

Title:	Endovascular treatments for intracranial aneurysms - February 2006
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Reference:	MSAC Reference 33 Assessment Report First printed August 2007 ISBN: 1 74186 028 8

Aim

To assess the safety, effectiveness and cost-effectiveness of endovascular approaches (mostly coiling) compared with surgical approaches (mostly clipping) for treating ruptured intracranial aneurysms. Also, to assess endovascular approaches (mostly coiling) compared with surgical approaches (mostly clipping) or conservative treatment for unruptured aneurysms.

Conclusions and Results

A total of 182 studies were included. For ruptured aneurysms, 34 comparative studies (including two randomised controlled trials (RCTs) of coiling versus clipping) were located. For unruptured aneurysms, 14 comparative studies (no RCTs) were identified. Thus most of the evidence base consisted of lower level evidence with very little data available for some comparisons such as endovascular versus conservative treatment for unruptured aneurysms.

Ruptured aneurysms

Safety:

Complication rates were generally similar for coiling or clipping in both the randomised and non-randomised comparative studies, although the rates of vasospasm and seizure were significantly higher for clipping than for coiling.

Effectiveness:

In one large RCT, functional outcome was significantly better for coiling than for clipping (relative risk reduction of 23.9% (95% CI 12.4 to 33.9 in Modified Rankin score 3-6 (death or dependency)); absolute risk difference of 7% in favour of coiling). This RCT also found a small but significant survival advantage (up to seven years' follow-up). The other smaller RCT found no differences in functional outcome (measured by the Glasgow Outcome Score) between coiling and clipping. Coiling may need more retreatment than clipping.

Cost-effectiveness:

Assuming a 7% risk difference in favour of coiling for functional outcome and a similar length of hospital stay, the incremental cost effectiveness ratio (for each additional death or dependency avoided) was estimated to be \$43,414 to \$57,770. In various sensitivity analyses, this ranged from about \$18,000 to \$136,000.

Unruptured aneurysms

For unruptured aneurysms, results were only available from nonrandomised studies. These indicated similar outcomes for coiling and clipping, although some studies reported significantly higher complication rates and hospital stays for clipping.

Recommendation

Available evidence suggests that endovascular treatment of intracranial aneurysms using coils is as safe and effective as surgical clipping for appropriately selected patients. The procedure is also cost effective when compared to surgery. MSAC recommended public funding for this procedure. The Minister for Health and Ageing endorsed this report on 6 June 2006.

Methods

The evidence for endovascular treatment of intracranial aneurysms was systematically assessed. MEDLINE, EMBASE and a number of other databases were searched from January 1990 to July 2005. Results for ruptured and unruptured aneurysms were analysed and presented separately.