Liver cancer is a malignant tumour within the organ itself. There are two types of liver cancer:

- **Primary liver cancer**: A cancer which started (originated) in the liver.
- **Secondary (Metastatic) liver cancer**: A cancer which has spread from another part of the body/organs to the liver.

### Types of Primary Liver Cancer

There are different types of primary liver cancer which include:

- **Hepatocellular carcinoma (HCC)**: The most common type of cancer originates from a liver cell (hepatocyte) which becomes cancerous. Almost 80% of HCC is associated with liver cirrhosis.
- **Cholangiocarcinoma**: This cancer is uncommon. It develops from cells that line the bile duct.
- **Hepatoblastoma**: This is a rare cancer which occurs in some children below the age of four.
- **Angiosarcoma or hemangiosarcoma**: This rare cancer. It develops from blood vessel cells within the liver.

*HCC is the fourth most common cancer in the world and one of the top two causes of cancer death in Asia. The frequency of liver cancer in Asia is closely linked to chronic Hepatitis B.*
Liver cancer is seldom diagnosed at an early stage, as patients are asymptomatic. In advanced stages, symptoms may be more severe. These include:
- A feeling of fullness or bloatedness after eating
- High fever, fatigue, nausea and vomiting
- Jaundice
- Pain in the right upper abdomen (may extend to the back and shoulders)
- Pale-coloured faeces
- Sudden deterioration of health for patients with chronic hepatitis or cirrhosis
- Sudden unexplainable weight loss
- Swollen abdomen caused by ascites (fluid build-up in the abdomen)

*These symptoms may be caused by liver cancer or other health problems. With any of the symptoms, a doctor should be consulted so that problems can be diagnosed and treated as early as possible.

If liver cancer is suspected, you are likely to have a number of tests which aim to:
- Confirm that you have a cancer in the liver.
- Assess the stage of the cancer.
- Assess the state of your liver function and your general health.

Therefore, a range of tests are usually needed, which may include:
- **Blood Tests**: Liver function tests may be abnormal and a specific cancer marker (alpha-fetoprotein) may be significantly elevated.
- **Diagnostic Imaging**: Tests such as ultrasound, CT scan, MRI or Angiogram which help to show the exact location and extent of the cancer.
- **Liver Biopsy**: A procedure in which a small needle is inserted into the liver to collect a tissue sample. It can be examined for signs of damage or disease in the liver.

The treatment(s) depend on the stage of liver disease, the liver function, and the patient’s age and health condition. The “stage” of cancer is used to describe the size and the number of tumours, and whether it has spread outside the liver. This is determined during diagnostic imaging tests.

**DIAGNOSIS**

**RISK FACTORS**

Factors that increase the risk of primary liver cancer include:
- Anabolic steroid users
- Certain inherited liver diseases
- Chronic viral hepatitis infection
- Cirrhosis
- Excessive alcohol consumption
- Exposure to aflatoxins
- Obesity, nonalcoholic fatty liver disease, and diabetes
- Rare diseases (Alpha1 anti-trypsin deficiency, Tyrosinemia & Wilson disease)

**SYMPTOMS**

- Nausea
- Upper losing white
- Liver radiation chemotherapy

**SURGICAL TREATMENT**

- **Surgery**: A procedure in which a small part of the liver is removed by surgery, when the liver function is adequate.
- **Liver Transplantation**: Liver cancer is unresectable when there is liver cirrhosis or a bilobar tumour. Liver transplantation remains the only option in this case.

**NON-SURGICAL TREATMENT**

- **Transarterial Chemo Embolization (TACE)**: This involves direct injection of drugs into the cancer site via the hepatic artery.
- **Radio-Frequency Ablation (RFA)**: This delivers extreme heat generated by electricity to destroy the cancer cells. This is done through image-guided techniques (CT scan or ultrasound) or intra-operatively.
- **Radiotherapy**: There are different types of radiotherapy that can be considered:
  - **Radiation Therapy (RT)**: Radiotherapy uses high-energy X-rays to control or kill malignant cancer cells. There are different types of radiotherapy that can be considered:
  - **External Beam Radiation Therapy (EBRT)**: This is a technique that uses high-energy X-rays delivered by a specialised machine (linear accelerator) to direct radiation beams from outside the body into the tumour.
  - **Stereotactic Body Radiation Therapy (SBRT)**: This is an advanced radiation therapy technique that delivers precise and accurate high dose radiation to destroy tumour(s) within the body, without the need for surgery. SBRT is non-invasive, and done as an outpatient treatment over only 1-5 sessions.
  - **Brachytherapy**: Brachytherapy targets cancerous tumour from inside the body by inserting the radiation source directly into or next to the tumour.
  - **Selective Internal Radiation Therapy (SIRT) / Radioembolisation**: It is a treatment for liver cancers or metastatic tumours that delivers millions of tiny radioactive microspheres directly to the liver tumours through the arteries which supply them.

In metastatic liver cancer, systematic chemotherapy may be considered. This is given orally or by injection.

**PROGNOSIS**

The discovery of cancer at the early stage allows a curative surgery to be performed. However, non-surgical treatments may also be able to control the disease and offer the patients a better quality of life. When patients do show symptoms, it is normally at an advanced stage of the liver cancer and the prognosis is usually poor. Liver transplantation is currently the only available treatment for primary liver cancer with end-stage liver cirrhosis and/or progressive liver diseases.