



Endovascular coiling: The end of conventional neurosurgery?

PETER A. RASMUSSEN, MD

The mainstay of therapy for cerebral aneurysm has been microsurgical clipping. Microsurgery offers a high rate of initial aneurysm cure coupled with a low rate of aneurysm recurrence or recurrent hemorrhage. At present, it continues to be the gold standard for cerebral aneurysm therapy.

Recently, however, endovascular management of cerebral aneurysms has become a viable alternative to surgical clipping. Initial attempts at endovascular management focused on the use of balloons to occlude either the aneurysm itself or the parent vessel giving rise to it. These initial attempts proved unsatisfactory, and in the early 1990s the GDC detachable coil became available. For the first time, a satisfactory solution for the endovascular treatment of at least a subset of intracranial cerebral aneurysms (those with narrow necks) became available. Subsequent technological advances have allowed for a greater scope of aneurysms to be treated.

■ TWO KEY ADVANCES FOR ENDOVASCULAR THERAPY

The past year has seen two important developments that have strengthened the argument for endovascular therapy and broadened the types and sizes of aneurysms that can be treated by endovascular means.

ISAT results

First, the results of the International Subarachnoid Aneurysm Trial (ISAT) have been published, demonstrating an increased likelihood of good outcome following aneurysmal subarachnoid hemor-

rhage when the patient is treated by endovascular means as compared with craniotomy. ISAT was a randomized, multicenter clinical trial comparing a policy of endovascular treatment to a policy of microsurgical treatment of ruptured intracranial aneurysms.¹ More than 2,100 patients were enrolled at 44 centers in Europe. The primary outcome measure was the rate of death or disability at 1 year. Interestingly, most patients were classified in Hunt and Hess grades 1 or 2 and had small aneurysms located in the anterior circulation. Clinical outcomes showed that 76% of patients treated by endovascular means had a modified Rankin score of 2 or less at 1 year, compared with 69% of patients treated with microsurgery ($P = .0019$).

Stent for wide-neck intracranial aneurysms

Second, an intracranial stent has been approved by the US Food and Drug Administration specifically for the treatment of wide-neck intracranial aneurysms. These aneurysms had previously been considered “uncoilable,” as the risk of parent vessel occlusion and/or thromboembolic events was too high. The new Neuroform Stent (Boston Scientific, Fremont, Calif.) allows for the treatment of these previously uncoilable aneurysms by placing a scaffolding or buttress over the face of the aneurysm to prevent coil herniation into the parent vessel. The introduction of this device thus corrects a previous deficiency in endovascular treatment.

Future developments and advances in catheter, coil, and device design promise to continue to broaden the indications for endovascular aneurysm treatment.

■ REFERENCES

1. International Subarachnoid Aneurysm Trial Collaborative Group. International Subarachnoid Aneurysm Trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised trial. *Lancet* 2002; 360:1267–1274.

From the Section of Cerebrovascular and Endovascular Neurosurgery, The Cleveland Clinic Foundation, Cleveland, Ohio.

Address: Peter A. Rasmussen, MD, Head, Section of Cerebrovascular and Endovascular Neurosurgery, The Cleveland Clinic Foundation, 9500 Euclid Avenue, S80, Cleveland, OH 44195.