NEUROSURGERY TODAY

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Integrating Neurosurgery Brings Ready Access to Advanced Care in South Jersey

In well-structured health care delivery, top-level neurosurgery is no longer a siloed super-subspecialty, but is unified smoothly within a continuum of care for patients who are seen at any level for symptoms or suspicion of neurosurgical-related issues. Such cohesive structure gives patients ready access to the latest advances in a range of areas as broad as back and spine issues, cerebrovascular conditions *(see page 2)*, and brain neoplasms.

"Our ability to care for most needs at Virtua locations and seamlessly send patients to Penn for other or more-complex interventions works end to end to the benefit of our jointly shared cases," said neurosurgeon Patrick Connolly, MD, who helps to lead the partnership between Virtua and Penn Medicine in neurosurgery services. "Neuroscience specialists at Virtua provide a large majority of the care, with streamlined access to care at Penn, as needed, for the convenience of patients and referrers in South Jersey."

Enhanced Care Across Neuroscience Sectors

Key examples illustrate the spectrum of patient interventions optimized by this collaborative care model:

- **Spine surgery:** Lumbar conditions such as disc herniation or spondylolisthesis are often referred to the service by pain specialists when nonsurgical treatments are no longer effective. The team offers a full range of spine surgery, using microsurgery tools and advanced technology such as CT navigation.

- **Underdiagnosed neurological pathologies:** Normal pressure hydrocephalus (NPH) may cause gait instability and other symptoms similar to those in Parkinson's disease. And, as much as 10% of people with dementia attributed to other disorders may actually have NPH. The team works closely with referring neurologists, offering spinal pressure testing and shunt implantation to resolve NPH.

- **Brain tumors:** Skull base tumors such as meningiomas typically have a benign pathology, but can nevertheless become sizable and highly symptomatic. Under coordinated care of the program's partnered radiation oncology and neurosurgery services, these conditions yield to definitive treatment with stereotactic radiosurgery at Virtua.

An Established, Successful Partnership

The Virtua and Penn Medicine teams have advanced and refined their collaboration over seven years of partnership, with emphasis on relationships with referring community colleagues. Imaging transfer and treatment prioritization have been simplified, and the service is uniquely primed for critical neurosurgery referrals, including for stroke, supported by an in-depth, wrap-around care program.

For central nervous system cancers, oncologists in the two systems work together and can take advantage of referral to quaternary care at Penn Medicine, where radiosurgery includes the treatment with the Gamma Knife® for precisely focused therapy. Later this year, the Penn Medicine | Virtua Health Proton Therapy Center will begin treating patients on the campus of Virtua Voorhees Hospital.

"Having neurosurgery fully integrated and embedded in neurosciences across the systems isn't just an operational advantage. It's optimal for patients in South Jersey because it brings best practices and prompt but individualized care pathways via state-of-the-science protocols," said Dr. Connolly.

Neurosurgeons perform advanced procedures in the hybrid operating room at Virtua Our Lady of Lourdes Hospital.

For emergency neurosurgical referral, call the Virtua Transfer Center at 856-757-3284.
For neurosurgical consultation, call 856-644-4484.

Virtua Health

Virtua Health

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CASE REVIEW: Patient with Multiple Cerebrovascular Conditions Illustrates Benefits of Coordinated Care

Kathy Simon, 60, presented at Virtua Our Lady of Lourdes Hospital with left arm numbness and underwent a workup that demonstrated a severe stenosis of the right internal carotid artery causing 80% narrowing and right-side TIAs. The patient also had a family history of brain aneurysms, and angiography revealed an unruptured, two-lobed left middle cerebral artery aneurysm. Thus, her single admission yielded two diagnoses that could significantly affect her survival.

The Penn Medicine-Virtua team recommended a right carotid endarterectomy with the plan to concurrently complete a cerebral angiogram to better image her aneurysm. In the hybrid OR at Virtua Our Lady of Lourdes Hospital, open removal of plaque from the carotid artery was successful, and the cerebral angiogram—completed with limited use of contrast agent due to the patient's poor renal function—demonstrated the shape and size of the aneurysm. The team discharged Simon to home the day after surgery, and she made a full recovery from the carotid procedure.

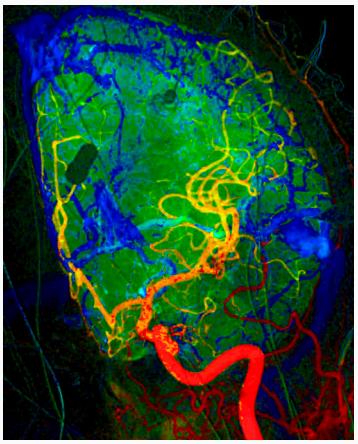
Having returned to her normal daily living, Simon considered options for addressing her brain aneurysm. The team discussed endovascular alternatives, including stents, coils, or a Woven Endobridge® implant (a nitinol mesh basket that fills the aneurysm and prevents embolization). The specialists also reviewed open surgical choices and, given Simon's age, aneurysm morphology, and inability to tolerate extensive iodinated contrast during an endovascular treatment, the team recommended microsurgical clipping. She tolerated the surgery well, and fluoroscopy before and after the procedure demonstrated complete exclusion of the aneurysm.

The team discharged Simon home after 48 hours. She made a complete recovery and is back to her previous life and activities.

"Stroke from carotid disease and aneurysm poses significant health burden to the public. In this case, we had a patient with a complex, dual condition and medical problems, where knowledge of family history once again proved important," said Penn neurovascular surgeon Omar Choudhri, MD, FAANS, who led the procedures."To her benefit, we were able to use complementary hybrid technologies and to sequence her care across our two health systems."

Endovascular surgeons and interventional radiologists on the Penn Medicine-Virtua team also provide comprehensive care for:

- Arteriovenous and cavernous malformations and dural fistulas
- Moyamoya disease
- Carotid artery emboli, including via mechanical thrombectomy for clot retrieval



Intraoperative color-flow angiogram post patient's aneurysm-clipping procedure.

They conduct most transvascular procedures by introducing catheters transradially (via the wrist), which is preferred by patients and is less invasive and less likely to cause complications than transfemoral access.