIVER DISEASE (CIRRHOSIS)
- HEPATOCELLULAR CARCINOMA
- FULLMINANT LIVER FAILURE

- HEPATECTOMY
- RADIO FREQUENCY ABLATION
- CHEMOEMBOLIZATION
- TIPPS, PORTOSYSTEMIC SHUNT SURGERY
- PANCREATICODUODENECTOMY - OPEN / LAP
- HBP ONCO SURGERIES

### GI BLEED CENTRE

# CETHAR HOSPITALS

*Enhancing life by redefining healthcare*

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