

## EDITORIAL

## The New 2023 European Society for Vascular Surgery (ESVS) Carotid Guidelines: The Transatlantic Perspective

The European Society for Vascular Surgery (ESVS) 2023 Clinical Practice Guidelines on the Management of Atherosclerotic Carotid and Vertebral Artery Disease<sup>1</sup> is a comprehensive document covering 14 sections and differing in principle from the Society for Vascular Surgery (SVS) 2021/2022 Clinical Practice Guidelines, which are divided into two separate documents. One document is entitled Clinical Practice Guidelines for Management of Extracranial Cerebrovascular Disease, where five specific questions/topics were selected based on the PICO (population, intervention, comparison, and outcome) framework and clinical dilemmas encountered by surgeons on a daily basis.<sup>2</sup> These were compiled into one concise document to satisfy the clearing house of clinical practice guidelines. The SVS writing committee drafted a second document to provide the implementation details and facilitate adaption and operationalisation of their recommendations and it was titled The SVS Implementation Document for Management of Extracranial Cerebrovascular Disease.<sup>3</sup>

The 2023 ESVS Guidelines have been extensively revised with several new sections, including: management of free floating thrombus, carotid webs, carotid interventions in patients on anticoagulants, asymptomatic patients with  $\geq 50\%$  carotid stenosis associated with atrial fibrillation, and timing of intervention in patients with acute ischaemic stroke treated with thrombolysis. There were 14 new recommendations under Class I, 14 under Class II Level A, seven under Class II Level B, and three under Class III. They also added 14 unanswered questions from the 2017<sup>4</sup> guidelines, such as: “Does Asymptomatic Carotid Stenosis (ACS) cause cognitive decline and can this be reversed by carotid intervention?”, “What is the relevance of new DW-MRI lesions after carotid interventions and do these lesions lead to a higher rate of recurrent stroke?”, and “Are there any high risk patients for carotid endarterectomy (CEA) who should preferably be treated with carotid artery stenting (CAS) or vice versa, etc?”

The following were also noted under specific sections:

**Comprehensive Medical Therapy:** A section on lipid lowering therapy was added along with several new/graded recommendations (e.g., patients with  $> 50\%$  ACS who are intolerant of aspirin, clopidogrel 75 mg daily should be considered). If patients are intolerant of both aspirin and

clopidogrel, dipyridamole should be considered. In ACS patients who are undergoing CEA, low dose aspirin rather than high dose aspirin (75/325 mg daily) is recommended. In patients with ACS and dyslipidaemia who are intolerant of statins, with or without ezetimibe, PCSK9 inhibitors should be considered.

**Management of ACS/Analysis of Stenosis Severity:** Two meta-analysis were added, one showed that patients with 80 – 99% ACS were more likely to develop late ipsilateral stroke vs. patients with  $< 80\%$  stenosis.<sup>5</sup> The second meta-analysis<sup>6</sup> concluded that increasing stenosis severity is an important predictor of late ipsilateral transient ischaemic attack (TIA)/stroke, but only with concurrent high risk features.

**Management of Symptomatic Carotid Artery Disease Sections:** Seven new recommendations were added, including symptomatic patients who are not candidates for CEA/CAS and where short term aspirin plus clopidogrel for 21 days, followed by clopidogrel or long term aspirin and dipyridamole was recommended (Class I Level A). Also, in recently symptomatic carotid stenosis patients who are not being considered for CEA/CAS and are intolerant of aspirin and clopidogrel, it is recommended that they be started on a regimen of dipyridamole or ticagrelor monotherapy (Class I Level B).

Other new recommendations in symptomatic carotid stenosis patients who do not reach their lipid target on maximum doses of the statin, ezetimibe (10 mg daily is recommended [Class I Level B]), and for patients who are intolerant or not achieving the target low density levels on statins, with or without ezetimibe, additional alternative therapy with PCSK9 inhibitors should be considered. A meta-analysis of 30 day outcomes in ten randomised controlled trials comparing CEA vs. CAS was also noted.

Although extensive transcerebral artery revascularisation (TCAR) coverage was included in the SVS implementation document, the ESVS document included a brief note and indicated that, while TCAR has emerged as a promising new CAS technology over the past few years, only one registry has reported outcomes stratified for delay from symptom onset to TCAR. Higher hospital rates of stroke/death have been reported in patients undergoing TCAR, stratified for timing after the most recent neurological event, when TCAR in  $< 2$  days vs. TCAR in 3 – 14 days or  $> 14$  days is compared.

**Timing of Intervention after Thrombolysis/Mechanical Thrombectomy:** A new recommendation was added for patients with acute ischaemic stroke due to symptomatic  $\geq$

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50% stenosis who received intravenous thrombolysis, when delaying CEA or CAS by six days following completion of thrombolysis should be considered. Similarly, in patients with acute ischaemic stroke undergoing intracranial mechanical thrombectomy with a tandem 50 – 99% carotid stenosis associated with a small area of ipsilateral infarction, synchronous CAS may be considered in the presence of poor antegrade internal carotid artery flow or poor collateralisation via the Circle of Willis.

**Patients with Near Occlusions:** A new unique therapeutic flowchart summary was added. A new recommendation for patients with carotid near occlusion and distal vessel collapse and recurrent carotid symptoms, despite best medical therapy, when CEA/CAS may be considered only after a multidisciplinary team review.

**Management of Free Floating Thrombus:** Three new recommendations were added: for patients presenting with recent carotid symptoms and evidence of free floating thrombus, therapeutic anticoagulation is recommended. In patients with recent carotid symptoms and free floating thrombus, who develop recurrent symptoms while receiving anticoagulation, surgical or endovascular thrombectomy may be considered. Meanwhile, in patients with recent carotid symptoms and evidence of free floating thrombus, intravenous thrombolysis is not recommended.

**Management of Symptomatic Carotid Web/Ocular Ischaemia and Atrial Fibrillation:** When no other cause of neurological event can be identified, CEA/CAS may be considered to prevent future recurrent stroke. In patients with confirmed ocular ischaemia syndrome and  $\geq 50\%$  ipsilateral carotid stenosis, CEA/CAS should be considered to prevent further ocular ischaemia.

Two new recommendations were added for treating TIA or moderate stroke in the presence of newly diagnosed or known atrial fibrillation associated with  $\geq 50\%$  carotid stenosis, when a comprehensive neurovascular workup is recommended to determine whether urgent carotid revascularisation or anticoagulation therapy is indicated.

**CEA Closure Recommendation:** It is interesting to note that the ESVS guidelines were similar to the SVS recommendations, in that they felt that patients undergoing conventional CEA should have routine patch closure rather than primary closure (Class I, Level A).

**CAS Consideration:** Two new recommendations were added regarding pre/post-percutaneous transluminal angioplasty (PTA) stenting, where a balloon diameter of  $< 5$  mm is to be used in patients undergoing CAS if pre-PTA is planned. Post-PTA is not recommended when the residual stenosis is  $< 30\%$ , in order to reduce haemodynamic instability.

In summary, this is a comprehensive document (629 references) of clinical practice guidelines on the management of atherosclerotic carotid and vertebral artery disease, and the authors are to be commended for a job well done.

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