NHS
National Institute for Health and Clinical Excellence

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Microwave ablation for atrial fibrillation in association with other cardiac surgery

Understanding NICE guidance – information for people considering the procedure, and for the public

Information about NICE Interventional Procedure Guidance 122

Ordering information

You can download the following documents from www.nice.org.uk/IPG122

- this booklet
- the full guidance on this procedure

For printed copies of the full guidance or information for the public, phone the NHS Response Line on 0870 1555 455 and quote:

- N0863 (full guidance)
- N0864 (information for the public)

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About this information

The National Institute for Health and Clinical Excellence (NICE) is the independent organisation responsible for providing national guidance on the promotion of good health and the prevention and treatment of ill health. One of NICE's roles is to produce guidance (recommendations) on the use of medicines, medical equipment, diagnostic tests and clinical and surgical procedures within the NHS in England and Wales.

This information describes the guidance that NICE has issued on a procedure called microwave ablation for atrial fibrillation that's usually done at the same time as other heart surgery. It is not a complete description of what is involved in the procedure – the patient's healthcare team should describe it in detail.

NICE has looked at whether microwave ablation is safe enough and works well enough for it to be used routinely, at the same time as other heart surgery, for the treatment of atrial fibrillation.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of microwave ablation for atrial fibrillation and how well it works
- asked experts for their opinions
- asked the views of the organisations that speak for the healthcare professionals and the patients and carers who will be affected by this guidance.

This guidance is part of NICE's work on 'interventional procedures' (see 'Further information' on page 9).

About microwave ablation for atrial fibrillation

Atrial fibrilliation is the medical name for when abnormal electrical signals in the heart cause the upper two chambers of the heart (the atria) to beat too quickly and not in a regular pattern. The effect is that the heart doesn't work as efficiently as it should and pumps lower

levels of blood than normal around the body. The person may feel dizzy or breathless as a result. They may also be aware of their heart beating quickly (the medical name for this is palpitations). Having atrial fibrillation is also linked with a higher risk of having a stroke.

Microwave ablation

Surgical treatment for atrial fibrillation aims to stop the abnormal electrical signals from being spread through the electrical system of the heart. In microwave ablation, heat is used to make scars through heart tissue in the atria. The scars may then interrupt the electrical signals and stop them from spreading and causing the problems. As the name suggests, the heat is produced by microwave energy, produced from a flexible probe. Scars may be formed on both the atria or on only the left-hand atrium. The surgeon may get to the tissue from inside the atrium or from the outside.

Microwave ablation is usually carried out at the same time the person is having other heart surgery, and the NICE guidance described here has only looked at microwave ablation when it is used in these circumstances. The most common type of surgery a person would be having is mitral valve surgery to replace or repair the mitral valve. The mitral valve is the valve that lets blood through from the left atrium to the left lower chamber of the heart (called the ventricle).

Other treatments

A person with atrial fibrillation may be offered medicines and/or electrical shock treatment (called cardioversion) to help to stop the atrial fibrillation. They may also be offered anticoagulant medicines to help to reduce the risk of a stroke happening.

The standard operation for atrial fibrillation, which is called the Cox maze procedure, involves making small cuts in the atria. There are also procedures that involve using heat from radiofrequency energy or from ultrasound energy, or cold temperatures to produce scarring.

How well the procedure works

What the studies said

One study compared the results in patients who had open heart surgery and microwave ablation with the results in patients who just had the open heart surgery. Straight after the surgery, 22 out of 24 patients (92%) who'd had the microwave ablation had a normal heartbeat, compared with 6 out of 19 patients (32%) who'd not had the microwave ablation. One year after the surgery, 12 out of 15 people (80%) who'd had the microwave ablation had a normal heartbeat compared with 3 out of 9 people (33%) who'd had the heart surgery but not the microwave ablation.

In another study, 84 out of 136 patients (62%) who'd had microwave ablation and heart surgery had a normal heartbeat 1 year after their surgery. In comparison, this was the case for only 5 out of 51 patients (10%) who'd had heart surgery but not microwave ablation.

Another study compared patients who had microwave ablation with patients who had radiofrequency ablation. When the patients were checked on after about a year, there was no real difference between the numbers who had a normal heartbeat between the two groups.

