

Symptomatic Mild Common Carotid Artery Stenosis

- Clinical features, radiological findings, and outcome in patients with symptomatic mild carotid stenosis: a MUSIC study
- Plaque biomarkers from high-frame rate vector flow imaging and shear wave elastography in mild carotid stenosis
- In-Depth Carotid Calcification Morphometrics and Their Temporal Changes Are Associated with Cardiovascular Risk Factors in Patients with Recent Ischemic Event: The Plaque At Risk Study
- Plaque RADS Related to Cerebrovascular Event Risk with Mild/moderate Stenosis: a CARE II study
- The correlation analysis between Normalized Wall Index and cerebral perfusion in patients with Mild Carotid Artery Stenosis under 3.0T MRI
- Moderate-to-Severe Preoperative Anemia is Associated with Increased Postoperative Myocardial Infarction and Mortality in Patients Undergoing Transcarotid Artery Revascularization
- Symptomatic Severe Stenosis of Cavernous Internal Carotid Artery Stenting: A Case Report with Short Literature Review
- Neurovascular management of intracranial internal carotid artery dissection post-carotid endarterectomy: A case report of an innovative approach

Symptomatic mild stenosis of the **common carotid artery (CCA)** refers to **< 50% luminal narrowing** that nonetheless produces **neurological symptoms** due to **plaque instability, artery-to-artery embolism**, or **coexisting vascular disease**.

Although most mild CCA stenoses are asymptomatic, unstable plaques may still lead to **transient ischemic attacks (TIAs)** or **ischemic stroke**, particularly when associated with other risk factors.

Definition

- **Luminal narrowing:** < 50%
- **Symptomatic:**
 - Transient monocular blindness (amaurosis fugax)
 - Hemispheric TIA (e.g. hemiparesis, aphasia)
 - Ischemic stroke in anterior circulation
- **Causality** must be established (e.g., ipsilateral lesion, absence of cardioembolic source)

Pathophysiology

- Not due to hemodynamic compromise
- Mechanisms:
 - **Unstable or ulcerated atherosclerotic plaque**
 - **Artery-to-artery embolism**
 - **Inflammatory or radiation-induced vasculopathy**
 - **Coexistent carotid bulb or ICA disease**

Diagnostic Workup

- **Carotid Duplex Ultrasound:**
 - Confirms < 50% stenosis
 - May show plaque irregularity or ulceration
- **CTA/MRA:**
 - Evaluates plaque morphology
 - Rules out tandem or distal disease
- **Brain MRI:**
 - Identifies embolic infarcts in relevant territory
- **Echocardiography / ECG / Holter:**
 - Excludes cardioembolic causes

Management

Medical Treatment (Cornerstone)

- **Dual antiplatelet therapy (DAPT)** for 21–90 days (aspirin + clopidogrel)
- **High-intensity statin** (e.g., atorvastatin 40–80 mg)
- **Strict blood pressure control**
- **Lifestyle intervention:**
 - Smoking cessation
 - Mediterranean diet
 - Physical activity

Revascularization

- **Not indicated** for < 50% CCA stenosis
- Surgical/endovascular options reserved for:
 - Progression to moderate/severe disease
 - Associated high-grade internal carotid stenosis

Prognosis

- Stroke risk can be substantially reduced with aggressive medical therapy
- Periodic imaging follow-up is recommended (e.g., every 6–12 months)

Key Concepts

- Symptoms can arise from **unstable plaques**, not just critical narrowing
- Management is similar to **symptomatic internal carotid stenosis**, with the difference that revascularization is usually **not justified**

See Also

- [common carotid artery stenosis](#)
- [mild common carotid artery stenosis](#)
- [symptomatic carotid artery stenosis](#)
- [stroke prevention](#)

Prospective multicenter cohort studies

In a Prospective multicenter cohort study Kashiwazaki et al. Primarily from University of Toyama, Toyama published in the [Journal of Neurosurgery](#) to assess clinical and radiological features in patients with symptomatic mild (<50%) carotid stenosis and determine whether [carotid endarterectomy](#) (CEA) offers clinical benefit over best medical therapy (BMT). Intraplaque hemorrhage (IPH) was strongly associated with increased risk of recurrent cerebrovascular events. CEA significantly reduced both primary (ipsilateral ischemic stroke) and secondary endpoints compared to BMT during 2 years of follow-up ¹⁾

Review:

This study addresses an important clinical question often overlooked by traditional stenosis-centric guidelines: whether patients with *symptomatic* yet *mild* carotid stenosis benefit from surgical intervention. By stratifying patients based on plaque composition—particularly identifying IPH—the authors introduce a more nuanced understanding of stroke risk beyond luminal narrowing.

Strengths include a prospective multicenter design and robust imaging-based categorization of plaque vulnerability. However, the study suffers from non-randomized treatment allocation, with CEA or BMT decisions left to institutional discretion, introducing considerable selection bias. Additionally, the cohort is relatively small (n=124), and 2-year follow-up, though reasonable, may not fully capture long-term risks or durability of interventions. No details are provided on standardized imaging criteria or inter-rater reliability for plaque type classification.

Statistically, the multivariate Cox analysis identifies IPH as a significant independent predictor of recurrence (HR ~1.9), aligning with pathophysiologic expectations. CEA appears to offer substantial protective effect (HR ~0.18), though this may be confounded by patient selection. The authors correctly highlight that IPH should be integrated into future treatment algorithms.

Nevertheless, without a randomized design, these findings should be interpreted as hypothesis-generating. A well-powered randomized controlled trial (RCT) would be necessary to change clinical practice.

Final Verdict:

A valuable observational study that underscores the importance of plaque morphology in stroke risk. While suggestive, it lacks the rigor to drive immediate changes in treatment standards.

Takeaway for the Practicing Neurosurgeon:

In symptomatic patients with mild carotid stenosis, consider advanced imaging for IPH; presence of

IPH may justify discussion of CEA even at <50% stenosis.

Bottom Line:

Plaque vulnerability, especially intraplaque hemorrhage, trumps degree of stenosis in symptomatic patients—CEA may reduce stroke risk when IPH is present.

Rating: 6.5 / 10

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Kashiwazaki D, Chida K, Yoshida K, Yamada K, Morioka M, Maruichi K, Hori E, Akioka N, Takagi Y, Moroi J, Miyamoto S, Iwama T, Chin M, Kamiyama K, Wada K, Sakai N, Izumo T, Nishikawa Y, Mase M, Hosoda K, Takizawa K, Kobayashi E, Kubo M, Fujita A, Sugiyama T, Fujimura M, Yoshioka H, Kinouchi H, Kunieda T, Nishimura A, Yoshimura S, Shiokawa Y, Abe H, Kataoka H, Ogasawara K, Uno M, Sasaki M, Kuroda S. Clinical features, radiological findings, and outcome in patients with symptomatic mild carotid stenosis: a MUSIC study. J Neurosurg. 2025 Feb 21;143(1):285-295. doi: 10.3171/2024.10.JNS241185. PMID: 40601988.

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