

## IMAGE GUIDED PERCUTANEOUS KIDNEY ABLATION



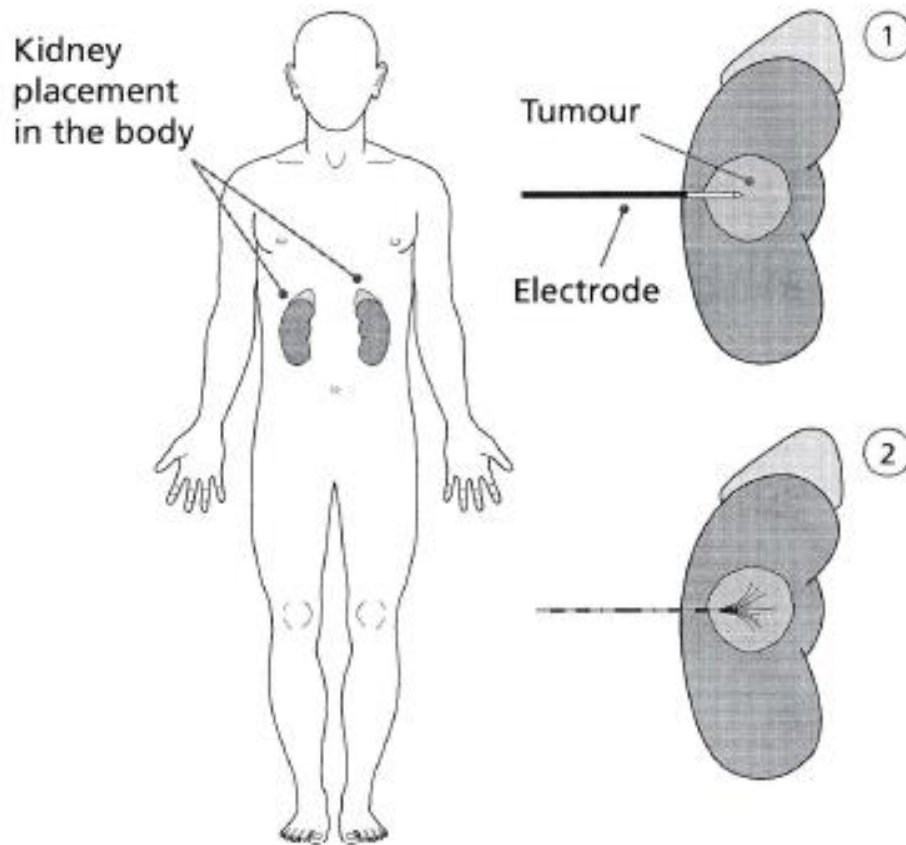
Image guided ablation is a treatment used to treat some types of cancer. There are several methods to treat kidney cancer and deliver the energy to destroy cancer cells: Radiofrequency ablation (RFA), Cryoablation (CA) and Microwave ablation (MWA). It is performed by a consultant intervention radiologist (IR doctor).

### **Microwave Ablation (MWA)**

MWA uses heat to destroy the cancer cells via a special needle inserted into the tumour. It works by agitating the water molecules to generate heat which destroys (ablates) the cancer cells. The cancer cells die and the area which has been treated gradually shrinks and eventually becomes scar tissue.

### **Radiofrequency Ablation (RFA)**

RFA uses heat to destroy cancer cells. It involves using a special needle called electrode to apply an electric current to the tumour cells. The electrical current heats the cancer cells to high temperatures and destroys them. (Figure 1 and 2)



## Cryoablation

This therapy uses cold to destroy cancer cells. As with RFA, a special needle or needles are placed into the tumour in your kidney from the skin. After the needles have been placed, they are frozen and actively warmed twice which destroys (ablates) the tumour. The cancer cells die, and the area eventually becomes scar tissue. The advantage of CA is that it can treat larger and more central lesions using multiple needles.

## **When is ablation treatment used?**

Ablation is mainly used to treat kidney cancers that are up to 4 cm in size.

Larger lesions can be treated but require multiple needles/ treatment sessions.

