ABSTRACT: Carotid artery stenosis (CAS), a narrowing of the carotid arteries due to the development of atherosclerotic plaques, has been associated with an increased risk of stroke, and has been hypothesized to have a negative impact on cognition, although the latter is still not certain. It has been shown that carotid endarterectomy (CEA) reduces the risk of stroke in patient’s with severe carotid stenosis, but the impact of CEA on cognition is still unclear. In this work, we investigate the impact of CEA on the brain using diffusion MRI to identify structural changes, functional MRI to identify changes in functional connectivity, and cognitive testing to determine changes in cognition. While the results are preliminary, and the cohort small, our findings suggest that improved cognition following CEA may be related to functional and structural changes in the brain.