



(From left) John Pile-Spellman, MD, FACR, interventional and endovascular neuroradiologist at NSPC, and Jonathan Brisman, MD, a board-certified neurosurgeon at NSPC

Neurological Surgery PC Specialists Offer a Less Invasive Alternative for Stroke Treatment and Prevention

By Laura Jane Walker

FOR PATIENTS WITH SYMPTOMATIC AND ASYMPTOMATIC CAROTID ARTERY DISEASE, CAROTID STENTING IS A MINIMALLY INVASIVE ALTERNATIVE TO CAROTID ENDARTERECTOMY THAT REDUCES THE RISK FOR STROKE AND TRANSIENT ISCHEMIC ATTACK.

CAROTID STENOSIS, THE narrowing of the inner wall of the carotid artery typically caused by atherosclerosis, can remain asymptomatic until the carotid artery is severely narrowed. When stenosis occludes the artery, patients can suffer a number of adverse events, including stroke. But because the risk of stroke is partly assessed by the presence of symptoms — and partly by the degree

of stenosis present on imaging studies — physicians with expertise in treating or managing the condition are a critical part of the care team for patients with carotid stenosis who are at risk for stroke.

In Neurological Surgery PC (NSPC), referring physicians have ready access to leaders in the fields of endovascular and neurovascular medicine and surgery. Jonathan Brisman, MD, a board-certified neurosurgeon at NSPC who specializes

in cerebrovascular and endovascular conditions, and John Pile-Spellman, MD, FACR, interventional and endovascular neuroradiologist at NSPC, each have decades of experience treating carotid stenosis and have published extensively on the subject.

Such expertise is a boon because there are a number of treatment options for carotid stenosis, each tailored to accommodate specific risk factors. Drs. Brisman



Jonathan Brisman, MD, and John Pile-Spellman, MD, FACR, review images of a patient referred for carotid stenosis evaluation and possible stenting.

“I’ve been treating patients using endovascular methods for more than 30 years. I have extensive experience with all aspects of this condition. I consult with my surgical partner Dr. Brisman to ensure all indications are taken into consideration and that each patient receives the most appropriate treatment.”

— John Pile-Spellman, MD, FACR, interventional and endovascular neuroradiologist at NSPC

and Pile-Spellman provide the spectrum of carotid stenosis treatments, including carotid artery stenting to prevent stroke or transient ischemic attacks (TIAs) in patients with symptomatic or asymptomatic carotid stenosis.

“Many people develop carotid artery stenosis, and the more occluded the artery is, the more likely it is that a piece of plaque will break off and cause a cerebrovascular event,” Dr. Brisman says. “Once patients suffer one such event, they’re more likely to experience a second or third. Before surgery, we carefully weigh each procedure’s risks and benefits. We strongly recommend surgical intervention for patients who have already experienced a stroke or TIA, or those whose carotid artery is more than 75 percent stenotic. Age also factors heavily into the care plan.”

In general, surgery is recommended for symptomatic patients who have narrowing greater than 50 percent. Patients who are asymptomatic are recommended for surgery if they have narrowing greater than 75 percent and are 75 years old or younger.

A Snapshot of Risk

Although carotid stenosis commonly affects the elderly, a number of risk factors — including high cholesterol and/or blood pressure, smoking, diabetes, obesity, metabolic syndromes, and insulin

WARNING OF FUTURE EVENTS

NARROWING OF THE carotid artery leads to symptoms related to loss of blood flow to the brain and eye. Severe stenosis increases the risk for pieces of plaque to break off and cause a temporary blockage, which can lead to transient ischemic attack (TIA), a cerebral vascular accident or transient monocular blindness (TMB).

“Often, when a patient experiences a transient event, it may be associated, through imaging confirmation, with a stronger event, and not just a TMB or TIA event,” says John Pile-Spellman, MD, FACR, interventional and endovascular neuroradiologist at Neurological Surgery PC. “When patients begin to have these events, the chance of them experiencing a secondary event in the following weeks is very high. It’s during this early period that treatment, such as endarterectomy or carotid stenting, should be considered. The longer the delay in treatment, the less benefit of the procedure.”

According to the CDC, TIAs are warning signs for future events. More than one-third of people who suffer a TIA will have a stroke within one year without treatment, and 10 to 15 percent of people who have a TIA will have a stroke within three months of the first event.



Dr. Brisman auscultates a patient for carotid bruit, a sign of significant carotid stenosis.

“We’re eager to help patients and other care providers prevent stroke. We also perform clot retrievals and treatment for embolic events, which distinguishes us from many other surgeons and practices in the area. Our goal is to promote optimal outcomes in all our patients by using best practices.”