The decision whether to use ablation or surgery is made on a case-by-case basis and specific to each patient. There are advantages and disadvantages of both ablation and surgery, however ablation is a minimally invasive technique that only uses small needles through a pin hole in the skin and can be performed as day case or with overnight stay. It is also a good choice for patients with a single kidney. Your urologist (kidney surgeon) and IR doctor should be able to guide you through the choice between surgery and ablation.

## **How is kidney ablation performed?**

Before the treatment is performed, you will see an IR doctor, who will explain the procedure to you along with any requirements pertinent to your specific case. This is a good time to ask any questions about anything that you are unsure about. You will be asked to sign a form (consent) at this time or later, on the day of procedure.

On the day of treatment, you will have been asked not to eat anything for several hours beforehand. If you take any drugs that thin your blood such as

Aspirin, Clopidogrel or Warfarin, it is very important you let your IR doctor know immediately. Your IR doctor will inform you when to stop taking these.

You will be given a hospital gown to change into and a fine tube (cannula) will be placed into a vein in your arm or hand.

The procedure is performed in the imaging department/ CT scanner. It is performed under a general anaesthetic as a day case or one overnight stay post procedure.

The ablation needle(s) will be placed through a pinhole sized skin incision(s) overlying the kidney, into the part containing the tumour. This placement is performed under ultrasound or x-ray guidance. Once satisfactory position is achieved, the electrode is switched on and treatment performed. How long treatment is applied for will depend on the size of the tumour. An area of healthy tissue around the tumour is usually also treated as there may be small cancer cells that can't be seen. The treated tissue slowly shrinks and heals over time.

What are the benefits of kidney ablation?

Kidney ablation can be used to cure cancer, to reduce its size or to relieve symptoms (palliative treatment). It can be given once or can be given multiple times. It may be used when surgery is not possible, for a variety of reasons

including position of lesion, medical and patient preference. Repeat ablations can be performed if treated tumour starts to grow again. The recovery times and hospital stay are much shorter than surgery.

### **What are the possible side effect and complications of liver ablation?**

There are some side effects you may have for a few days after your treatment-

1. Pain or discomfort- You will be prescribed painkillers to take regularly for a few days, if required, following the ablation. For most people pain or discomfort lasts for less than a week. If pain persist beyond this, please contact your doctor for advice.
2. Feeling unwell with raised temperature- You might feel a little unwell for the first few days and have a slightly raised temperature. You will probably feel tired as well. This is seen more in patients who have larger tumours ablated. This is a normal reaction and is caused by your body clearing away the dead cells. Drinking plenty of fluids will help. It's a good idea to take it easy for a few days, but you should be able to get back to your usual activities after about a week. If your temperature doesn't return to normal or if it goes above 38 degrees centigrade contact your doctor as this may be due to infection.

Possible complications after ablation are low. The main complications that can occur are-

1. Bleeding- there is usually very little bleeding during the treatment.

Occasionally, some people have more serious bleeding during or immediately after the procedure. The risk of this is less than 3%. You will be closely monitored for a few hours after treatment, so that any bleeding can be dealt with straight away. Sometimes bleeding presents as blood in the urine. In majority of cases this clears in 2-3 days.

2. Burns- Specifically during RFA, pads are placed under the upper part of both thighs to collect the returning electrical current used to kill the cancer. Very rarely, despite our best efforts, some current can “escape” and cause a burn to your thigh. CA can cause cold burns on the skin where the needles were placed. This is very rarely a serious problem.
3. Infection- Some patients can develop an infection at the site of treatment. You may be given antibiotics to prevent this. Infection could present as redness, discharge, pain at treatment site or generally feeling unwell. If you think you might have an infection, contact your doctor for advice.
4. Damage to organs close to the area being treated- This is rare as we normally use different forms of imaging to guide the electrodes.

However, some people are at a greater risk because of size or location of tumour. In a few cases, patients may experience damage to their bile ducts causing jaundice or to their bowel. Sometimes fluid is placed within the abdomen or chest to reduce the risk of injury further.

5. Urine leak- Urine leak can occur if the tubes carrying urine are damaged during ablation. This is rare and a ureteric stent for a few weeks can solve this. This is inserted to allow urine to flow correctly away from the leak.

### **What is the follow up after the procedure?**

You will be given an appointment to have repeat CT or MRI scan after your kidney ablation to see how well the treatment has worked. We will discuss the results with you in clinic and any further treatment that may be recommended.