Three other studies followed what happened in patients who'd had microwave ablation during heart surgery. In one study, 25 out of 41 patients (61%) had a normal heartbeat immediately after the surgery. This was also the case for 32 out of 42 patients (76%) in the second study. The third study reported that 74 out of 119 patients (62%) had a normal heartbeat 1 year after having the surgery.

What the experts said

The experts thought that the procedure was just a different way of doing the standard Cox maze operation.

Risks and possible problems with the procedure

What the studies said

Because patients in the studies usually had microwave ablation at the same time as other heart surgery, it was difficult to be sure what problems in the studies happened specifically because of the microwave ablation.

The main problems reported in the studies were death in hospital following the surgery and the need for a permanent pacemaker (a device to control the heartbeat). In the study that compared patients who had microwave ablation and heart surgery with patients who had heart surgery but not microwave ablation, 1 person died out of the 24 who had the microwave ablation, and 1 person also died out of the group of 19 who didn't have the microwave ablation. As percentages, these figures are close – the deaths account for 4% of the group who had microwave ablation and 5% of the group who did not. In other studies that reported how many patients died after surgery, the numbers went from 0 out of 42 patients (0%) to 1 out of 23 patients (4%).

In the studies that reported how many patients needed a permanent pacemaker after the surgery, the numbers went from 0 out of 41 patients (0%) to 46 out of 202 patients (23%).

One study also included details of other problems patients had. These included:

- internal bleeding – this affected 2 out of 23 patients
- the need to have a device put in to open up the aorta (a major blood vessel taking blood away from the heart) – needed by 1 patient out of 23
- a temporary problem in which the heart was only pumping out a low amount of blood – this affected 1 patient
- severe inflammation affecting the body – this affected 1 patient.

What the experts said

The experts said that the possible problems were damage to the oesophagus (the tube that carries food from the mouth to the stomach), heart block (which happens when the normal electrical signals that make the ventricles contract are partly or fully blocked), heart attack during the surgery, and excessive damage to the heart tissue.

What has NICE decided?

NICE has considered the evidence on microwave ablation for atrial fibrillation. It has recommended that when doctors use it for people with atrial fibrillation, they should be sure that:

- the patient understands what is involved and agrees (consents) to the treatment, and
- the results of the procedure are monitored.

NICE has also recommended that a team of different types of healthcare professional should be involved in checking that a person is suitable for the procedure, and checking on them after they've had the surgery. Heart surgeons who carry out microwave ablation should be specifically trained to use the microwave equipment involved.

Other comments from NICE

Most of the patients in the studies NICE looked at were having mitral valve replacement and microwave ablation. There was not much information about what happened in patients who were having other types of heart surgery at the same time as the microwave ablation.

Microwave ablation seems to work better in patients who have had atrial fibrillation for less than a year. Also, it might be difficult for surgeons always to know when they have produced enough scarring across the heart tissue.

What the decision means for you

Your doctor may have offered you microwave ablation for atrial fibrillation. NICE has considered this procedure because it is relatively new. NICE has decided that the procedure is safe enough and works well enough for use in the NHS. Nonetheless, you should understand the benefits and risks of microwave ablation for atrial fibrillation before you agree to it. Your doctor should discuss the benefits and risks with you. Some of these may be described above.

Further information

You have the right to be fully informed and to share in decision-making about the treatment you receive. You may want to discuss this guidance with the doctors and nurses looking after you.

The NICE website (www.nice.org.uk) has further information about NICE, the Interventional Procedures Programme and the full guidance on microwave ablation for atrial fibrillation in association with other cardiac surgery. The evidence that NICE considered in developing this guidance is also available from the NICE website.

NICE has also issued guidance on radiofrequency ablation and cryoablation for atrial fibrillation. The booklets describing these can be downloaded from www.nice.org.uk/IPG121publicinfo (radiofrequency ablation) and www.nice.org.uk/IPG123publicinfo (cryoablation). NICE is also currently developing a guideline for the diagnosis and treatment of atrial fibrillation (see www.nice.org.uk/page.aspx?o=98520 for up-to-date information on this guideline).

If you have access to the internet, you can find more information on heart conditions on the NHS Direct website (www.nhsdirect.nhs.uk).

You can also phone NHS Direct on 0845 46 47.

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