Stroke: Vascular and Interventional Neurology

REVIEW

Endovascular Thrombectomy in Medium and Distal Vessel Occlusions: A Focused Guideline From the Society of Vascular and Interventional Neurology Guidelines and Practice Standards Committee

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BACKGROUND: The authors present an overview of the current evidence and management recommendations for evaluation and treatment of adults with acute ischemic stroke from distal- and medium-vessel occlusion (DMVO) for endovascular thrombectomy (EVT). The intended audiences are prehospital care providers, physicians, and allied health professionals.

METHODS: The Society of Vascular and Interventional Neurology Guidelines and Practice Standards committee formed a writing group to conduct a structured literature review on EVT for DMVO-related acute ischemic stroke and to draft practice recommendations in accordance with the Society of Vascular and Interventional Neurology Guidelines and Practice Algorithm. A structured literature search was conducted across PubMed, MEDLINE, and the Cochrane Library from January 2015 through February 2026, supplemented by manual review of reference lists from key studies and conferences. Recommendations were developed with consensus from an expert panel and the Guidelines and Practice Standards committee, with final approval by the Society of Vascular and Interventional Neurology Board of Directors.

RESULTS: Data from all randomized controlled trials, prior meta-analyses, and subgroup analyses were extracted to evaluate the latest evidence on the safety and efficacy of EVT in patients presenting with DMVO acute ischemic stroke. The guideline outlines practical considerations for patient selection, procedural technique, and systems of care.

CONCLUSIONS: These guidelines provide focused practical recommendations based on recent evidence regarding patient selection and decision-making for EVT in patients presenting with acute DMVO. Routine EVT for DMVO is not supported by current evidence; however, performing EVT in patients with disabling acute dominant M2 occlusion remains reasonable.

GRAPHIC ABSTRACT: A graphic abstract is available for this article.

Key Words: guideline ■ ischemic stroke ■ neurology ■ stents ■ thrombectomy

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Nonstandard Abbreviations and Acronyms

ACA	anterior cerebral artery
DMVO	distal- and medium-vessel occlusion
EVT	endovascular thrombectomy
LVO	large vessel occlusion
MCA	middle cerebral artery
mRS	modified Rankin Scale
NIHSS	National Institutes of Health Stroke Scale
PCA	posterior cerebral artery
RCT	randomized controlled trial
tPA	tissue-type plasminogen activator

Distal- and medium-vessel occlusions (DMVO) involve distal intracranial arteries and account for roughly 25% to 40% of acute ischemic strokes.[1] Although there is some heterogeneity in the definition of DMVO, these typically include occlusions of the M2-M3 segment of the middle cerebral artery (MCA), the A1-A3 segments of the anterior cerebral artery (ACA), and the P1-P3 segments of the posterior cerebral artery (PCA). Although the benefit of endovascular thrombectomy (EVT) for proximal large vessel occlusions (LVOs) has been well established,[2–6] its benefit in DMVO remains uncertain. The 2019 American Heart Association/American Stroke Association guidelines acknowledge that EVT for DMVO "may be reasonable" (class IIb) for select patients presenting within 6 hours of symptom onset.[7]

Recently, several randomized controlled trials (RCTs), including the ESCAPE-MeVO (Endovascular Treatment to Improve Outcomes for Medium Vessel Occlusions),[8] DISTAL (Endovascular Therapy Plus Best Medical Treatment [BMT] Versus BMT Alone for Medium Vessel Occlusion Stroke),[9] and DISCOUNT (Evaluation of Mechanical Thrombectomy in Acute Ischemic Stroke Related to a Distal Arterial Occlusion) trials[10] did not demonstrate a benefit of EVT over best medical management for patients with DMVO acute ischemic stroke. However, these trials were subject to selection bias and other methodological limitations, and there remains a suggestion that certain subgroups of patients may still benefit from EVT.[11] Importantly, in February 2026, the ORIENTAL-MeVO (Endovascular Treatment in Acute Intracranial Distal Medium Vessel Occlusion Stroke)[12] and DISTALS (Distal Ischemic Stroke Treatment With Adjustable Low-Profile Stentriever) trials were presented at the International Stroke conference. At this time, publication of these trials is still pending. ORIENTAL-MeVO, which enrolled 564 patients with baseline National Institutes of Health Stroke Scale (NIHSS) scores ≥6 and less thrombolysis usage, demonstrated that EVT significantly improved functional independence (modified Rankin Scale [mRS] score 0–2) compared with BMM. Benefit was driven by patients with NIHSS score ≥8.[12] The DISTALS[13] trial demonstrated that thrombectomy with the Tigertriever 13 achieved 3-fold greater successful reperfusion without symptomatic intracranial hemorrhage (sICH) compared with medical management (86.3% versus 27.7%, $P<0.001$), with zero sICH in the per-protocol treatment arm.[14] In addition, the recently published 2026 2019 American Heart Association/American Stroke Association guidelines for the early management of acute ischemic stroke gave a class III recommendation suggesting no benefit for the treatment of proximal/nondominant or codominant M2 segment of the MCA, distal MCA, ACA, or PCA. Some experts may find this too restrictive given the evolving evidence landscape, and given that the American Heart Association guidelines were published before the presentation of ORIENTAL-MEVO and DISTALS.[15]

The following recommendations—structured by vascular territory (M2, M3/M4, A2-A4, P1-P4)—provide evidence-based guidance on the use of EVT for DMVO. Each recommendation is assigned to a Class of Recommendation and Level of Evidence (LOE) according to Society of Vascular and Interventional Neurology–Guidelines and Practice Standards criteria[16] and is supported by the latest trial evidence in addition to the available observational data (Figure 1).

