Intracranial aneurysm Systematic Review and Meta-Analysis

The long-term durability of different modalities of intracranial aneurysm repair remains unclear. The aim of this study was to conduct a meta-analysis comparing long-term rates of intracranial aneurysm recurrence, retreatment, and rebleeding after surgical clipping or endovascular treatment (EVT).

METHODS: A systematic review of PubMed and Embase was performed in accordance with the PRISMA guidelines and a meta-analysis was conducted. Cohort studies and randomized controlled trials (RCTs) with a surgical and an endovascular arm of ≥10 patients each and a median follow-up of ≥3 years were included. Pooled-effect estimates for reported outcomes were calculated using the random-effects model; sensitivity analysis was performed using the fixed-effects model.

RESULTS: Of 4876 articles, 11 studies including 3 RCTs comprising 4517 patients were analyzed. Coiling was the modality of EVT in all included studies. In the random-effects model, coiling was associated with an increased relative risk of 8.1 for recurrence (95% confidence interval [CI], 3.8-17.2), 4.5 for retreatment (95% CI, 3.4-5.9), and 2.1 for rebleeding (95% CI, 1.3-3.5); the fixed-effects model yielded similar results. Meta-regression by study design, length of follow-up, age, aneurysm size, ruptured versus unruptured aneurysms, or posterior versus anterior location did not yield significant results (all P interactions >0.05). No significant publication bias was identified.

CONCLUSIONS: These results indicate better long-term durability of clipping compared with coiling-based EVT. The relatively high incidence of recurrence and retreatment after coiling should be considered when determining treatment strategy.The long-term durability of different modalities of intracranial aneurysm repair remains unclear. The aim of this study was to conduct a meta-analysis comparing long-term rates of intracranial aneurysm recurrence, retreatment, and rebleeding after surgical clipping or endovascular treatment (EVT).

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[1]
Hulsbergen AFC, Mirzaei L, van der Boog ATJ, Smith TR, Muskens IS, Broekman MLD, Mekary RA, Moojen WA. Long-Term Durability of Open Surgical versus Endovascular Repair of Intracranial

Aneurysms: A Systematic Review and Meta-Analysis. World Neurosurg. 2019 Aug 13. pii: S1878-8750(19)32154-0. doi: 10.1016/j.wneu.2019.08.002. [Epub ahead of print] PubMed PMID: 31419590.