

# **Coil embolisation of unruptured intracranial aneurysms**

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

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**Coil embolisation of unruptured intracranial aneurysm**  
**Understanding NICE guidance – information for people considering the procedure, and for the public**

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Copies of this booklet can be ordered from the NHS Response Line; telephone 0870 1555 455 and quote reference number N0756.

A version in Welsh and English is also available, reference number N0757. Mae fersiwn yn Gymraeg ac yn Saesneg ar gael hefyd, rhif cyfeirnod N0757. The NICE interventional procedures guidance on which this information is based is available from the NICE website ([www.nice.org.uk](http://www.nice.org.uk)). Copies can also be obtained from the NHS Response Line, reference number N0755.

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**National Institute for  
Clinical Excellence**

MidCity Place  
71 High Holborn  
London  
WC1V 6NA

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## About this information

This information describes the guidance that the National Institute for Clinical Excellence (NICE) has issued to the NHS on a procedure called coil embolisation that's used for unruptured intracranial aneurysms (see below for an explanation). 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 coil embolisation is safe enough and works well enough for it to be used routinely for the treatment of unruptured intracranial aneurysms.

To produce this guidance, NICE has:

- looked at the results of studies on the safety of coil embolisation 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 10).

## About coil embolisation for unruptured intracranial aneurysms

An aneurysm is the medical name for what happens when a section of a blood vessel starts to bulge out like a balloon. An intracranial aneurysm is one that's inside the skull. Usually the cause is unknown but people with genetic causes of weak blood vessels are more likely to develop aneurysms. Occasionally aneurysms burst and bleed into the surrounding area. This is called rupturing. The guidance that is described here concerns the use of coil embolisation for unruptured aneurysms (ones that haven't burst).

The standard operation for most intracranial aneurysms involves making a small opening in the side of the skull (just in front of the ear) so that the surgeon can get to the blood vessel with the aneurysm. A clip is put across the 'neck' of the bulging section of the blood vessel to close off the aneurysm. This means that blood can still flow through the blood vessel but it won't build up in the aneurysm.

The procedure NICE has looked at involves passing a thin tube containing a coil through the blood vessels of the body and up into the skull (the tube is usually first put into an artery in the groin at the top of the leg). X-rays are used to make sure that the tube is going in the right direction and gets to the correct position. When the tube gets to the blood vessel with the aneurysm, the coil is

released from the tube and put into the aneurysm. More coils are added until the bulging aneurysm is filled up with coils. The aim of the coils is to make the blood clot in the aneurysm, as this makes it harder for the aneurysm to fill with blood. This should make it less likely that an unruptured aneurysm will burst.

## How well it works

### What the studies said

One study NICE found compared patients who'd had the type of procedure described above with patients who'd had the standard surgery. One year after having surgery, 41 out of 451 patients who'd had the new type of procedure had an illness related to the aneurysm or had died, compared with 233 out of 1917 patients who'd had the standard surgery. As percentages, these results are quite similar – 9% for the newer procedure compared with 12% for the standard surgery. These results have to be treated cautiously, though, because the two groups of patients were different. For example, the patients who had the newer type of procedure were usually older than those in the other group, and this may have made them more likely to have problems afterwards.

In a study that looked specifically at the results of coil embolisation in 379 patients, the aneurysm was completely blocked in 207 patients (55%),

partially blocked in 91 patients (24%) and unsuccessful in 67 patients (18%). The results for 12 patients (3%) were not known.

### **What the experts said**

The experts thought that the main question was about how long the effects of the coil embolisation would last (would it stop the aneurysm bursting over a long time?). The results from the studies carried out to date could not answer this.

## **Risks and possible problems**

### **What the studies said**

In a study that looked back at what happened in 62 patients who'd had coil embolisation, 14 patients (23%) had problems related to the procedure. Five patients had major problems, and nine patients had minor ones that meant they had to stay in hospital longer than expected. In this study, the aneurysm burst either during or after the procedure in four patients (6%). Seven patients had problems involving nerves in the area after they'd had coil embolisation.

In the study that looked at 451 patients who had the new type of procedure, there was bleeding inside the skull in 10 patients (2%) either during or after the procedure. Twenty-six patients (6%) had

what's known as a cerebral infarction, which is where the blood stops flowing to a part of the brain. This happens if the blood vessel with the aneurysm bursts or if bits of the blood clot break off and block other blood vessels supplying blood to the brain.

## What the experts said

The experts thought that coil embolisation was generally safe for people with unruptured intracranial aneurysms. One expert said that it was possible that the aneurysm could rupture during the surgery or that bits of the blood clot could break off and block other blood vessels in the brain, but the chances of this happening were low. The experts also pointed out that there is a small risk that the aneurysm will bleed some time after the procedure.

## What has NICE decided?

NICE has considered the evidence on coil embolisation. It has recommended that when doctors use it for people with unruptured intracranial aneurysms, 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 pointed out in its guidance that some unruptured aneurysms are not likely to bleed while others are more likely to cause problems if left untreated. The risk depends on the size and position of the aneurysm. Because of this, the decision about whether to use coil embolisation should be made on the basis of the individual patient's condition and wishes. In particular, patients should be clear about what might happen if they have the coil embolisation compared with what might happen if the aneurysm is left alone.

Finally, NICE has said that coil embolisation should only be carried out in specialist units where the staff have training and experience in this type of surgery (surgery carried out inside the blood vessels).

## **What the decision means for you**

Your doctor may have offered you coil embolisation. 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 coil embolisation before you agree to it. It's particularly important that you understand the risks of having the procedure compared with the risks of not having it. Your doctor should discuss this with you. Some of the benefits and risks 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.

You can visit the NICE website ([www.nice.org.uk](http://www.nice.org.uk)) for further information about the National Institute for Clinical Excellence and the Interventional Procedures Programme. A copy of the full guidance on coil embolisation of unruptured intracranial aneurysms is on the NICE website ([www.nice.org.uk/IPG105guidance](http://www.nice.org.uk/IPG105guidance)), or you can order a copy from the website or by telephoning the NHS Response Line on 0870 1555 455 and quoting reference number N0755. The evidence that NICE considered in developing this guidance is also available from the NICE website. If you want more information on aneurysms, a good starting point is NHS Direct, telephone 0845 4647, or NHS Direct Online ([www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)).

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MidCity Place  
71 High Holborn  
London  
WC1V 6NA

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