Commentary on “Carotid Artery Stenting Will Replace Carotid Endarterectomy”

Peter H. Lin, MD

Since carotid artery stenting (CAS) was approved by the United States Food and Drug Administration for clinical application in 2004, this percutaneous procedure has become a treatment alternative in patients who are deemed high risk for endarterectomy. In contrast with many endovascular peripheral arterial interventions, percutaneous carotid stenting represents a much more challenging procedure because it requires complex catheter-based skills using the 0.014-inch guidewire system and a distal protection device. Moreover, current carotid stent devices predominantly use the monorail guidewire system, which requires more technical agility in contrast with the over-the-wire catheter system that is routinely used in peripheral interventions. This percutaneous intervention often requires balloon angioplasty and stent placement through a long carotid guiding sheath through a groin approach. Poor technical skills can result in devastating treatment complications such as stroke, which can occur due in part to plaque embolization during the balloon angioplasty and stenting of the carotid artery. Because of these various procedural components that require high technical proficiency, many early clinical investigations of CAS, which included physicians with little or no carotid stenting experience, have resulted in alarmingly poor clinical outcomes.1-3

McCormick and associates provided a broad perspective that examined several large clinical studies on carotid occlusive disease management. Although the authors boldly titled this article as “Carotid Artery Stenting Will Replace Carotid Endarterectomy,” virtually little or no convincing evidence was provided to illustrate why CAS would replace carotid endarterectomy (CEA). The authors cited that CEA has been considered a treatment of choice in both symptomatic or asymptomatic patients on the basis of large randomized trials such as the North American Symptomatic Carotid Endarterectomy Trial (NASCET) and the Asymptomatic Carotid Atherosclerotic Study (ACAS).4,5 McCormick et al underscored the stringent inclusion criteria of these trials, including patients aged younger than 79 years old and exclusion of those with significant medical comorbidities, as potential limitations in these trials. As a result, they noted that the beneficial outcome of CEA conducted in these highly selective patients might not reflect the clinical practice environment in a real world.

To address the issue of whether CEA will be replaced by CAS, one must examine clinical evidence that directly compares the outcome of CEA and CAS in prospective, randomized–controlled trials. Dr McCormick only cited 2 such studies that randomized patients to these 2 treatment modalities: the Stenting and Angioplasty with Protection in Patients at High Risk for Endarterectomy (SAPPHIRE) and the Endarterectomy versus Stenting in Patients with Symptomatic Severe Carotid Stenosis (EVA-3S) trials.6,7 The first randomized trial comparing CEA and endovascular intervention was the Carotid and Vertebral Artery Transluminal Angioplasty Study (CAVATAS), which compared balloon angioplasty with CEA and found equivalency between the 2 treatment modalities with regard to neurologic complications and freedom from stroke at 3 years.8 The EVA-3S clearly showed that CAS resulted in poor clinical outcomes compared with CEA.