

Introduction

- Optimal management of **ruptured MCA aneurysms** remains controversial.
- Clipping may offer higher durability and occlusion, while coiling is less invasive and favored by **ISAT/BRAT** but **MCA cases underrepresented (10% and 14% respectively)**.
- This **meta-analysis** directly compares clipping vs coiling in ruptured MCA aneurysms, focusing on occlusion, retreatment, functional outcomes, and complications.

Methods

- PRISMA-compliant systematic review of MEDLINE + EMBASE (through Feb 2024).
- 12 studies, 614 patients** (388 clipping, 226 coiling). Analysis: Random-effects model; ORs/RRs with 95% CI
- Inclusion: **Comparative** studies reporting outcomes for both clipping and coiling in **ruptured MCA** aneurysms.
- Outcomes:** Raymond-Roy occlusion grade, retreatment, rebleeding, mRS 0–2, intraoperative rupture, stroke, vasospasm, decompressive craniectomy, shunt dependence, mortality.

Results

- Raymond I (complete): **Clipping superior** (RR 1.45, $p < 0.0001$).
- Raymond II (neck remnant): **Coiling higher** (RR 0.29, $p < 0.0001$).
- Raymond III (incomplete): **No difference**.
- Retreatment: **Less after clipping** (OR 0.44, $p = 0.0376$).
- No significant difference** in mRS at discharge and at 1 year, Raymond Roy grade III, rupture, stroke, vasospasm, craniectomy, shunt dependence, or mortality.
- Sensitivity:** Findings stable across exclusions; mRS sensitivity (excluding one outlier) suggested possible modest coiling advantage but not consistent.

Discussion

- Clipping:** higher complete occlusion; fewer retreatments.
- Coiling:** equally effective for functional outcomes; may be favored in older or comorbid patients.
- Clinical outcomes \neq occlusion rates** \rightarrow durability does not necessarily translate to functional advantage.
- Results align with prior studies though susceptible to **selection bias** (clipping for complex or wide-neck aneurysms). Though, a study resolving this bias corroborated our findings.

Conclusion

- Clipping achieves more durable occlusion with fewer retreatments** than coiling in ruptured MCA aneurysms with **no significant difference** in mortality, complications, or long-term functional outcomes.
- Treatment decisions should be **patient- and aneurysm-specific**, balancing durability vs invasiveness.
- Future **prospective multicenter RCTs (e.g., MCAAT)** are critical to refine practice guidelines.