— Jonathan Brisman, MD,
board-certified neurosurgeon
at NSPC

resistance — can increase the chances of developing stenotic carotid arteries. While medical management and lifestyle changes can mitigate some risk factors, surgical intervention may be necessary to open the artery and reduce the risk of cerebrovascular events.

Stroke is responsible for nearly one out of every 20 deaths, or 130,000 deaths annually, according to data compiled by the CDC. One out of six people will experience stroke in his or her lifetime. An estimated 795,000 people experience a stroke every year, and of that number, about 185,000 strokes occur in people who’ve had a previous stroke. Additionally, the financial burden of stroke weighs heavily upon healthcare entities and patients — strokes annually cost an estimated \$34 billion in costs for related services, medications for treatment and missed workdays, according to the CDC.

Symptomatic carotid stenosis is, by some estimates, responsible for 25 percent of all ischemic strokes. In a chapter included in *Surgical Management of Symptomatic Carotid Disease: Carotid Endarterectomy and Extracranial-Intracranial Bypass*, Dr. Brisman — who also co-edited the volume — provides evidence that endarterectomy can reduce the risk of stroke for symptomatic carotid stenosis. He also presents recent studies that show carotid angioplasty and stenting to be an effective treatment for patients who are at high risk for complications during carotid endarterectomy.

“Diseases such as chronic obstructive pulmonary disease [COPD] and emphysema put patients at higher risks for complications related to general anesthesia,” Dr. Brisman says. “For such patients, we would likely recommend carotid stenting.”

Dynamic Procedures

Once considered the gold standard for carotid stenosis treatment, carotid endarterectomy can also be used as a prophylactic measure against future strokes. During the procedure, surgeons make a small incision in the neck to remove plaque buildup from the lumen, or inner walls, of the carotid artery.

Carotid stenting is an alternative treatment for patients with symptomatic carotid artery disease. Typically,

patients who undergo carotid stenting have experienced a stroke prior to intervention, according to Dr. Pile-Spellman.

Before placing the stent, surgeons perform a carotid angioplasty. Local anesthetic is administered in the groin, where the catheter is inserted. Surgeons use real-time X-ray imaging to guide the catheter to the blocked artery and inflate the small balloon on the catheter’s tip to crush the plaque against the lumen, reestablishing blood flow. After the artery has been reopened, surgeons place a stent to prevent subsequent cerebrovascular events.

Both procedures lower the risk of stroke, or ischemic attack, and prevent future strokes.

Evidence-based Indications

Dr. Brisman’s research compares the efficacy of carotid endarterectomy and carotid stenting based on major clinical trials of each procedure. One major takeaway from the literature is that surgeons must be wary of a number of highly specific indications that can influence surgical outcomes for either intervention.

Carotid artery stenting is less invasive than carotid endarterectomy and can typically be completed in one to two hours. The fact that the procedure can be performed using local anesthesia extends a critical treatment option to patients who are contraindicated



Dr. Pile-Spellman discusses a treatment plan with a patient.

Dr. Brisman studies a patient's carotid angiogram prior to carotid stenting.



for endarterectomy. Patients who may be appropriate candidates for carotid artery stenting include patients who:

- + have suffered a mild stroke or one or more TIAs in the past six months and who present with a carotid artery narrowed by at least 50 percent

- + have asymptomatic stenosis greater than 75 percent and who have reasonable life expectancy

- + have low risk for complications related to stenting

- + are aware of the risks and benefits of stenting as opposed to endarterectomy

- + have a severe systemic illness, such as COPD or emphysema, and who may be at risk under anesthesia

- + have had a prior endarterectomy, spine or other neck surgery that makes an open procedure, such as an endarterectomy, a greater risk

- + have significantly poor intracranial collaterals that can make cross clamping during endarterectomy difficult

- + have tandem lesions in the distal internal carotid and proximal internal carotid

- + have occlusions that are difficult to reach surgically. Anatomical areas that pose contraindicative challenges for endarterectomy include those high up the neck, under the jaw or beneath the skull base.

- + have radiation-induced stenosis from prior radiation or a tumor in the area

- + take antiplatelet agents that cannot be stopped for carotid surgeries such as endarterectomies

The Need for Both Procedures

Major clinical trials support endarterectomy's efficacy at preventing future strokes in patients with symptomatic carotid stenosis, but the

DISTINGUISHED STROKE PHYSICIANS

PROVIDING THE FULL spectrum of stroke care requires a level of skill that can only be gained from decades of experience. At Neurological Surgery PC (NSPC), patients from Long Island and beyond have access to leaders in stroke treatment.

