OPEN ACCESS Freely available online

ISSN: 2329-6925
Journal of Vascular Medicine & Surgery

Perspective

Carotid Revascularization in the Age of Optimal Medical Therapy

Yuzhen Xu*

Department of Vascular Surgery, Shandong First Medical University, Taian, China

DESCRIPTION

The management of carotid artery stenosis has evolved significantly over the past three decades, transitioning from an era of surgical dominance to one characterized by procedural options and increasingly effective medical therapy. As we navigate this changing landscape, vascular specialists face complex decisions regarding the optimal approach to stroke prevention in patients with carotid disease.

The foundation of our evidence base for carotid intervention was established by landmark trials including NASCET and ECST, which demonstrated clear benefit of Carotid Endarterectomy (CEA) over medical therapy for symptomatic patients with high-grade stenosis. The ACAS trial subsequently extended these findings to asymptomatic patients, albeit with a more modest absolute risk reduction. However, these pivotal studies were conducted in an era when "best medical therapy" consisted primarily of aspirin and rudimentary risk factor management, lacking the potent statins, modern antihypertensives, and comprehensive lifestyle interventions that define contemporary practice.

Recent epidemiological data reveal a striking decline in stroke incidence among patients with asymptomatic carotid stenosis managed with modern medical therapy alone. The annual stroke risk in medically managed patients has decreased from approximately 2-3% in earlier decades to 0.5-1% in contemporary cohorts. This reduction challenges the risk-benefit calculus that has traditionally supported prophylactic intervention, particularly for asymptomatic disease.

The emergence of Carotid Artery Stenting (CAS) as an alternative to CEA has further complicated decision-making. Multiple randomized trials comparing these modalities, including CREST, ICSS, and ACT-1, have demonstrated roughly equivalent outcomes for the composite endpoint of stroke, death, and myocardial infarction, though with differing distributions of complications. CAS generally carries a higher periprocedural stroke risk offset by lower rates of myocardial infarction and cranial nerve injury. These trade-offs necessitate an individualized approach that considers patient anatomy, comorbidities, and age.

Technological innovations continue to refine both surgical and endovascular approaches. The adoption of Transcarotid Artery Revascularization (TCAR) represents a hybrid technique that combines the advantages of direct carotid access with endovascular therapy while utilizing flow reversal to minimize embolic complications. Early registry data suggest promising results with reduced stroke rates compared to transfemoral CAS, particularly in high-risk anatomic scenarios. Similarly, advances in neuroprotection devices, stent designs, and embolic protection strategies continue to evolve for traditional CAS approaches.

Against this backdrop of evolving techniques and improving medical therapy, several ongoing trials seek to clarify the optimal management strategy. The CREST-2 trial is comparing CEA or CAS plus intensive medical management versus intensive medical management alone for asymptomatic patients. The ECST-2 study is evaluating revascularization versus optimal medical therapy for symptomatic and asymptomatic patients using a risk stratification model. The results of these trials will substantially influence practice patterns and guidelines in the coming years.

CONCLUSION

In the interim, vascular specialists face the challenge of making evidence-based decisions while acknowledging the limitations of our current knowledge. Several principles should guide contemporary practice. First, all patients with carotid disease should receive aggressive medical therapy including antiplatelet medication, high-intensity statin therapy, blood pressure optimization, smoking cessation, and diabetes management regardless of whether intervention is pursued. Second, symptomatic patients with significant stenosis (>50% by NASCET criteria) continue to derive substantial benefit from intervention, with the choice between CEA and CAS individualized based on anatomic and clinical factors. Third, patient selection for intervention in asymptomatic disease

Correspondence to: Yuzhen Xu, Department of Vascular Surgery, Shandong First Medical University, Taian, China, E-mail: xuyuzhen96@sdfmu.edu.cn

Received: 01-Jan-2025, Manuscript No. JVMS-25-28752; **Editor assigned:** 03-Jan-2025, Pre QC No. JVMS-25-28752 (PQ); **Reviewed:** 17-Jan-2025, QC No. JVMS-25-28752; **Revised:** 24-Jan-2025, Manuscript No. JVMS-25-28752 (R); **Published:** 31-Jan-2025, DOI: 10.35248/2329-6925.25.13.579.

Citation: Xu Y (2025). Carotid Revascularization in the Age of Optimal Medical Therapy. J Vasc Surg. 13:579.

should be discriminating, with consideration of factors that may identify higher-risk subgroups, including progressive stenosis, silent emboli on transcranial Doppler, intraplaque hemorrhage on MRI, or inadequate collateralization. Patients should understand the spectrum of options, the evolving evidence base, and the uncertainties in our current knowledge. The decision to intervene or observe must balance procedural risk, life expectancy, comorbidities, and patient preferences within the context of institutional outcomes. The evolution of carotid disease management exemplifies the dynamic nature of vascular practice, where technological innovation, medical advances, and refined patient selection continuously reshape our therapeutic approach. By embracing evidence-based flexibility rather than dogmatic adherence to historical paradigms, we can optimize outcomes for this common but consequential condition.