INPLASY

Endovascular Therapy versus Standard medical Treatment for Vertebrobasilar Artery Occlusion: A Systematic Review and Meta-Analysis

INPLASY202590088

doi: 10.37766/inplasy2025.9.0088

Received: 22 September 2025

Published: 23 September 2025

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ADMINISTRATIVE INFORMATION

Support - Research and Promotion Program of Appropriate Techniques for Intervention of Chinese High-risk Stroke People（GN-2020R0007）.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590088

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 September 2025 and was last updated on 23 September 2025.

INTRODUCTION

Review question / Objective To systematically evaluate and compare the efficacy and safety of endovascular therapy versus standard medical treatment in patients with vertebrobasilar artery occlusion, by synthesizing evidence from both randomized controlled trials and observational studies.

Condition being studied Vertebrobasilar(VBAO) account for about 1-2% of all ischemic strokes,is associated with high mortality and severe disability. Endovascular treatment (EVT) for anterior circulation stroke have demonstrated its efficacy, establishing it as a standard of care.of patients with VBAO suffer from severe disability and mortality.Numerous randomized controlled trials (RCTs) on endovascular treatment (EVT) for anterior circulation stroke have demonstrated its efficacy, establishing it as a standard of care. In contrast, the evidence for EVT in VBAO has developed more slowly and with greater difficulty.

METHODS

Participant or population Stroke patients with Vertebrobasilar artery occlusion.

Intervention EVT with standard medical treatment SMT(with intravenous thrombolysis if suitable).

Comparator SMT only (with intravenous thrombolysis if suitable).

Study designs to be included Randomized controlled trials and observational cohort studies (prospective and retrospective).

Eligibility criteria (1) RCTs and observational cohort studies (prospective and retrospective); (2) comparison of the safety and efficacy of endovascular treatment with usual care in treating stroke patients with vertebrobasilar artery occlusion: (3) studies reported at least one predefined outcome .excluded after careful

examination, excluding conference abstracts, case reports, clinical trials, reviews, meta-analyses, and letters from the RWS retrieval results.

Information sources We searched PubMed, Embase, and the Cochrane Library from January 1, 2000 to July 1, 2025 for English-language studies.

Main outcome(s) Modified Rankin Scale(mRS) score of 0-3 at 90 days.

Additional outcome(s) mRS score of 0-2 at 90 days； the distribution of mRS scores towards an improved outcome at 90 days;symptomatic intracerebral hemorrhage；90-day mortality.

Quality assessment / Risk of bias analysis For the assessment of methodological quality and bias risk, Two authors independently evaluated each randomized controlled trial (RCT) using the Cochrane Risk-of-Bias tool for Randomized Trials (RoB) .We used the Newcastle-Ottawa Scale to assess the quality of these cohort study.

Strategy of data synthesis For categorical outcomes, data from randomized controlled trials (RCTs) were pooled using the Mantel-Haenszel random-effects model, with results reported as risk ratios (RRs) and their corresponding 95% confidence intervals (95% CIs); for cohort study data, categorical outcomes were synthesized via the same model, and results presented as odds ratios (ORs) with 95% CIs. Continuous outcome data (specifically the modified Rankin Scale [mRS] scores at 3 months) were pooled using the inverse variance random-effects model, and results reported as mean differences (MDs) and 95% CIs.Heterogeneity across studies was assessed using the I^2 statistic. All meta-analyses were performed using stata software.

Subgroup analysis Subgroup analyses will be performed to test interactions according to study type、sex, age, baseline stroke severity (NIHSS score), intravenous thrombolysis, study population.

Sensitivity analysis To assess the robustness of the findings, we plan to perform the following sensitivity analyses for the primary outcome: 1. Excluding studies rated as having a 'high risk of bias. 2. Repeating the analysis using a fixed-effect model instead of a random-effects model. 3. Omitting one study at a time to evaluate the influence of each individual study on the overall effect. 4. Conducting an analysis including only randomized controlled trials(RCTs).

Country(ies) involved China.

Keywords Endovascular Therapy 、vertebrobasilar artery occlusion、Standard medical Treatment.

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