M2 SEGMENT OCCLUSIONS

The M2 segment of the MCA (insular segment) supplies a substantial portion of the cerebral hemisphere, and consequently, M2 occlusions can cause disabling deficits, especially when the occlusion involves a dominant branch (typically defined as supplying >50% of the MCA territory). The M2 segment is heterogeneously classified and has great anatomic variability. However, it is classically defined as originating at the M1 bifurcation after the division into superior and inferior branches, typically as vertically directed insular MCA branches. Historically, many stroke centers have pursued EVT for M2 occlusions,[17] and strong observational evidence, as well as post hoc randomized data, have suggested that EVT can be beneficial in these patients.[18,19]

Proximal and dominant M2 occlusions remain underrepresented—not only in recent DMVO trials but also in earlier randomized studies, as reflected in the HERMES (Highly Effective Reperfusion Evaluated in Multiple Endovascular Stroke Trials) meta-analysis. In the HERMES pooled analysis of 7 randomized trials, only 11% of patients (130 patients) had M2 occlusions, with 116 (89%) being proximal and 73 (56%) being dominant M2 occlusions. EVT was highly effective in this subpopulation (90-day mRS score, 0–2; adjusted odds ratio, 2.68 [95% CI, 1.13–6.37]), with dominant M2 occlusions benefitting substantially (adjusted odds ratio, 4.08 [95% CI, 1.08–15.48]). A pooled analysis of the EXTEND-IA

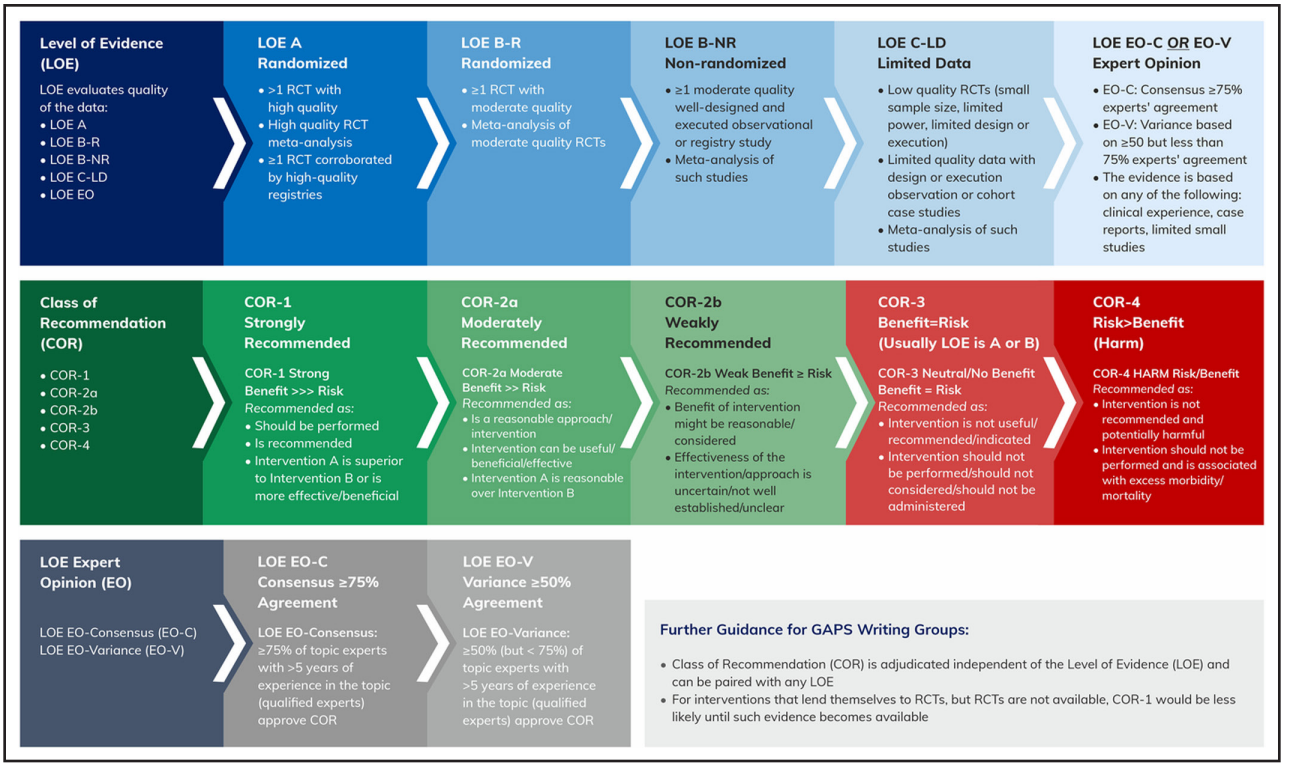

Figure 1. Society of Vascular Interventional Neurology Guidelines and Practice Standards (GAPS) algorithm for applying the LOE of COR to intervention, approach, and treatment.

LD indicates limited data; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial. Adapted from Otto et al[70] with permission. Copyright ©2021, the American College of Cardiology Foundation and the American Heart Association, Inc.

(Extending the Time for Thrombolysis in Emergency Neurological Deficits — Intra-Arterial), EXTEND-IA-TNK (Tenecteplase Versus Alteplase Before Endovascular Therapy for Ischemic Stroke), INSPIRA (International Stroke Perfusion Imaging Registry), and SELECT (Optimizing Patient's Selection for Endovascular Treatment in Acute Ischemic Stroke) trials focused on EVT for isolated M2 occlusions, using NIHSS score and mismatch profile to assess stroke severity, demonstrating improved functional independence with EVT, particularly among patients with favorable perfusion mismatch and higher baseline NIHSS scores.[20] However, a secondary analysis of the CLEAR study (CT for Late Endovascular Reperfusion) showed that in patients with M2 occlusion presenting in the 6 to 24 hour window, EVT conferred no benefit compared with medical management.[17] The MR CLEAN registry also demonstrated that EVT performed in M1 and M2 had similar rates of good outcome and a similar complication profile.[21]

In 2025, the ESCAPE-MeVO trial (n=530), the DISTAL trial (n=543), as well as the interim results from the DISCOUNT trial (n=163) provided Level I evidence on M2-M4, A1-A3, and P1-P3 occlusions. The ESCAPE-MeVO trial enrolled patients with proximal M2 occlusion, whereas the DISTAL trial only included patients with codominant or nondominant M2 occlusions. These trials found there was no overall improvement in 90-day functional outcomes with EVT compared with best medical management.[8–10] In ESCAPE-MeVO, the primary outcome of 90-day mRS score of 0 to 1 was 41.6% with EVT versus 43.1% with medical therapy (adjusted rate ratio, 0.95 [95% CI, 0.79–1.15]). Similarly, the rate of mRS score of 0 to 2 was 54.1% (EVT) versus 58.8% (medical management). Notably, there was higher mortality in the EVT group of the ESCAPE-MeVO trial (13.3% versus 8.4%; adjusted hazard ratio 1.82 [95% CI, 1.06–3.12]). The DISTAL trial likewise reported no reduction in disability with EVT (excellent outcome odds ratio, 0.88 [95% CI, 0.61–1.25]), and 90-day mortality was similar between groups (15.5% versus 14%). In the interim analysis of the French DISCOUNT trial, EVT likewise failed to improve functional outcomes (mRS score of 0–2: 60% [EVT] versus 77% [medical management]).

