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# Radiofrequency ablation for the treatment of liver tumours

This information is about radiofrequency ablation (RFA) for the treatment of liver tumours. The Australian Safety and Efficacy Register of New Interventional Procedures - Surgical (ASERNIP-S) compared its safety and effectiveness with other treatments.

THE FOLLOWING INFORMATION IS NOT INTENDED TO REPLACE THE ADVICE OF YOUR DOCTOR, BUT RATHER TO HELP YOU AND YOUR DOCTOR MAKE DECISIONS ABOUT YOUR CARE THAT ARE BEST FOR YOU.

## Main messages

This information refers mainly to the most common form of primary liver cancer, hepatocellular carcinoma (please see 'What are liver tumours?' below).

### Safety

Current research provided limited information on RFA for the treatment of liver tumours, although it suggested this was slightly safer than other ablative treatments.

### Effectiveness

ASERNIP-S could not determine the effectiveness of RFA for the treatment of liver tumours compared with other ablation techniques.

ASERNIP-S concluded that more studies on RFA for the treatment of primary and metastatic tumours (see definitions below) are needed. ASERNIP-S recommended that cancer registries collect data on RFA for the treatment of liver tumours.

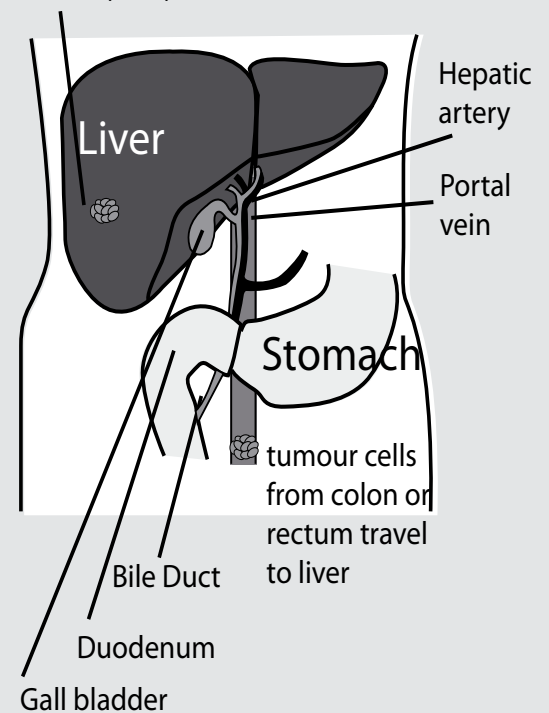
## What are liver tumours?

The liver helps to metabolise food and removes harmful substances, or toxins, from the blood. A liver tumour is an abnormal growth of cells in the liver. A tumour is malignant if it has the potential to invade other tissues or organs. Liver tumours consist of either liver cells (primary liver tumours), or tumour cells that originated elsewhere in the body and travelled to the liver (metastatic liver tumours). Hepatocellular carcinoma (HCC) is the most common form of primary liver cancer. It is usually associated with liver cirrhosis, caused by hepatitis B or C, alcohol intake or toxic factors. If left untreated, patients may only live a short time from diagnosis, but with treatment many live much longer. Metastatic liver tumours often originate in the colon or rectum.

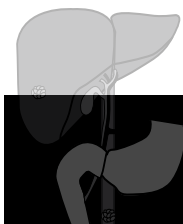
## Treatment of liver tumours

Surgical removal (resection) of a liver tumour is the only treatment that currently offers a possible cure for liver tumours, but only one in five patients is suitable for this surgery. For other patients alternative techniques are available, including chemotherapy, cryoablation, microwave coagulation therapy, laser therapy and ethanol injection.

Primary liver tumour (HCC)



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## Radiofrequency ablation for the treatment of liver tumours

### Radiofrequency ablation

A new procedure called radiofrequency ablation (RFA) has also been developed. This involves placing an electrode in the liver tumour either through the skin using a local anaesthetic; by inserting a long thin telescope called a laparoscope through a small cut in the abdomen; or through a wider cut during an open operation. The electrode delivers a high-frequency current that produces heat, destroying the tumour and surrounding cells.

