

### What are liver lesions?

An abnormality in the liver on radiology. These lesions may be benign or malignant.

### Anatomy and pathology

The liver is a solid organ in the right upper part of the abdomen. It has several important functions including the manufacture of bile, storage of sugar, detoxification of blood and protein manufacture. Bile produced in the liver is transported through the liver by a system of tubes called bile ducts which pass into the bowel to aid in digestion.

Lesions in the liver may be rarely either cystic (fluid-filled) or more commonly solid in appearances. Malignant lesions may arise primarily from the liver or more commonly spread to the liver from elsewhere. Most commonly this occurs in the setting of gastrointestinal malignancies.

### What are the signs and symptoms of a liver lesion?

Typically, these lesions are found incidentally when imaging is performed for another reason.

Symptoms suggestive of a liver lesion are usually vague and occur in the presence of advanced disease. Symptoms include abdominal bloating, fullness, upper abdominal pain, nausea, vomiting, loss of weight or appetite. Occasionally if bile drainage is obstructed by a tumour the patient or the relative may notice their eyes or skin has a yellow tinge (jaundice).

### What tests are required?

In addition to tests evaluating your kidney function and blood count, you will need to have liver function tests and tumour markers. Tumour markers are blood tests that are helpful if significantly abnormal but require interpretation in the current context. Unfortunately, if normal they are unhelpful and non-diagnostic. Additional blood tests may be requested to assist in ruling out benign causes such as inflammatory conditions.

Ultrasound is useful in distinguishing a solid lesion from one which is cystic in appearance. However, multi-phase contrast imaging is essential in most situations to provide a diagnosis, either with a CT of the abdomen/pelvis, MRI, or both. Additionally, if a malignancy is suspected your surgeon will stage the disease and arrange a CT of your chest.

It is rare to attempt a liver biopsy to diagnose the underlying pathology, due to concerns about spreading cancer cells. This is obviously limited to lesions that can be managed with curative intent. An additional reason to perform invasive procedures are to drain the bile duct by stent placement in patients with obstructive jaundice. This procedure can be performed conventionally either by endoscopy (ERCP) or radiologically (PTC). There is also an important emerging role for other endoscopic techniques (EUS).

Finally, if liver surgery is contraindicated due to liver size relative to tumour, there are dedicated techniques to increase the volume of the liver. These are performed by radiologists in select centres.

### What are the options of management?

Depends on whether the pathology is benign or malignant. If benign, typically surgery is avoided, and the patient discharged from surveillance. There is however a role for surgical management of lesions which may transform into a malignancy in the future.

Alternatively, where there are concerns for malignancy, your surgeon will present your case in a multi-disciplinary meeting for further discussion. A multi-disciplinary meeting is a meeting of multiple experts from different specialties who review potential malignancies and formulate a decision that is both patient-centred and evidence-based. In the meeting the patients are discussed and in their absence their imaging and biopsies (if applicable) are reviewed. A consensus is reached, and the plan communicated to the patient by the treating doctor and the patient's general practitioner. Treatments recommended are either for curative or palliative intent (symptom management). The treatment intent depends on patient factors (age, medical problems) and disease factors (stage of disease, liver function)



Curative treatment is surgical in most instances, often in combination with systemic treatment (chemotherapy). However, for primary liver malignancies there is a role for burning the lesion (ablation) by passing a catheter through the skin and into the liver under imaging-guidance by a radiologist and therefore avoiding surgery altogether. There are also options to combine ablation with surgery for secondary liver cancers in select circumstances.

Surgery is usually by an open approach and increasingly laparoscopic (keyhole). The open approach is a large incision in the midline for 20-30 cm and extends to an incision at right angles to the former, extending for a further 20-30 cm. Surgery involves removing the cancer in its entirety, aiming to include a cancer-free margin with normal surrounding tissue. Surgery may involve removing a small part of the liver or alternatively a larger part. Chemotherapy may be required depending on the final pathology review after surgery (stage of the disease).

There is a limited role for liver transplantation for select patients' primary liver cancers who are not surgical candidates with a reasonable performance or health status. These patients are referred to a liver transplant service for discussion and further management as appropriate. Other treatment options for primary liver cancers include ablation combined with

chemotherapy administered by a radiologist under imaging guidance.

Palliative treatments are directed at symptom control. A biopsy is taken, the bile tube is stented if the patient is jaundiced, and the patient referred to an Oncologist for consideration of palliative chemotherapy. A referral is also made to palliative care doctors and nurses for additional symptom management. Occasionally radiotherapy may be useful to assist with symptoms.

### What are the possible complications?

- Bile leak
- Liver failure
- Major haemorrhage
- Death
- Incisional hernia

### What to expect following your procedure?

All procedures require an overnight admission. You will wake from anaesthesia with dressings placed over dissolvable sutures. It is normal to experience pain from the procedure which is managed with painkillers. Occasionally, a drain is placed which is removed within 2 days of being placed if there is no bile present. You will be admitted to the intensive care for close monitoring. You will be encouraged to ambulate after surgery and will be discharged from hospital if you are tolerating a diet, your pain is controlled with painkillers, you are

ambulating independently and in the absence of any complications.

Gentle exercises are encouraged. Avoid heavy lifting for 2-4 weeks. You may drive if you are able to put your foot on the brake in an emergency or have ceased taking any painkillers. Usually this occurs after 2 weeks.

Post-operative follow-up usually occurs in four weeks and will be arranged on discharge with your surgeon. Your surgeon will discuss and review the pathology specimen in the multi-disciplinary meeting. If chemotherapy is required, a referral will be made to the Oncologists and an appointment. You will then undergo surveillance with blood tests and imaging following your surgery at regular intervals designed to detect if the cancer returns.