In February 2026, the ORIENTAL-MeVO trial was presented at the International Stroke Conference with results that significantly shift the evidence landscape.[12] This trial randomized 564 patients with MeVO and NIHSS score ≥6 to EVT plus medical management versus medical management alone. The study demonstrated that EVT significantly improved functional independence at 90 days (mRS score of 0–2: 58.6% versus 46.6%, *P*=0.009) and that the benefit was particularly driven by patients with moderate-to-severe deficits (NIHSS score ≥8). Crucially, the included M2's were codominant or

nondominant. In total, 122 of the patients had M2 occlusions, and the treatment effect for these patients was the highest in the reported subgroups (adjusted rate ratio, 1.43 [95% CI, 1.12–1.82]). These findings are critical and must be taken into consideration when making EVT decisions for DMVO.

The DISTALS trial evaluated EVT with the Tigertriever 13, an adjustable stent retriever purpose-built for distal vessel occlusions. The DISTALS trial demonstrated a 3-fold greater successful reperfusion without sICH when compared with the medical management arm (86.3% versus 27.7%, $P<0.001$), with notably zero sICH in the per-protocol treatment arm. With regards to M2 occlusions, the trial only enrolled M2 codominant and nondominant occlusions (n=47).

Importantly, the neutral 2025 DMVO trials had strict inclusion criteria, which potentially affected the spectrum of M2 occlusions enrolled. Both ESCAPE-MeVO and DISTAL distinguished dominant versus nondominant M2 branches and predominantly enrolled nondominant M2 occlusions, possibly excluding the most extensive M2 infarcts.[11] This is also supported by the low median NIHSS scores (eg, median NIHSS score of 6 in DISTAL). Similarly, the interim DISCOUNT cohort had relatively mild strokes (median NIHSS score of 8) and did not specifically include or characterize dominant M2 occlusions. This raises concern that patients with more severe M2 occlusion strokes (who often have NIHSS scores >10 and large territory at risk) were underrepresented—indeed, such patients may have been treated outside of the trials due to lack of equipoise. The trial findings, therefore, should be interpreted with caution for proximal or dominant M2 occlusions that cause substantial deficits. Observational series and prior meta-analyses indicate that these large M2 occlusions can benefit from EVT, and many practitioners continue to offer EVT for these patients.[19,21–25] However, it should be noted that large observational cohorts that combine M2 and M3 occlusions have shown neutral results.[26] Of note, in the more recent ORIENTAL-MeVO trial and the DISTALS trial, many of these shortcomings were accounted for. There was explicit exclusion of codominant and nondominant M2 occlusions in both trials, and the inclusion criteria in DISTALS required an NIHSS score of ≥6, with the median NIHSS score of 10 in the trial.

The 2025 DMVO RCTs inform us that many M2 patients will do well with medical therapy—for instance, in ESCAPE-MeVO nearly half of patients in both EVT and medical arms achieved mRS score of 0 to 2.[8] Furthermore, the risk of sICH was not negligible: ESCAPE-MeVO reported sICH in 5.4% of EVT patients versus 2.2% with medical therapy, and DISCOUNT showed sICH 12% versus 6%.[10] These findings highlight the need for careful selection- focusing on patients with substantial deficits, large at-risk territory, limited infarct core, favorable collaterals, and rapid treatment eligibility.[27] Subgroup analyses suggest time may be a factor: ESCAPE-MeVO found a trend toward better outcomes with EVT in patients treated earlier (<4.5 hours).[8] This was also seen in the ORIENTAL-MeVO subgroup analyses, with both ≤ 4.5 hours as well as 4.5 to 8 hours demonstrating a positive effect for M2 occlusions. Thus, as with LVO, rapid treatment is important—delays in reperfusion can reduce the benefit, especially because DMVOs may have different collateral circulation profiles than more proximal occlusions. Altogether, for M2 occlusions, although EVT for all M2 strokes is not supported by RCTs, a nuanced, case-by-case approach is warranted, specifically when dealing with dominant and codominant M2 occlusion as well as those with a higher NIHSS score.[28,29] The very concept of dominance remains one of considerable debate, as the dominant hemisphere may be more relevant than the dominant branch or division. In addition, because the NIHSS score may underestimate functional impact in DMVO, many centers apply a disabling deficit framework (eg, aphasia, hemianopia, prominent motor deficits) and consider the risk of early neurological deterioration when selecting patients for EVT, even when the baseline NIHSS score is low.[30,31]

Technique—Aspiration Versus Stent Retriever for DMVO

Large trials comparing first-line aspiration and stent retriever EVT for LVO have demonstrated comparable efficacy. The ASTER (Contact Aspiration Versus Stent Retriever for Successful Revascularization) and COMPASS (A Comparison of Direct Aspiration Versus Stent Retriever as a First Approach) trials found no significant difference in final reperfusion or functional independence at 90 days between contact aspiration and stent retriever approaches.[32–34] In a post hoc ASTER analysis focusing on isolated M2 occlusions (79 patients), aspiration and stent retrievers achieved similar revascularization rates (modified Thrombolysis in Cerebral Infarction ≥2b ≈90% versus 84%, $P=0.36$) and 90-day good outcomes (≈54% versus 50%).[32] This was also supported by nonrandomized studies, which demonstrate comparable efficacy, including a large multicenter retrospective study directly comparing these 2 techniques.[35–39] There is some suggestion, however, that the use of stent retrievers in DMVOs may be associated with a higher rate of hemorrhagic complications, likely owing to these being more tortuous and fragile vessels; technical nuances such as partial deployment may mitigate this risk, though their clinical impact remains uncertain.[25,40–44] However, in patients with PCA occlusion, the PLATO study (Posterior Cerebral Artery Occlusion) showed higher rates of first pass effect with stent retriever compared with contact aspiration or combined technique, and with better outcomes.[45]