John Pile-Spellman, MD, FACR, interventional and endovascular neuroradiologist at NSPC, is board-certified in radiology and has more than 25 years of experience in diagnosing, managing and treating cerebral aneurysms, tumors and malformations, and stroke. He specializes in developing clinically relevant imaging and treatment paradigms, and his work in the field has earned him international recognition as a leader in interventional neuroradiology.

He served fellowships in neuroradiology at Massachusetts General Hospital and in interventional radiology at New York University Medical Center. Before his tenure at NSPC, Dr. Pile-Spellman served as vice chair of research and director of interventional MRI at Columbia University Medical Center.

Most recently, his honors include ranking as one of "America's Top Doctors" from 2001 to 2014, inclusion in *New York Magazine's* "Best Doctors in New York" list from 2002 to 2014 and receiving the Saddek Hilal Faculty Research Award from Columbia University.

Dr. Pile-Spellman is a member of the Alpha Omega Alpha Medical Honor Society and belongs to more than 20 professional organizations and societies. He is published in more than 160 peer-reviewed journals.

Jonathan Brisman, MD, board-certified neurosurgeon at NSPC, specializes in treating carotid stenosis, brain aneurysms and cerebral aneurysms, as well as in neuroendovascular surgery and microneurosurgical techniques.

He is the first endovascular surgeon on Long Island, and one of approximately 100 neurosurgeons trained in both neuroendovascular and microneurosurgical specialties. He currently serves as the Director of Cerebrovascular and Endovascular Neurosurgery at Winthrop-University Hospital and South Nassau Communities Hospital. He served fellowships in interventional neuroradiology at Roosevelt Hospital in New York City and in microvascular neurosurgery at Swedish Hospital in Seattle.

Prior to joining NSPC, Dr. Brisman served as assistant professor of neurosurgery at Seton Hall University and as director of cerebrovascular and endovascular services at the New Jersey Neuroscience Institute at JFK Medical Center in Edison.

He has published more than 37 articles in peer-reviewed neurosurgery journals, and his written work on topics including carotid artery disease, intracranial aneurysms, arteriovenous malformation, subarachnoid hemorrhage and vasospasm also appears in textbooks.

Dr. Brisman is a member of many neurological associations and serves on the editorial board of the *American Journal of Neuroradiology*. In recent years he was selected as a "Top Doctor: New York Metro Area" by Castle Connolly, and is one of two Long Island neurosurgeons listed in *New York Magazine's* "Best Doctors of 2013."

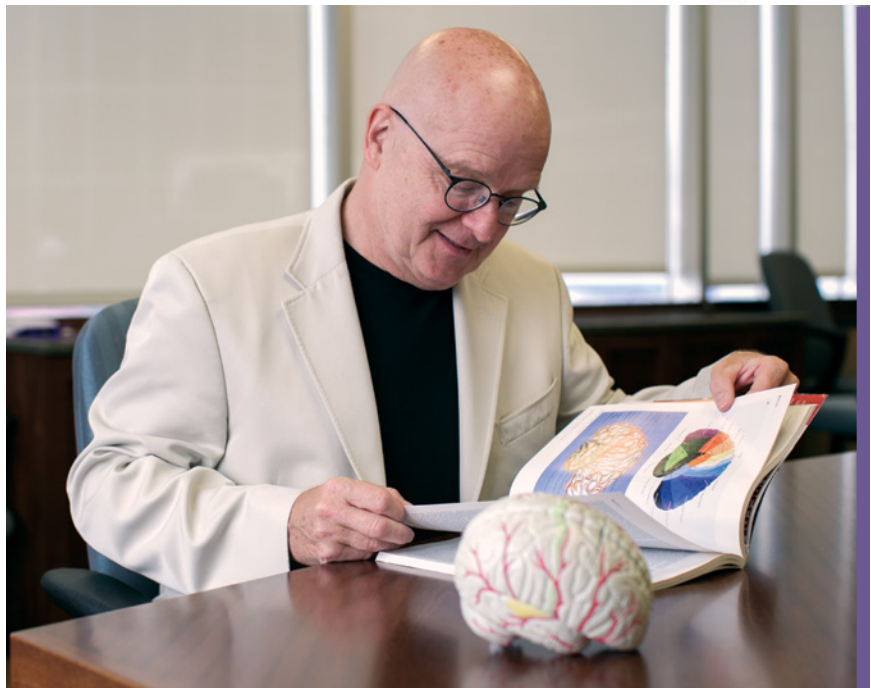
DEATH RATE RELATED TO STROKE IS IN DECLINE

IN LATE 2014, stroke dropped from the fourth leading cause of death in the United States to the fifth leading cause of death, according to statistics from the American Heart Association. This fall in rankings is a testament to the great strides being made in stroke response and treatment.

The decline in stroke-related deaths is most drastically seen in those younger than age 65, which has greatly reduced the years of potential life lost, according to the American Stroke Association. Control of hypertension is one of the major factors in reducing stroke risks.

