DEBATE: Many Asymptomatic Carotid Stenosis Patients Benefit from CEA and CAS: Which Ones?

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Introduction:
Mechanical repair of the carotid artery is the only proven effective means of stroke prevention among those with significant carotid stenosis. Although medical management serves as an adjunct and has benefits, it is not an acceptable replacement for mechanical repair. Carotid repair with CEA and in some cases CAS, is appropriate in selected patients with significant asymptomatic carotid stenosis. Carotid endarterectomy (CEA) has been compared with medical management of patients with asymptomatic carotid stenosis of >60% in two major studies and has demonstrated a reduction in stroke risk by about half over 5 years.(1,2) Although CAS in asymptomatic patients outside of clinical trials remains limited and controversial, in the SAPPHIRE study, CAS performed as well as CEA in stroke risk reduction in high-risk patients. CAS for asymptomatic carotid stenosis is appropriate in patients at high medical and anatomic risk for surgery.(3) The purpose of this abstract is to summarize the current rationale for carotid repair as a treatment option in patients with asymptomatic carotid stenosis and specify subgroups of patients that may benefit from repair.

Medical Treatment versus Mechanical Repair of Asymptomatic Carotid Stenosis:
Asymptomatic carotid stenosis is a major public health issue. Population based studies have found >50% carotid stenosis in 7% of men and 5% of women over the age of 65. Among those with prior MI or PVD, 20% to 30% will also have >60% carotid stenosis. Approximately 30% of strokes are due to carotid stenosis. One may argue that asymptomatic carotid stenosis is best treated medically. However, it must be pointed out that there are no data in asymptomatic patients with critical carotid artery stenosis showing medical therapy is as effective as mechanical repair. In fact, where mechanical repair plus medical management has been compared with medical management alone, the former approach was more efficacious. The annual risk of stroke with medical therapy for asymptomatic carotid stenosis ranges from 1.0% to 3.3%. In both the ACST and ACAS Trials the absolute benefit of carotid surgery was approximately 6% at 5 years, compared to medical management. These trials may also have understated the benefits of repair by including those with stenosis less than 80% diameter reduction. The risk of stroke and death with mechanical repair was 3% or less in the ACAS and ACST studies, and in both of these studies the benefits of repair were better than with medical management alone. In addition, there are some specific groups of symptomatic patients that are at higher annual risk of stroke. These include patients with silent cerebral infarcts on cerebral imaging, soft plaque with a low gray scale median, recent progression of degree of stenosis, and patients with evidence of emboli on TCD. There are data to suggest that mechanical repair of carotid stenosis combined with medical management provides more risk reduction than medical management alone. No one knows what the annual risk of stroke and death is in patients at high risk for endarterectomy who are treated medically. However, many of those with anatomical high risk for CEA also have relatively normal life-expectancies (eg; after cure of neck cancer) and might benefit from the option of CAS.
What Is the Risk of Carotid Repair In Asymptomatic Patients?:
Patients with significant but asymptomatic carotid stenosis, have an annual stroke risk which probably does not go away. Some may argue that the annual risk is low. The data available is inadequate to know the annual stroke risk with certainty, but may be as high as 3-5% per year and much higher than the one-time perioperative risk of repair. Although there may some day be a medication or a combination of medications that resolves that risk, there is no evidence that we have that now. CEA has been shown to be safe in standard risk patients in both the ACAS and the ACST. Perioperative stroke and death rates of 3% or less have been demonstrated in these studies and others. In more modern studies, especially combined with better medical management, the risk of stroke and death may be even lower. In the CREST Trial, the perioperative risk of stroke and death was 1.4% for CEA and 2.5% for CAS.(4)

Conclusion:
Repair of the carotid artery using either CEA or CAS is the only proven effective means of stroke prevention among those with significant carotid stenosis. Although medical management has benefits, it is not a replacement for repair. CEA has been compared with medical management of patients with asymptomatic carotid stenosis of >60% and has demonstrated a reduction in stroke risk by about half over 5 years. CAS for asymptomatic carotid stenosis is appropriate in patients at high risk for surgery.

References:
2. ACAS. JAMA 273;1995.
3. SAPPHIRE. NEJM 351;2004