A principal advantage of direct aspiration is the ability to remove the thrombus by engaging it at the proximal occlusion face without the need to traverse the clot. In contrast, deployment of a stent retriever requires crossing the occlusion with a microguidewire and microcatheter, which in small M2 or distal branches may increase the risk of endothelial injury or perforation. The relatively higher incidence of vessel injury, subarachnoid hemorrhage, and vasospasm observed with stent retrievers compared with aspiration may not substantially influence clinical outcomes in LVO EVT, given the greater absolute benefit derived from recanalization in this population. However, in DMVO, where the efficacy gap between best medical management and EVT is narrower, even a modest increase in procedure-related complications may negatively influence the clinical outcome and offset the treatment effect. There is some suggestion that an aspiration-first approach may represent a favorable initial strategy for DMVO EVT, especially in the case of M2 occlusions,[40,46] although the DISTAL trial did not show any difference in outcomes across different techniques, and large prior observational cohorts have not demonstrated differences between approaches.[39,47]

It should be noted, however, that the Tigertriever 13 device used in the DISTALS trial is a low-profile, adjustable stent retriever that is purpose-built for DMVO. The encouraging preliminary trial results from DISTALS further support the notion that devices designed specifically for distal vessels may be associated with a much more favorable risk/benefit profile, and thus may change the calculus in making DMVO EVT decision-making.

Vessel Perforation

Vessel perforation during EVT is a serious complication that carries the risk of catastrophic intracranial hemorrhage and poor clinical outcomes. A multicenter study analyzed data from 1373 patients undergoing EVT for DMVO and found an overall incidence of vessel perforation of 4.8%. Perforation rates were notably higher in DVO (M3: 8.9%, A2: 8.3%) compared with more proximal M2 occlusions (4.3%).[48] These data highlight the increased technical challenge and complication risk when treating the most distal vessel occlusions. Predictors of perforation include smaller vessel diameter, distal location, tortuosity of vessel anatomy, and prolonged procedure time. Mitigation strategies include careful guidewire and microcatheter selection to minimize vessel wall trauma, gentle aspiration or retriever advancement, awareness of normal anatomic variants, and rapid recognition and management of perforation (including reversal of anticoagulation and careful hemostasis with consideration of angiographic monitoring and vasopressor support). Operators should maintain high clinical suspicion for perforation-related complications during and immediately after DMVO thrombectomy procedures.

M2—Recommendations

- EVT is reasonable for patients with disabling stroke due to proximal and/or dominant M2 occlusions, particularly when associated with moderate-to-severe deficits and imaging evidence of salvageable brain tissue (class IIa; LOE B-nonrandomized).

Rationale

Subgroup analyses from HERMES and multiple observational cohorts demonstrate the substantial benefit of EVT in proximal and dominant M2 occlusions. These occlusions frequently involve large cortical territories and may clinically resemble proximal LVO. Importantly, recent 2025 DMVO RCTs predominantly enrolled nondominant and lower-NIHSS M2 strokes, limiting the generalizability of their neutral findings to higher-severity proximal or dominant M2 occlusions.

Practical Considerations

EVT should be considered for proximal and/or dominant M2 occlusions with significant deficits, large at-risk territory, or dominant-branch involvement. Imaging should confirm a limited core infarct and a favorable collateral status. Rapid treatment remains essential.

- EVT may be considered in distal, codominant, or nondominant M2 occlusions who present with disabling deficits and an NIHSS score ≥6 (class IIb; LOE B-randomized).

Rationale

Whereas ESCAPE-MeVO, DISTAL, and DISCOUNT did not demonstrate the overall benefit of routine EVT in nondominant M2 occlusions, the ORIENTAL-MeVO trial demonstrated improved functional independence in patients with an NIHSS score ≥6, with the strongest treatment effect observed in the M2 subgroup. These findings suggest that stroke severity and clinical disability may be important determinants of benefit.

Practical Considerations

Patient selection should incorporate NIHSS score severity, eloquence of the deficit, infarct core size, perfusion mismatch (if available), and procedural risk. EVT in this category should be individualized rather than routine.

- Routine EVT is not recommended for patients with distal or nondominant M2 occlusions presenting with low stroke severity and nondisabling symptoms (class III: no benefit; LOE A).

Rationale

Across ESCAPE-MeVO, DISTAL, and DISCOUNT, patients with mild, nondominant M2 occlusions did not experience improved functional outcomes with EVT and demonstrated higher rates of symptomatic intracranial

hemorrhage. These data do not support indiscriminate treatment of low-severity M2 occlusions. In DISTALS, these patients were not found to have an increased rate of sICH.

Practical Considerations

Best medical management, including IV thrombolysis when eligible, is appropriate in this population. EVT may be considered only in rare cases with clearly disabling symptoms despite a low NIHSS score or imaging suggesting substantial threatened territory.

M3/M4 SEGMENTS OCCLUSIONS

M3 and M4 refer to the more distal MCA branches—M3 (opercular segment) courses over the cortical surface after the M2 segments exit the Sylvian fissure, and M4 are the small cortical penetrating branches on the brain surface. Occlusions in M3/M4 branches typically produce smaller, more focal strokes (eg, restricted to one gyrus or cortical region). Often these strokes result in mild to moderate deficits (such as isolated hand weakness, partial sensory loss, or a quadrant of visual field deficit), and some can recover well with medical therapy alone. However, certain M3 occlusions can still be disabling (eg, an M3 occlusion in the precentral branch causing dense hand/arm weakness, or in a temporo-occipital branch causing aphasia). The clinical presentation, therefore, varies widely depending on which cortical territory is affected.

