

Profile John D. Barr, M.D. and Giuseppe Ammirati, M.D.

Two neurointerventional radiologists join Scripps' hospitals to combat strokes and aneurysms with X-ray-guided surgery

By Arthur Lightbourn

They're called neurointerventional radiologists.

There are fewer than a dozen of them in San Diego County.

If you suffer a stroke, hopefully, within three hours of your first symptoms, you will be rushed, (and "rushed" is the operative word) to one of the county's 15 designated stroke centers and a neurointerventional radiologist will be available to perform an X-ray-guided, minimally invasive procedure to search for and destroy the offending blood clot before it causes even more damage.

Case in point: On July 17, an 18-year-old recent grad of Westview High was driving with her boyfriend from her home in Rancho Penasquitos to La Jolla for a relaxing day at the beach before starting college on a volleyball scholarship.

Suddenly, without warning, a blood clot lodged in the girl's brain. She was in the process of suffering a massive stroke.

She lost control of her car and as the vehicle swerved over the La Jolla Parkway median, her boyfriend, from the passenger seat, grabbed the steering wheel and guided the car safely to the side of the road where he called 9-1-1.

Paramedics rushed the stricken girl to the stroke center at Scripps Memorial Hospital La Jolla.

That's where Dr. Giuseppe Ammirati briefly entered her life.

The 35-year-old physician and his senior partner, Dr. John Barr, 49, had recently affiliated with Scripps La Jolla and Scripps Encinitas to re-establish the hospitals' neurointerventional program.

In fact, Ammirati had just picked up his badge from Scripps La Jolla to start work on Monday and was driving to Los Angeles when he received a call from the on-duty neurologist at Scripps saying they had just admitted a young woman who was in the midst of a massive ischemic stroke with a recent onset and could he come immediately.

Stroke is a "brain attack" that cuts off vital blood flow and oxygen to the brain.

An ischemic stroke occurs when arteries are blocked by blood clots or by the gradual build-up of plaque and other fatty deposits. A hemorrhagic stroke occurs when a blood vessel in the brain breaks leaking blood into the brain.

Doctors have a three-hour window of opportunity after the first stroke symptoms to begin removal of a clot blocking the blood flow to the brain. Two million brain cells die every minute during a stroke, increasing the risk of permanent brain damage, disability or death.

With the clock ticking since the onset of the stroke almost two hours earlier, Ammirati was set to begin the procedure.

"I accessed the femoral artery, which is the major artery in the leg, and guided a

catheter [a hollow flexible tube] up into the patient's neck and injected the blood vessels [with a contrast substance] on the side where we knew the problem was and identified the clot," he recounted.

"I then introduced a second and smaller catheter within the larger catheter to reach inside the brain at the level of the clot and injected medication which softens the clot as a first step and then advanced a suctioning microcatheter into the clot and a microblade to break up the clot and aspirate it into a vacuum."

As it turned out, there were two vessels that were blocked and had to be cleared.

The good news is: the procedure, which took almost five hours to complete, was a success and the patient has recovered, is playing volleyball again and plans to begin college in January.

The scary news is: had she not had the procedure, the stroke could have developed into a full-blown debilitating and possibly lethal stroke. In some cases, a stroke can be mitigated and the clot cleared with the clot-busting drug, tPA (Tissue Plasminogen Activator), administered through an intravenous (IV) line in the arm within three hours of the initiation of a stroke.

"Maybe 2 percent of people who have a stroke actually receive that drug," Ammirati's colleague, Dr. Barr estimated, "because so

few people make it into a hospital and get a CT scan and are ready to be treated within three hours."

When the intravenous drug doesn't work or doesn't work fast enough, the neurointerventionists get to work with catheters guided directly to the location of the blood clot.

Stroke is the third leading cause of death in the U.S., killing 144,000 people each year, and a leading cause of serious, long-term adult disability, according to the National Stroke Association.

We interviewed Drs. Ammirati and Barr, in the Schaezel Center medical library on the campus of Scripps La Jolla.

Barr describes their specialty as: "X-ray-guided, inside-out neurosurgery.... It's real surgery except it's done through catheters."

"The society we had for years was called the American Society of Interventional and Therapeutic Neuro-Radiology. A few years ago, I was the president of that," Barr said. "Two years ago, we changed the name because there are now neurosurgeons that are trained to do this and a handful of neurologists who are trained to do this as well. So now we call this the Society of Neurointerventional Surgery."

The two docs deal mostly with strokes and aneurysms.