### What were the findings of the ASERNIP-S updated review?

ASERNIP-S looked at all the research comparing the safety and effectiveness of these treatments and found that:

#### RFA compared to surgical resection:

*Safety* - There was no research available comparing these treatments.

*Effectiveness* - The only available study suggested that tumours removed by RFA were more likely to come back (39% of patients) than those removed by surgical resection (24%). Recurrences also tended to occur sooner after RFA.

#### RFA compared to chemotherapy:

*Safety* - Very limited data suggested that fewer complications occurred after RFA compared to chemotherapy.

*Effectiveness* - It was unclear which was better at controlling tumour growth.

#### RFA compared to cryoablation:

No suitable studies were found.

#### RFA compared to microwave coagulation therapy:

*Safety* - While reports of major complications were similar for these procedures, minor complications were more common in microwave therapy patients (four out of 36 patients, compared with one out of 36 RFA patients).

*Effectiveness* - In one study, treatment was completely effective in 96% of RFA treated nodules and 89% of nodules treated with microwave therapy. In another, more tumour cells were destroyed by RFA than microwave therapy.

#### RFA compared to laser therapy:

*Safety* - In one study (32 RFA patients, 14 laser patients), major complications (such as death of liver tissue through disturbed blood supply) occurred more often in patients treated with laser than RFA. Damage to the portal vein occurred in two RFA treated patients. Both groups had few other complications.

*Effectiveness* - Longer treatment times were needed for laser therapy than RFA (one study). In another study, more tumour tissue remained (76% of tumours) following laser treatment than RFA treatment (35% of tumours).

### What is ASERNIP-S?

The Australian Safety and Efficacy Register of New Interventional Procedures - Surgical (ASERNIP-S) is a programme of the Royal Australasian College of Surgeons (the College). ASERNIP-S conducts literature reviews on the safety and effectiveness of new surgical techniques before they are widely accepted into the health care system. Each review collects all relevant information, or evidence, on new and standard techniques used to treat a medical condition. The quality of evidence is assessed. ASERNIP-S then makes recommendations on the safety and effectiveness of the procedures, that are endorsed by RACS. Reviews are regularly updated.

ASERNIP-S recommendations are sent to hospitals and surgeons in Australia and overseas, and published on the website with summaries for consumers. One of the procedures reviewed is radiofrequency ablation for the treatment of liver tumours.



Royal Australasian College of Surgeons

### RFA compared to ethanol injection:

*Safety* - Very limited data showed that fever and pain after operation appeared to be worse for RFA patients. RFA patients stayed in hospital for a shorter period.

*Effectiveness* - Very limited data showed that fewer RFA sessions were needed to completely destroy the tumour. Also fewer tumours recurred after RFA.

August 2006 (Updated review publication date)



## Radiofrequency ablation for the treatment of liver tumours

### Glossary

ablation: removing or destroying cells

benign: a term used to describe a tumour which enlarges locally, not invading tissue or spreading remotely, as opposed to a malignant tumour, which can invade other parts of the body

chemotherapy: the treatment of tumours using drugs

cirrhosis: a condition of the liver in which death of liver cells leads to fibrosis and regrowth of liver cells in small lumps or nodules

cryoablation: liquid nitrogen is used to kill tumour cells thus destroying the tumour

electrode: one device that generates heat through the passing of electricity

malignant: a term usually used to describe cancerous tumours which can invade other tissues or organs. The term is opposite in meaning to benign.

microwave coagulation therapy: an electrode is placed into the tumour. A high frequency electromagnetic wave generates heat and destroys tumour cells.

nodules: small, solid-like lumps of tissue occurring anywhere in the body

open operation: operation in which the surgeon accesses the site through a large surgical cut

primary liver tumours: liver tumours consisting of liver cells

recurrent tumour: tumour that grows back after treatment

resection: surgical removal

tumour: an abnormal growth of cells in the body

### Acknowledgments

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For more information on RFA for the treatment of liver tumours please see our literature review on the ASERNIP-S website, or contact:

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