National Institute for Health and Clinical Excellence

Coil embolisation of ruptured intracranial aneurysms

Issued: January 2005

NICE interventional procedure guidance 106

www.nice.org.uk/ipg106

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1 Guidance

1.1 Current evidence on the safety and efficacy of coil embolisation of ruptured intracranial aneurysms appears adequate to support use of the procedure, provided that normal arrangements are in place for consent, audit and clinical governance.

1.2 The procedure should only be performed in specialist units with expertise in the endovascular treatment of intracranial aneurysms. Clear arrangements should be in place for the involvement of different clinical disciplines in treatment and follow-up.

1.3 Patients with subarachnoid haemorrhage should have rapid access to appropriate specialist care.

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2 The procedure

2.1 Indications

2.1.1 Intracranial aneurysms are small balloon-like dilated portions of blood vessels that may occasionally rupture, causing haemorrhage, stroke or death. Usually the cause is unknown but people with genetic causes of weak blood vessels are more likely to develop aneurysms. Rupture of intracranial aneurysms causes subarachnoid haemorrhage and has a poor prognosis. About 30% of people die within 24 hours and a further 25–30% die within 4 weeks.

2.1.2 The alternative treatment for ruptured intracranial aneurysm involves open surgery to clip the aneurysm inside the skull.

2.2 Outline of the procedure

2.2.1 The coil technique involves approaching the aneurysm from inside the diseased blood vessel, thereby avoiding the need to open the skull. A thin tube containing the coil on a guidewire is inserted into a large artery, usually in the groin, and passed up into the skull under radiological guidance. The coil is placed inside the aneurysm and detached from the guidewire. Once in position, it causes clotting and stops blood from entering the aneurysm. Multiple coils may be inserted into the aneurysm through the same tube until the aneurysm is filled with coils.

2.3 Efficacy

2.3.1 Use of the procedure was supported by a high-quality randomised controlled trial. In the trial, 'dependency' reflected a moderate to severe disability as defined by the modified Rankin score. The trial showed a 7% absolute risk reduction in dependency or death for patients treated with coils compared with patients treated by surgical clipping. For more details, refer to the Sources of evidence section.

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2.3.2 The Specialist Advisors stated that, in the short term, the procedure is more effective clinically than surgical clipping. However, the long-term durability of coil embolisation has not been established.

2.4 Safety

2.4.1 Complications associated with the procedure included perforation of the aneurysm, intracranial haematoma and re-bleeding. In a case series of 403 patients, aneurysm perforation was observed in 11 patients (3%) and cerebral clot embolisation in 10 patients (2%). Coil migration occurred in two patients (0.5%). For more details, refer to the Sources of evidence section.

2.4.2 The Specialist Advisors considered this procedure to be safer than surgical clipping. They stated that procedural mortality and stroke were the main adverse events. They also stated that there is a small risk of re-bleeding, and that this should be monitored over the long term.

2.5 Other comments

2.5.1 Currently, evidence on the procedure's long-term results is limited to a mean follow-up of 3.7 years.

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3 Further information

3.1 This guidance relates to ruptured intracranial aneurysms. The Institute has also published separate guidance on the use of coil embolisation for unruptured intracranial aneurysms.

3.2 In 2002, the Royal College of Physicians published guidelines on the management of stroke, including subarachnoid haemorrhage.

Andrew Dillon
Chief Executive
January 2005

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the following document.

'Interventional procedure overview of coil embolisation of ruptured intracranial aneurysms', October 2004.

Information for patients

NICE has produced information on this procedure for patients and carers ('Understanding NICE guidance'). It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

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4 Changes since publication

As part of the NICE's work programme, the current guidance was considered for review but did not meet the review criteria as set out in the IP process guide. The guidance below therefore remains current.

To be alerted to developments regarding the use of the procedure to treat unruptured intracranial aneurysms please refer to our website.

26 January 2012: minor maintenance.

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5 About this guidance

NICE interventional procedure guidance makes recommendations on the safety and efficacy of the procedure. It does not cover whether or not the NHS should fund a procedure. Funding decisions are taken by local NHS bodies after considering the clinical effectiveness of the procedure and whether it represents value for money for the NHS. It is for healthcare professionals and people using the NHS in England, Wales, Scotland and Northern Ireland, and is endorsed by Healthcare Improvement Scotland for implementation by NHSScotland.

This guidance was developed using the NICE interventional procedure guidance process.

We have produced a summary of this guidance for patients and carers. Information about the evidence it is based on is also available.

Your responsibility

This guidance represents the views of NICE and was arrived at after careful consideration of the available evidence. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of healthcare professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way which would be inconsistent with compliance with those duties.

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