Evidence From Trials

Overall, 27% of patients in the DISTAL trial had M3/M4 segment occlusions. As previously noted, this trial found no significant difference in 90-day disability between the EVT group and the medical management group. The subgroup analysis for M3/M4 occlusions (adjusted odds ratio, 0.77 [95% CI, 0.44–1.37]) also did not demonstrate a functional benefit for EVT. ESCAPE-MeVO included 216 (41%) patients with M3 occlusions, with the subgroup analysis demonstrating no benefit (adjusted odds ratio, 1.01 [95% CI, 0.77–1.31]). The rate of sICH was also found to be higher in the EVT arm (5.9% versus 2.6%). Overall, 76% of patients in the DISCOUNT trial had M3 occlusions. Interim results suggested a potential trend toward worse outcomes with EVT, as 90 days with an mRS score of 0 to 2 being 60% in the EVT and 77% in the medical management arm, leading to trial stoppage. There was also a higher overall rate of ICH in DISCOUNT (44% versus 29%). Although these results are not specifically reflective of M3/M4 occlusion outcomes, they suggest that indiscriminately treating distal MCA occlusions may not help and could potentially harm. Although the ORIENTAL-MeVO trial was a positive one, in subgroup analyses, M3 occlusions (n=54) were not found to have a significant benefit with regard to functional outcomes.

There are a few additional considerations when interpreting the findings of these trials. First, it is worth noting that the RCTs may not have identified a subgroup of M3/M4 patients who benefit, but this does not mean none exist. These trials included patients with relatively low NIHSS scores, which is not uncommon for M3/M4 occlusions; however, patients who presented with more severe deficits may have been treated outside the trial, introducing selection bias. Furthermore, device selection could play an important role, particularly in smaller, more delicate vessels. It remains possible that with newer devices designed for distal EVT, rates of sICH may decrease, and recanalization outcomes might improve. The use of stent retrievers in these small tortuous vessels may have contributed to an increased rate of ICH. This has been shown in prior studies with higher rates of sICH in M3/M4 vessels.[49,50] However, it should be noted that none of the 28 M3 patients in the positive DISTALS trial were found to have sICH. In addition, the rates of intravenous tPA (tissue-type plasminogen activator) were high in these randomized trials (60%–70%).

The strategy for EVT decision-making for M3/M4 occlusions should be on a case-by-case basis. The strategy should be based on the level of disability; generally, an NIHSS score threshold of ≥5 is reasonable for distal occlusions (aligning with ESCAPE-MeVO's criteria of NIHSS score >5 or 3–5 with disabling deficit). The deficit should be eloquent—for example, causing significant functional impairment (aphasia, hemianopia, hemiparesis) and more than a mild, nondisabling deficit. This, in conjunction with infarct burden and procedural risk (based on patient-specific anatomy), can be used to make a final decision regarding EVT. The DISTAL trial investigators concluded that while EVT should not be standard for all, it "can still be considered for select people on a case-by-case basis" given its safety profile. Our recommendations align with their philosophy. The Table summarizes the evidence.

M3/M4—Recommendations

- EVT for distal MCA (M3/M4)—EVT with mechanical devices is not recommended as a standard treatment for occlusions of the M3/M4 MCA branches (class III: no benefit; LOE B-randomized).
- It is reasonable to enroll patients with M3/M4 occlusions and disabling deficit in future RCTs examining the safety and efficacy of EVT using aspiration technique, small/adjustable stentrievers, or intra-arterial thrombolysis compared with best medical management.

Rationale

Across multiple randomized trials—including DISTAL, ESCAPE-MeVO, and interim DISCOUNT results—no improvement in 90-day functional outcomes was

Table. Summary of Guideline Recommendations for EVT in Medium-Vessel Occlusions by Territory

Vascular territory	Recommendation	COR	LOE
M2 (MCA division)	EVT should be performed for disabling proximal and/or dominant M2 occlusions–with favorable imaging with CT, CTP, or MRI.	IIa	B-NR
	EVT is reasonable in nondominant/codominant or distal M2 occlusions with severe clinical presentations (NIHSS score ≥6).	IIb	B-R
	Routine EVT for nondominant or low-severity M2 occlusions is not recommended. Additional randomized trial data are needed.	III	A
M3/M4 (Distal MCA)	Routine EVT is not recommended/ EVT may be considered in select cases with severe deficits, favorable imaging, and poor response to IV thrombolysis.	III/ IIb	B-R/ C-LD
ACA (A2/A3)	Routine EVT not recommended for isolated distal ACA occlusions.	III	B-NR
	EVT should be considered for patients with disabling deficits, large territory at risk, favorable imaging, and good baseline functional status.	IIb	B-NR
PCA (P1/P2/P3)	Routine EVT for isolated PCA occlusions not recommended.	III	B-NR
	EVT may be considered for patients with severe, disabling deficits or those unable to receive IV thrombolysis.	IIb	B-R

COR: I=is recommended; IIa=is reasonable; IIb=may be considered; III=not recommended/no benefit (or harm). LOE: A=multiple RCTs or meta-analyses; B-R=single RCT or NR subgroup from RCT; B-NR=observational or registry studies; C-LD=LD or expert opinion. Where trial data for DMVO were neutral or negative, recommendations are by necessity based on nonrandomized evidence and expert consensus, as reflected in the LOE. ACA indicates anterior cerebral artery; COR, Class of Recommendation; CT, computed tomography; CTP, computed tomography perfusion; DMVO, distal- and medium-vessel occlusion; EVT, endovascular thrombectomy; IV, intravenous; LD, limited data; LOE, Level of Evidence; MCA, middle cerebral artery; MRI, magnetic resonance imaging; NIHSS, National Institutes of Health Stroke Scale; NR, nonrandomized; PCA, posterior cerebral artery; R, randomized; and RCT, randomized controlled trial.

observed for patients with M3/M4 occlusions treated with EVT. Some evidence (DISCOUNT) even suggested a potential signal toward harm, including higher rates of intracranial hemorrhage. These findings are consistent with the small infarct volumes, low NIHSS scores, and favorable natural history typical of distal cortical branch occlusions. No RCT subgroup has demonstrated a clear clinical benefit.

Practical Considerations

EVT for all distal MCA occlusions cannot be justified. However, individualized use may be reasonable in rare cases where the deficit is clearly disabling (eg, aphasia, hemiparesis, severe visual deficit), IVT is contraindicated, or imaging demonstrates substantial at-risk tissue with minimal core. Vessel fragility and tortuosity increase procedural risk. Enrollment into ongoing DMVO trials is encouraged. The use of intra-arterial thrombolytics may be of benefit in select patients and continues to be investigated.