Although the number of stroke-related deaths is declining, the fight to further reduce mortality rates continues. An aging population and increasing numbers of younger individuals being diagnosed with conditions, such as high blood pressure, that lead to stroke underscore the need for prophylactic care.

To prevent stroke and its related debilitating health effects, it is critical that patients who are at risk for stroke receive multidisciplinary care from a team of stroke experts. Physicians at Neurological Surgery PC are committed to partnering with primary care providers to create a comprehensive care team capable of delivering the full spectrum of stroke care.



Dr. Pile-Spellman in his office

body of literature supporting carotid stenting as an equally safe and effective prophylactic is growing.

The Carotid Revascularization Endarterectomy versus Stenting Trial examined the outcomes of symptomatic and asymptomatic patients who were randomized to either carotid endarterectomy or carotid angioplasty and stenting. The results of the trial showed that carotid stenting outcomes were slightly better for patients younger than 70, and endarterectomy outcomes

were slightly better for patients older than 70.

The study also illuminated differences in complication rates, which indicates that NSPC specialists do patients and referring physicians a great service by offering both endarterectomy and carotid angioplasty and stenting for the prevention of stroke.

To prevent complications related to either procedure, NSPC physicians evaluate each patient to determine which procedure is ideal.

“In terms of unfavorable outcomes, heart attack and stroke can result from both carotid stenting and carotid endarterectomy, which is why it is critical to weigh the risks and benefits of each procedure,” Dr. Pile-Spellman says. “But the risks involved in each procedure are different and patient-dependent. For example, carotid artery stenting carries a greater risk for stroke and lower risk for heart attack than carotid endarterectomy, so it’s critical to identify whether patients are at higher risk for cardiac or neurologic complications before surgery. If a patient has significant cardiac disease, and his or her anatomy is unfavorable for endarterectomy, then we’ll recommend carotid artery stenting.”

Members of the NSPC care team discuss a patient’s chart.



Individualized Care

Drs. Brisman and Pile-Spellman consult with patients to assess risk and discuss the potential benefits of any treatment for carotid stenosis. They assess each case individually and work in tandem to deliver the best results for patients. Cardiology consultation is a crucial piece of the care process for patients at NSPC.

“Each patient is evaluated for both procedures — we do not favor one intervention over the other, we provide the treatment that best addresses each patient’s condition and risk factors,” Dr. Brisman notes. “Because our expertise facilitates performing either intervention, we can look at each case objectively. Our low complication rates are a testament to our commitment to identifying the optimal procedure for every patient.”

Physicians begin by analyzing all appropriate imaging modalities to identify the most effective treatment plan. They review all studies that may show complementary or confirmatory information. Angiograms, CT scans, MRIs and ultrasounds are used to assist in the decision-making process for treatment and care.

Ultimately, the course of treatment is a collaborative decision made after Drs. Brisman and Pile-Spellman meet with patients to discuss the risks and benefits of each procedure. Each surgical intervention is performed collaboratively, so if complications arise, the collective expertise in the operating room facilitates smooth resolution.

“Both of these procedures can be efficacious, but the team aspect enhances the surgery’s success,” Dr. Brisman says. “Dr. Pile-Spellman pioneered neuro-interventional procedures, and his expertise is an invaluable component to our team. We perform stents together because they’re highly technical — our combined expertise helps ensure the success of our procedures.”

Learn more about Drs. Pile-Spellman and Brisman and the expert stroke care at NSPC by visiting nspc.com.

GIVEN ITS LONG history of safety and efficacy, carotid endarterectomy remains the first line of treatment for carotid stenosis. Carotid angioplasty and stenting may be an alternative for patients who are younger than 70 and who have particular conditions that would complicate endarterectomy.

CONTROLLING RISK FACTORS FOR STROKE

ONE OF THE first lines of defense for preventing stroke is to control a patient’s modifiable risk factors. According to the American Stroke Association, these include:

- + blood disorders, including sickle cell anemia
- + carotid artery disease or any other artery disease
- + diabetes
- + excessive alcohol consumption
- + heart disease or atrial fibrillation
- + high blood pressure — the leading cause of stroke
- + high cholesterol, which increases the risk of blocked arteries
- + illegal drug use
- + obesity or physical inactivity
- + tobacco use, which leads to damaged blood vessels
- + transient ischemic attacks, which are a major risk factor for stroke

Other risk factors, such as increasing age, gender, heredity and race, cannot be modified. The American Heart Association stresses the importance of evaluating risk for both stroke and coronary events. Cardiovascular risk assessment tools that align with the accepted prevention guidelines are available for physician use.



Members of the NSPC team