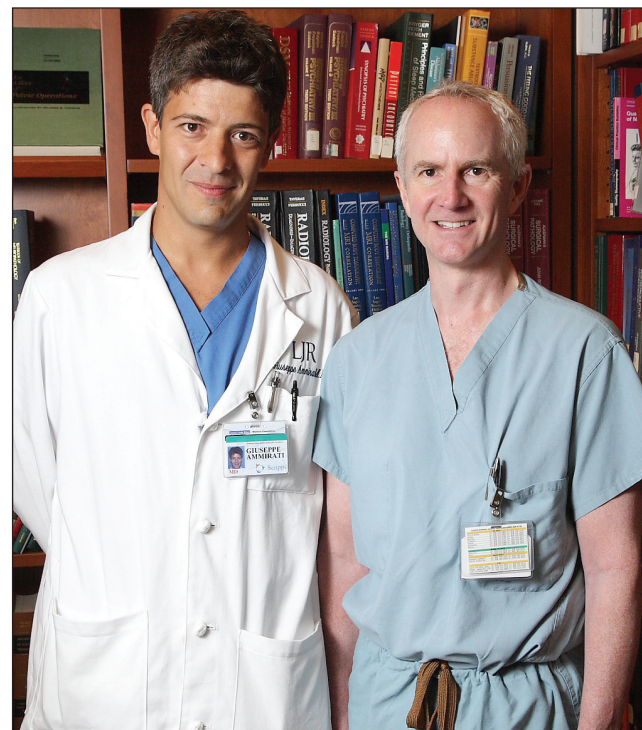
"An aneurysm," Barr explained, "is like a bubble on the blood vessel that doesn't belong there and there are weak spots that can rupture."

"Sometimes we can treat them before they rupture, if we find them. Other times, they rupture and a lot of those patients, about a third of them, just die on the spot. But the others are very ill and, if they survive the bleeding once, there is a very high risk, they'll bleed again; so the first thing to do is fix the aneurysm so it doesn't bleed again."

The choice is to fix the aneurysm by open surgery or by the less invasive neurointerventional surgery, using catheters to fill the aneurysm with soft coils.

"A landmark study with over 2,000 patients provided very solid evidence that aneurysms that can be treated with coils should be treated with coils and the patients do significantly better than with open surgery," Barr said.

Asked what distinguishes a good neurointerventionist, Barr said: "You need really good hand/eye coordination,



Giuseppe Ammirati, M.D. and John D. Barr, M.D.
Photo/Jon Clark

every bit as much as in open surgery. You need to be able to think in three dimensions.

"Part of my interest in this was I was an engineer as an undergraduate," he said. He has designed some of the instruments he works with and, as a consultant to various companies, helped develop various devices.

"I've trained a number of surgeons to do this and several of them commented to me they can't 'feel' anything much through the catheters and wires we use. They're not used to that. They're used to having their hands on things directly. And it's hard for them to conceptualize that things are happening four and a half feet away at the end of the catheter...."

"I've been doing this for 16 years now," he added.

Barr was born in Glasgow, Montana. His father was an Air Force career officer.

He earned his B.S. and M.D. degrees, and completed his residency in diagnostic radiology, from University of Virginia; followed by fellowships in vascular and interventional radiology, and diagnostic and interventional neuroradiology, at the University of Pittsburgh Medical Center.

He is a former assistant professor of radiology and surgery at Penn State University and staff physician with the Cleveland Clinic Foundation.

A local resident, Barr is divorced and father of two children.

What drew him to medicine? "I think it's endlessly fascinating and challenging." And eventually to radiology, "because every patient in the hospital gets some kind of imaging, so it's like a central repository."

At five-foot-eight, 145 pounds, Barr keeps in shape running. "I've done five marathons. I've done Big Sur four times. Actually, last night, in a fit of insanity, I signed up to do the 2010 Boston Marathon and seven days later the Big Sur."

Dr. Ammirati was born in Naples, Italy. His father is a neurosurgeon.

Coming to the U.S. in 1998 when he was 25, he earned his B.S. and M.D. degrees at the University of California Irvine in 2002. He completed his internship at the Albert Einstein Medical Center, Philadelphia, Pa.; a residency in diagnostic radiology at Temple University Hospital, Philadelphia; and a fellowship in interventional neuroradiology at UCSD.

Also a local resident, Dr. Ammirati is married and is the father of two pre-school children. He keeps in shape jogging, playing soccer and practicing martial arts.

Both doctors are certified by the American Board of Radiology.

Quick Facts

Name: John D. Barr, M.D.

Distinction: Senior physician of the La Jolla Neurointerventional Medical Group, affiliated with Scripps La Jolla and Scripps Encinitas.

Born: Glasgow, Montana, 49 years ago. The son of a U.S. Air Force officer, he grew up mostly in Virginia.

Education: B.S. and M.D. degrees, and residency in diagnostic radiology, University of Virginia; fellowships in vascular and interventional radiology, and diagnostic and interventional neuroradiology, University of Pittsburgh Medical Center.

Family: Divorced. Two daughters: Lauren, 17, soon to be 18, and Morgan, 12.

Interests: Marathon running. He has competed in five marathons and is training for the 2010 Boston Marathon.

Philosophy: "I guess the philosophy that I bring to the hospital is: 'Treat every patient like they are your mom or dad on the table.'"

Name: Giuseppe Ammirati, M.D.

Distinction: A neurointerventional radiologist with the La Jolla Neurointerventional Medical Group, affiliated with Scripps La Jolla and Scripps Encinitas

Born: Naples, Italy, 35 years ago

Education: B.S. and M.D. degrees, 2002, University of California Irvine; internship, Albert Einstein Medical Center, Philadelphia, Pa.; residency in diagnostic radiology, Temple University Hospital, Philadelphia; and a fellowship in interventional neuroradiology at UCSD.

Family: He and his wife, Eleni (nee Pentheroudakis) have been married six years. They have a son, Emanuele, 4, and daughter, Chiara, 2.

Interests: Jogging, soccer and martial arts

Philosophy: "Treat everyone the best you can and enjoy what you're doing while you're doing it."