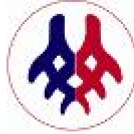

Vascular Specialists of Central Florida, Inc.

Strategies for Stroke Prevention

by Charles S. Thompson, M.D.

Stroke is a devastating event, affecting 500,000 people per year. Indirect costs related to the care of stroke victims are estimated to be one of the largest healthcare expenditures in the nation. Aggressive treatment of hypertension, better medical management of atherosclerotic diseases, and direct prevention through the use of carotid endarterectomy has resulted in a decline in stroke mortality, while stroke morbidity has remained constant. The incalculable morbidity to the affected individual adds further to the magnitude of the problem. Prevention of stroke remains the most plausible alternative, and that method of prevention is tailored to the patient's individual heath requirements. Options in treatment include carotid artery endarterectomy and carotid stenting.

Carotid artery surgery was first performed in the late fifties, but became popular in the seventies and eighties largely due to the increase in studies showing the benefit of endarterectomy for stroke prevention. Similar results were obtained when the studies were repeated in the large prospective randomized trials comparing endarterectomy to medical therapy in North America and Europe. As the procedure evolved the most well known clinical trials showed a relative stroke risk reduction of 53% in asymptomatic patients with significant arterial stenosis when compared to a control population receiving the best medical therapy. For patients with significant symptomatic carotid arterial stenosis, a more dramatic relative stroke risk reduction of 71% was demonstrated with surgery. The latest North American Symptomatic Carotid Endartectomy Study surprisingly showed a relative mortality risk reduction of 58% in favor of carotid endarterectomy. Applied appropriately, carotid endartectomy has produced a dramatic reduction in the stroke rate in asymptomatic and symptomatic patients with significant arterial stenosis. Few surgical procedures have been studied as intensely as carotid artery endarterectomy and few have as consistently proven their utility.

Advances in minimally invasive procedures in the eighties and nineties have resulted in the application of endovascular surgical techniques to the treatment of carotid artery diseases. Originally, methods of carotid stenting where fraught with difficulty due to procedural stroke rates as high as 10% and 15%, compared to surgical procedural stroke rates of 2%. The use of cerebral protection devices, including balloons and filters, which serve to trap stroke-producing emboli, lowered the stroke rate in patients undergoing carotid stenting. The most recent carotid stent trials compared carotid artery stenting using cerebral protection devices to carotid endartectomy. Those patients deemed "high surgical risk" were randomized to receive either a carotid stent, or carotid endarterectomy. In these selected patients, 30-day mortality, stroke rates and cardiac morbidity was comparable between treatment arms. These studies established carotid artery stenting with cerebral protection as a viable treatment option for patients who are at high risk for surgical carotid endartectomy. Recent FDA approval for usage and reimbursement will make the procedure obtainable without enrollment in a sponsored study for this subgroup of patient.

Each procedure has its dark side, and carotid stenting is no exception. Clearly, the procedure is meant to

augment choice in cerbrovascular intervention and this is just one of several vascular surgical techniques that can be used for stroke prevention. But no one procedure should be exclusively used for the treatment of carotid diseases. Witness the fact that difficult anatomy may determine the actual intervention, be it carotid stenting or carotid surgery, regardless of the actual physiologic risks involved. A peripheral vascular specialist best determines the most appropriate mode of treatment. The vascular specialist may make his decision on the type of treatment using patient physical exam, ultrasonography, contrast angiography and magnetic resonance angiography. Based on a variety of factors, including patient comorbidities, plaque characteristics, and vascular anatomy, the most appropriate treatment course may be selected.

Application of appropriate technologies to the prevention of stroke will continue to decrease stroke incidence, improve mortality, and may decrease stroke morbidity. Aggressive screening and evaluation may allow physicians to find potential stroke victims earlier, and newer treatments may result in overall better outcomes.

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