ACA OCCLUSIONS (A2/A3)

Isolated occlusions of the ACA beyond the A1 segment are relatively uncommon (≈1%–5% of acute ischemic stroke), but can lead to significant disability. The A2 segment, defined as the postanterior communicating artery segment, supplies the medial frontal lobes, including areas responsible for leg motor/sensory function (paracentral lobule), abulia, and motivation (medial frontal cortex), and bladder function. Bilateral ACA strokes (if both A2s are affected, or one A2 in the presence of a single anterior communicating artery supplying both sides) can cause paraplegia with incontinence and profound abulia, which can be highly disabling. Unilateral A2/A3 occlusions often cause contralateral leg weakness more than arm/face and can cause frontal release behaviors or cognitive slowing. Some patients with unilateral ACA stroke compensate well if the other ACA via the anterior communicating artery provides collateral flow. Thus, clinical presentation can range from mild leg weakness to akinetic mutism, depending on collateral circulation and the extent of infarct.

Evidence

High-level evidence for EVT in ACA is sparse, as these occlusions were not targeted in earlier EVT trials. In addition, the recent DMVO RCTs only included small ACA subgroups. In DISTAL, 30 patients (5.5%) had A2/A3 occlusions, and no benefit from EVT was observed (odds ratio, 0.43 [95% CI, 0.10–1.83]). ESCAPE-MeVO enrolled 24 patients (4.5% with ACA occlusions) but did not report subgroup outcomes. DISCOUNT included 27 patients (17%) with ACA occlusions (including A1), and no subgroup results were available. The ORIENTAL-MeVO trial included 66 patients with ACA occlusions, and in subgroup analyses, there was a trend toward improved outcomes, although it did not reach statistical significance (adjusted rate ratio, 1.23 [95% CI, 0.93–1.69]). The DISTALS trial included 10 patients with ACA occlusions and was associated with no rates of sICH in this population.

Outside of the limited evidence from the randomized trials, the best evidence for the ACA comes from observational comparisons and accumulated case series. The TOPMOST study (Treatment for Primary Medium Vessel Occlusion Stroke) was a retrospective case-control analysis that included 110 matched patients with distal ACA occlusions.[51] The rate of favorable outcome (mRS score of 0–2) was 49% in both groups after propensity

matching, and excellent outcome (mRS score of 0–1) was ≈37.8% versus 33.3% (EVT versus medical). Mortality at 90 days was also similar (21.6% with EVT versus 30.8% with medical; *P*>0.05). Rates of successful recanalization were seen in 81% of cases, and the rate of sICH was only 2.1%. This was seen in MAD-MT (Multicenter Analysis of Distal Medium Vessel Occlusions: Effect of Mechanical Thrombectomy), where procedural success was 91% without a substantial improvement in functional outcome over BMT.[52] Several other observational comparisons and accumulated case series also demonstrate similar outcomes.[53–59] Taken together, these studies suggest that EVT for distal ACA occlusions does not confer a clear benefit but also does not cause significant harm in experienced centers. It should be noted that many of the deficits caused by an ACA occlusion are behavioral (abulia, agitation, emotional lability, and cognitive decline), would not be captured in the mRS, and as such, complicate assessing the benefit of EVT in these patients.[60]

ACA—Recommendations

- In acute ischemic stroke due to an occlusion of the distal ACA (A2/A3 segments), routine EVT is not recommended due to insufficient evidence demonstrating clear benefit (class III: no benefit; LOE B-nonrandomized).

Rationale

Evidence from the DMVO RCTs (DISTAL, ESCAPE-MeVO, DISCOUNT) includes only small ACA subgroups, none showing benefit. ORIENTAL-MeVO demonstrates a trend towards benefit. Observational studies—including TOPMOST-ACA (Treatment for Primary Medium Vessel Occlusion Stroke — Anterior Cerebral Artery subgroup) and several multicenter registries—demonstrate high recanalization rates but no improvement in functional outcomes with EVT over medical therapy. Mortality and sICH rates seem similar between groups, with randomized data (DISTALS) suggesting technical feasibility with no additional harm but no proven superiority.

Practical Considerations

Management of distal ACA occlusions should generally favor best medical therapy, with individualized decision-making reasonable in select patients.

- In patients with ACA occlusion with disabling deficits, large territory at risk, favorable imaging, and good baseline functional status, EVT may be considered on a case-by-case basis (class IIb; LOE B-nonrandomized).

Rationale

Although no randomized trial has shown clinical benefit, multiple observational cohorts as well as the DISTALS randomized trial confirm that EVT for A2/A3 occlusions is technically feasible, achieves high rates of successful recanalization, and does not increase hemorrhagic complications relative to medical management. ACA occlusions were included in the ORIENTAL-MeVO trial, which as a whole, demonstrated a benefit in patients with high NIHSS scores. Patients with clinically severe ACA syndromes—such as profound leg-dominant weakness, akinetic mutism/abulia, bilateral ACA involvement, or perfusion imaging demonstrating a large at-risk territory with limited core—may derive meaningful benefit from reperfusion. These presentations behave more like proximal anterior circulation strokes, for which EVT may be beneficial.

Practical Considerations

Individualized EVT may be most appropriate for those with disabling symptoms likely to cause long-term dependence, those ineligible for IV thrombolysis, and those with imaging confirming salvageable tissue. Bilateral ACA supply variants or hemodynamically vulnerable territories may further support intervention. When possible, patients with distal ACA occlusions should be enrolled in ongoing DMVO or ACA-specific randomized trials to strengthen the evidence.

PCA P1 TO P3 SEGMENTS OCCLUSIONS

Isolated PCA occlusions are considered DMVOs and most often present with visual field defects, cortical blindness, alexia without agraphia, or visual-cognitive disturbances. Although proximal P1 occlusions can cause more disabling midbrain/thalamic syndromes, most isolated P2/P3 strokes result in primarily visual field deficits, which vary in their functional impact. Classification of P1 occlusions may vary; some centers classify a dominant P1 as a large vessel requiring urgent attention, while others include P1 in DMVO analyses. For the purposes of these guidelines, P1 occlusions are included in DMVO discussions. The clinical spectrum is broad, making individualized assessment essential when considering EVT.

