Image guided renal ablation

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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 (cryo) and microwave (MW). It is performed by a consultant interventional radiologist (X-ray doctor).

**Radiofrequency ablation**

RFA is a treatment that is used for some types of cancer. It is performed by a consultant interventional radiologist (X-ray doctor). RFA can also be given by a consultant surgeon during an operation.

RFA uses heat to destroy cancer cells. It involves using a special needle called an electrode (inserted into your kidney, see diagram 1 below), to apply an electrical current (radiofrequency) to a tumour (see diagram 2 below).
The electrical current heats the cancer cells to high temperatures which destroys (ablates) them. The cancer cells die and the area which has been treated gradually shrinks and eventually becomes scar tissue.

Cryoablation
Cryo uses the 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 which has been treated gradually shrinks, eventually becoming scar tissue. The main difference between cryo and RFA is that cryo ablation can treat larger and central lesions.

Microwave ablation
This is very similar to radiofrequency ablation in that it uses heat to destroy the tumour. It is a newer technique with much higher energy usage with the advantage of potentially shorter treatment times. We are evaluating this technique at QEHB presently.

When is ablation treatments used?
RFA is mainly used to treat kidney cancers that are relatively small (under 4cm). The decision whether to use ablation of surgery is made case by case 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 the skin and can be done as a day case or single overnight stay. It is also a good choice for those patients with only one kidney. Your urologists (kidney specialist) and Interventionalist (ablation specialist) will be able to guide you through the choice between surgery and ablation options.
How is ablation given?

Your consultant interventional radiologist will explain the whole procedure to you. This is a good time to ask questions about the procedure and after care. You will be asked to sign a consent form to say that you agree to the treatment.

You will be asked not to eat anything for several hours before your treatment. If you take any medicines, you will be asked to take them as normal. If you take drugs that can thin your blood, such as aspirin, Warfarin or clopidogrel, your doctor will give you instructions about when to stop taking these. This is at least 10 days before the treatment.

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

The procedure usually takes place in the Imaging department. The procedure is performed as a day case or single night stay and you are given a short general anaesthetic.

Once you are on the CT scanner X-rays are taken to identify the tumour in the kidney. Several needles are placed through the skin into the part of the kidney that has the tumour using image guidance (ultrasound and CT). Once the needles are in the right position the ablation is commenced either with RFA or cryo, which will have been decided and discussed with you beforehand. A small part of healthy tissue will be treated as well in order for any microscopic cancer to be ablated. The treated tissue won’t be removed but will slowly shrink and will heal overtime.

After image guided renal ablation is given, you will usually be left with three tiny holes in the side of your abdomen, which are dressed with a simple bandage.
What are the benefits of ablation?

Ablation treatments are used to cure kidney cancer or to reduce its size. It is usually given alone but can be given multiple times. Ablation can be used for patients who may not be able to have surgery. The recovery times and hospital stay are much shorter than surgery.

What are the possible complications:

- **Bleeding:** There is usually very little bleeding during the treatment. Sometimes some people have more serious bleeding during or immediately after the procedure. You will be monitored closely.

- **Burns:** During RFA pads are placed under the upper part of both thighs to collect the electrical current. Occasionally this current can escape and cause a burn to your leg. This is not a serious burn. In cryo, you can get ‘cold’ burns on the skin where the needles were placed. This is very rarely a serious problem.

- **Infection:** Some people can develop infection. Simple antibiotics can help with this.

- **Urine leak:** A urine leak internally can occur. This is rare and a simple stent for a few weeks can solve this. This is inserted to allow urine to flow correctly for a few weeks until everything has healed.

- **Organ damage:** This happens only rarely as the doctor uses scans to see where the electrodes are.

- **Pain:** You will need to take pain killers. This generally lasts around a few days and painkillers will be prescribed before you leave.

- **Feeling unwell with a mild temperature:** You may feel a little tired or unwell for a few days.
What happens afterwards?

The interventional radiologist who performed the procedure will arrange follow-up care. You will have a CT scan about a week after the procedure to check that there are no complications from the ablation treatment.

You will be given an appointment to have a further CT scan after 3 months and then one 6 months after that. The team will also arrange to see you in clinic to review how you are doing and discuss how successfully the treatment has worked.

Further information

If you have any other questions please contact:

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Please use the space below to write down any questions you may have and bring this with you to your next appointment.
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