NICE guidance

Coil embolisation of ruptured intracranial aneurysms

Interventional procedures guidance
Published: 26 January 2005

www.nice.org.uk/guidance/ipg106

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.

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.

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.

3 Further information

3.1 This guidance relates to ruptured intracranial aneurysms. See also published separate NICE 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.

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the overview to this guidance.

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.

ISBN: 978-1-4731-3986-2

Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.