Evidence

Across the 2025 DMVO randomized trials—ESCAPE-MeVO, DISTAL, and DISCOUNT-PCA—occlusions represented a small proportion of enrolled patients. None of these trials demonstrated a functional benefit of EVT for P2/P3 subgroups, and subgroup analyses from ESCAPE-MeVO and DISTAL showed no improvement in 90-day disability outcomes with EVT. DISCOUNT did not report PCA-specific results. More recently, ORIENTAL-MeVO included 54 patients with PCA occlusions with a trend towards benefit in the PCA subgroup (adjusted rate ratio, 1.37 [95% CI, 0.95–2.00]), whereas the DISTALS trial included 32 patients with PCA occlusions and demonstrated improved successful reperfusion and no sICH.

Observational and multicenter studies provide additional clarity. The PLATO study—the largest analysis of isolated PCA strokes—found no improvement in disability outcomes with EVT compared with medical therapy,

although EVT was associated with greater early NIHSS score improvement and higher rates of complete visual recovery.[61] The TOPMOST registry and other retrospective cohorts similarly demonstrate that EVT is technically feasible with high recanalization rates, but without consistent functional benefit (as measured by mRS). The TOPMOST study suggested a possible advantage in patients with more severe strokes (NIHSS score ≥10) or in those ineligible for intravenous thrombolysis.[62] Meta-analyses demonstrated no improvement in functional outcomes and suggested a potential increase in mortality among EVT-treated patients.[63] Overall, nonrandomized evidence reinforces that EVT for distal PCA occlusion remains of uncertain benefit and should be applied cautiously.[64–67] It should be noted that measuring outcomes in PCA occlusion with tools such as mRS may not fully capture the extent of disability and/or recovery in these patients.

Based on these data, EVT for isolated P2/P3 occlusions should not be routinely performed. A selective, individualized approach may be reasonable for patients with clearly disabling deficits, such as in patients with cortical blindness, dense hemianopia affecting independence, or significant midbrain/thalamic involvement, as EVT in this population has been found beneficial in some studies.[61,68] Lower infarct burden, favorable anatomy, and availability for thrombolytics should be key consideration points during EVT decision-making. Patients with mild or rapidly improving symptoms, or those with isolated visual field deficits unlikely to impair long-term functional recovery, should generally be treated medically. Enrollment into clinical trials evaluating EVT for distal posterior circulation occlusions is preferred when available.

PCA—Recommendations

- EVT is not recommended as a routine treatment for isolated PCA occlusions (class III: no benefit; LOE B-nonrandomized).

Rationale

Subgroup analyses from the DMVO RCTs, ESCAPE-MeVO, DISTAL, and DISCOUNT, show no functional benefit of EVT in P1 to P3 occlusions. The overall neutral/negative findings of these trials, combined with higher hemorrhage rates observed in the EVT arms of some studies, provide no supportive signal for routine intervention in isolated distal PCA occlusions. However, the recent results of ORIENTAL-MeVO, a positive trial with a signal towards benefit in the PCA subgroup, as well as the DISTALS trial, which demonstrated safety, should be taken into consideration. Observational evidence, including large cohorts such as PLATO, TOPMOST, and other multicenter registries, demonstrates high technical recanalization success but no consistent improvement in 90-day disability, and some meta-analyses suggest a possible increase in mortality among EVT-treated patients. Together, these data indicate that EVT is technically feasible but may not improve outcomes when applied broadly.

Practical Considerations

Routine EVT for all P2/P3 occlusions is not indicated, especially in those patients with small, nondisabling visual field deficits, rapidly improving symptoms, or imaging showing limited tissue at risk. P2/P3 strokes may produce visual deficits with variable functional impact. Patients may achieve adequate functional recovery with the best medical therapy alone. Consideration of EVT should be avoided in patients with small, nondisabling visual field deficits, rapidly improving symptoms, or imaging showing limited tissue at risk.

- EVT for isolated PCA occlusions (P1, P2, or P3 segments) may be considered in selected patients who present early, exhibit severe neurological deficits significantly impacting quality of life, or who are ineligible for intravenous thrombolysis (class IIb; LOE B-randomized).

Rationale

Although randomized data are neutral, several retrospective multicenter studies and propensity-matched comparative cohorts (eg, PLATO,[69] TOPMOST-PCA) suggest that patients with severe or disabling presentations—including cortical blindness, dense hemianopia impacting independence, or proximal PCA occlusions with midbrain or thalamic involvement—may derive greater benefit from reperfusion. These studies showed high recanalization success and no excess symptomatic ICH when EVT was performed in high-severity cases. Technical feasibility combined with observational outcome data supports individualized decision-making. This is corroborated by the recent findings from the ORIENTAL-MeVO trial and the safety signal in DISTALS.

Practical Considerations

EVT may be reasonable in patients with clearly disabling visual or diencephalic syndromes (eg, cortical blindness, dense hemianopia, midbrain/thalamic involvement), in those ineligible for IV thrombolysis, or when imaging demonstrates substantial salvageable tissue. Enrollment in prospective DMVO trials is encouraged.

Summary of Recommendations by Territory

The Table summarizes the guideline recommendations for EVT in medium and distal vessel occlusions, according to vascular territory. Each recommendation includes the Class of Recommendation and LOE.

CONCLUSIONS

In conclusion, the endovascular management of DMVO requires a balanced, evidence-informed approach. The latest RCTs—ESCAPE-MeVO, DISTAL, and

DISCOUNT—indicate that routine EVT for DMVO strokes (M2, distal MCA, ACA, and PCA) does not improve outcomes over current best medical therapy. At the same time, these trials had limitations in design, patient eligibility, and recruitment, including selection bias, EVT technique and device selection, treatment delays, lower reperfusion rates, high rates of IVT in the medical arm, and other procedural nuances. Importantly, the recently presented ORIENTAL-MeVO demonstrates that in properly selected patients, EVT for DMVO can be associated with increased rates of functional outcome, namely in those patients with more severe clinical deficits. In addition, the DISTALS trials demonstrate that purpose-built devices for DMVO may usher in a safer era of DMVO EVT and consequently change the risk-benefit discussion in these patients. The Society of Vascular and Interventional Neurology Guidelines and Practice Standards Committee recognizes that not all DMVOs should be treated the same way, and the treatment decision should consider the patient's clinical severity of presentation, vessel caliber, vessel tortuosity, territory at risk, collateral flow, IV thrombolytic therapy status, and patient factors. This guideline provides territory-specific recommendations to reflect those nuances (Figure 2). In practice, this means aggressively treating those DMVO that behave like LVO (eg, a dominant M2 with a large stroke syndrome), while avoiding unnecessary endovascular intervention in patients likely to do well without it (eg, small cortical branch occlusion with minor symptoms).

