Carotid Endarterectomy: Current Guidelines and A Cadaveric Study

M. Burhan Janjua, MD¹, Andre Thomas, BS¹, Vibhav Bansal, MD², Alexis Hayne, MS², Steven Hwang, MD³

Division of Neurological Surgery¹, Division of Interventional Neurology²
Mercy Health Hospital, Rockford IL
Department of pediatric neurosurgery⁴, Shriners Hospital for Children
Disclosures

- Nothing to disclose
Introduction

- Carotid endarterectomy (CEA) has been an established surgical technique for restoration of blood flow to the cerebrum in patients with carotid artery stenosis thereby reducing the risk of subsequent stroke

- There appear to be a desperate need to determine the efficacy of stroke prevention in asymptomatic and symptomatic patients with internal carotid artery (ICA) stenosis

- Authors have studied current guidelines for the carotid endarterectomy in detail
Methods

• 2 cadavers underwent bilateral neck dissections (4) in order to study the vascular neck anatomy in detail

• The surgical technique of CEA has been described step by step for easy learning and reproduction in the real setting

• Detail literature review has been performed utilizing PUBMED to study the current guidelines for the carotid endarterectomy versus stenting procedure
Results

• Careful preoperative review of the neck imaging is vital to discern the vascular anatomy and the contours of the plague. Intraoperative EEG or Transcranial Doppler for MCA drop in > 50% velocity can help to determine the need for intraoperative shunting, alternatively, shunting before plague removal can obviate the monitoring

• Careful neck dissection steps have been discussed in detail. Meticulous neck dissection helps to decrease the intraoperative cranial neuropathy

• Current guidelines for CEA are patients with symptomatic carotid occlusion (70-99%) within 2 weeks of symptom onset, and maybe considered in occlusion (50-69%)
Results

• CEA is beneficial in cases of non-disabling symptoms, no tandem stenoses, and high-grade stenosis, and in asymptomatic patients with stenosis of (60-99%) with life expectancy > 5 years with < 3% risk of perioperative stroke

• CEA can be deferred with contralateral asymptomatic carotid occlusion, disabling stroke, hemodynamic instability, and contralateral laryngeal palsy. Patients with the cardiac comorbidities are risk factors for adverse events after CEA. Conversely, stable (homogeneous) atherosclerotic plaque with clear contour and no ulceration is optimal for carotid artery stenting

• Carotid artery stenting (CAS) is preferred in symptomatic carotid occlusion (50-99%) with multiple comorbidities, tracheostomy, and patients with prior neck radiation or dissection
Conclusions

• CEA is efficacious for the symptomatic ipsilateral, and the contralateral carotid artery stenosis

• Clear anatomical landmarks and meticulous neck dissection is helpful for clear access and to avoid cranial neuropathy

• Patients with radiographic contralateral occlusion, multiple comorbidities, poor cardiac reserve, and disabling stroke are not favorable for the CEA