What you may need to tell your doctor or nursing staff looking after you:

- If you are pregnant
- If you have blood clotting problems
- If you are taking blood thinning medication (warfarin, aspirin, clopidogrel, anti-inflammatories).

What are the risks?

The chance of any complication is very small. Risks include:

- General and localised infection
- Depending upon the site of ablation—shoulder pain, damage to the bile ducts resulting in biliary obstruction, or thermal damage to the bowel
- Bleeding
- Damage to organs close to where the ablation is taking place
- Severe pain after radiofrequency ablation is very uncommon, but may last a few days and require strong analgesia.

What are the benefits?

- Can be an effective treatment for primary liver cancer and for cancers that have spread to the liver in select patients whose disease is unsuitable for surgical resection.
- In most studies, more than half of the liver tumours treated by radiofrequency ablation have not recurred.
- Treatment related, serious complications are infrequent and discomfort is minimal.
- Radiofrequency ablation may be used repeatedly to treat recurred liver tumours.
- The percutaneous method of radiofrequency ablation, in which electrodes are inserted into the skin, is minimally invasive, produces few complications, and generally does not require hospital admission.
- RFA is a relatively quick procedure and recovery is rapid so that chemotherapy may be resumed almost immediately.
- RFA is less expensive than other treatment options.
- No surgical incision is required-only a small nick in the skin that does not require stiches.

You will be required to sign a consent form to say that the procedure has been explained to you fully, including risks and benefits. If you need any clarification please ask your doctor for more information before you sign.

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Radiofrequency Ablation of Liver Tumours

What is Radiofrequency Ablation of liver tumours?

Radiofrequency ablation, sometimes referred to as RFA, is a minimally invasive treatment for cancer. It is an image-guided technique that heats and destroys cancer cells.

In radiofrequency ablation, imaging techniques such as ultrasound, computer tomography (CT) or magnetic resonance imaging (MRI) are used to help guide a needle electrode into a cancerous tumour. High-frequency electrical currents are then passed through the electrode, creating heat that destroys the abnormal cells.

What are some common uses of the procedure?

Radiofrequency ablation is used to treat two types of liver cancer:

- Hepatocellular carcinoma, which is a primary liver cancer (meaning it begins in the liver)
- Colon cancer that metastasizes or spreads from the colon to the liver.

In general, radiofrequency ablation is most effective treating tumours that are less than one and a half inches in diameter. It may be used in addition to chemotherapy or radiation therapy or as an alternative to surgical treatment. Radiofrequency ablation is a viable and effective treatment option if you:

- Are not a good candidate for surgery because your tumour is difficult to reach
- Have another medical condition that makes surgery especially risky
- Would not have enough liver tissue left for the organ to function adequately following the surgical removal of the tumour
- Have liver tumours that have not responded to chemotherapy or that have recurred after being removed surgically
- You have several small liver tumours that are too spread out to be removed surgically.

What does the equipment look like?

The equipment used in the procedure depends upon the type of imaging used-magnetic resonance (MR), computed tomography (CT), or ultrasound. Other equipment such as needle electrodes, an electrical generator and grounding pads may also be used.

How does the procedure work?

Radiofrequency works by passing electrical currents in the range of radiofrequency waves between the needle electrode and the grounding pads on the patient's skin. These currents create heat around the electrode, which when directed into the tumour, heats and destroys the cancer cells. Because healthy liver tissue is better able to withstand heat, radio frequency is able to destroy a tumour and only a small rim of normal tissue around the edges of the tumour. At the same time, heat from radiofrequency energy closes small blood vessels and reduces the risk of bleeding. The dead tumour cells are gradually replaced by scar tissue that shrinks over time.

Ultrasound or computed tomography imaging may be used to help your physician guide the needle electrode into the tumour.

How is the procedure performed?

Radiofrequency ablation is performed by an Interventional Radiologist in an interventional suite.

You will be placed on an examination table and connected to monitors that record your heart rate, blood pressure and pulse during the procedure. An IV cannula will be inserted and sedation will be given if required.

The area in which the electrodes are to be inserted will be sterilized and covered with a surgical drape. Local anaesthetic will be injected to the area in which the needle electrode is to be inserted.

Using imaging-guidance, the needle electrode is inserted through the skin and advanced into the site of the tumour. Once in place, radiofrequency energy is applied. For a large tumour, multiple repositioning of the needle electrode may be required to ensure no tumour tissue is left behind.

At the end of the procedure the needle electrode is removed and pressure will be applied to stop any bleeding. A dressing is then applied to the site. No sutures are required.

Each ablation can take 10–30 minutes, with additional time required if multiple ablations are performed. The entire procedure is usually completed in 1–3 hours.

Pain immediately following radiofrequency ablation can be controlled by pain medication given through your IV or injection. Afterward any mild discomfort you may experience can be controlled by oral pain medications. You may feel nauseous, but this can also be relieved by medication.

You will remain in the recovery area until you are completely awake. Most patients spend one night in hospital. You should be able to resume your normal daily activities within a few days.