Future studies may identify specific imaging or clinical profiles that benefit from EVT. Technological advancements—such as a new generation of aspiration catheters designed for DMVO and smaller adjustable stentretrievers such as the device in the DISTALS trial—might improve recanalization rates and procedural safety in distal vessels. Moreover, alternative strategies like adjunctive pharmacotherapy (intra-arterial lytics, glycoprotein IIb/IIIa inhibitors) could enhance outcomes.[71] For now, given the available evidence, our practical guidance is to proceed with EVT for DMVO strokes in a selective, evidence-weighted manner, prioritizing patient safety and likelihood of benefit. We also encourage enrolling eligible patients in ongoing DMVO trials such as STEP MeVO (StrokeNet Thrombectomy Endovascular Platform [MeVO domain]) and FRONTIER AP (Randomized Controlled Trial of the Clinical Outcome and Safety of Endovascular Versus Standard Medical Therapy for Stroke With Medium Sized Vessel Occlusion).[72,73]

In summary, we recommend a tailored approach to EVT in DMVO. This guideline provides a framework to

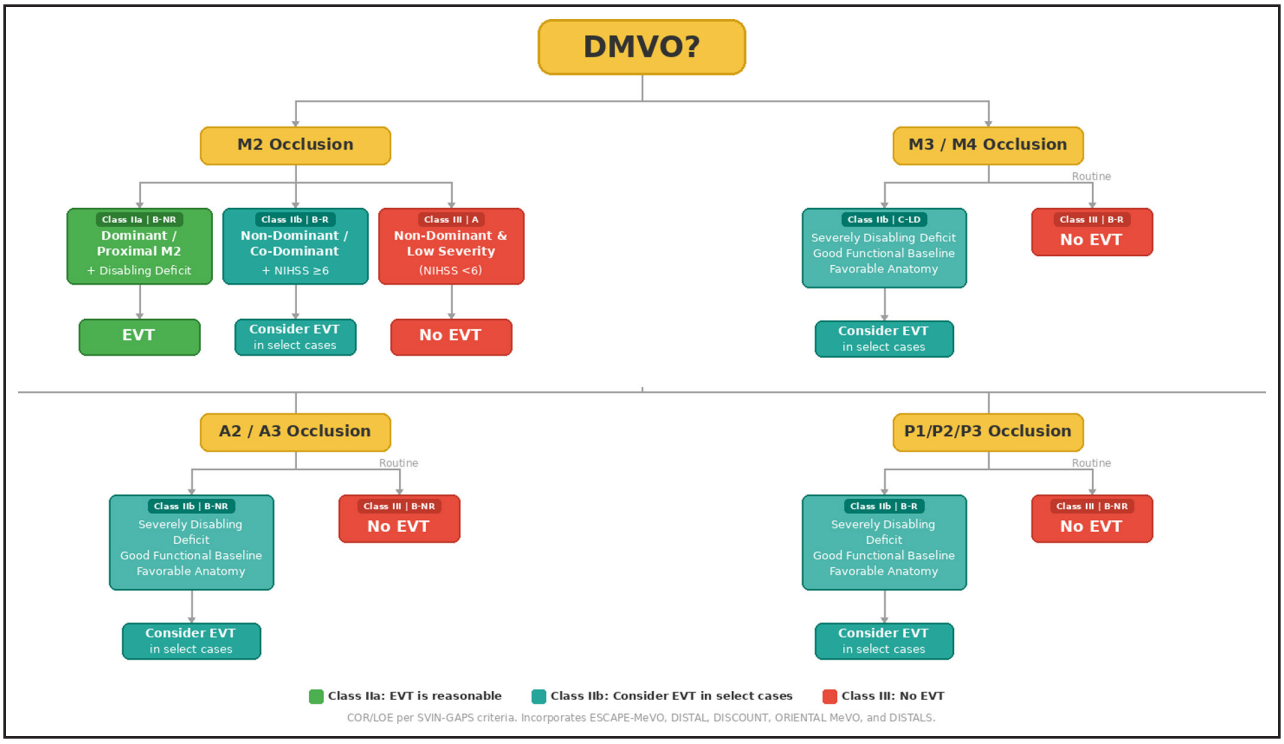

Figure 2 . Decision tree summarizing Society of Vascular and Interventional Neurology (SVIN) guideline recommendations for endovascular thrombectomy (EVT) in distal- and medium-vessel occlusion (DMVO) acute ischemic stroke.
Routine EVT is not supported by current randomized trial evidence for M3/M4, A2/A3, or P1/P2/P3 occlusions and is generally discouraged for nondominant, low-severity M2 strokes (red boxes) but can be considered in those with a National Institutes of Health Stroke Scale (NIHSS) score ≥6. EVT is reasonable for disabling dominant/proximal M2 occlusions with favorable imaging (green pathway), whereas selective EVT may be considered in carefully chosen DMVO cases—across all territories—when patients have clearly disabling deficits, good baseline function, substantial salvageable tissue, and favorable vascular anatomy (teal pathway). LD indicates limited data; NR, nonrandomized; and R, randomized.

ensure that endovascular therapy is utilized in those medium/distal occlusion strokes where it can make a meaningful difference while avoiding potential harm or futile intervention in cases where evidence and experience suggest minimal benefit. We anticipate that as the field learns from these recent trials and addresses their gaps, future updates to these recommendations will refine our ability to improve outcomes for patients with MeVO strokes. Future studies should use rigorous patient selection criteria to minimize selection bias and allow the use of various EVT techniques, such as the new generation of aspiration catheters, adjustable stent retrievers, and intra-arterial thrombolysis.

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