Miller School Neurosurgeon’s Innovative Device Company Acquired by Medtronic

Transaction takes game-changing interventional catheter from bench to bedside

Drawing on his experience as an interventional neurosurgeon, Eric Peterson, M.D., developed an innovative catheter to improve access to the brain, licensed the technology from the University of Miami, and spun off a company that was recently acquired by Medtronic, one of the world’s largest medical device companies.
Eric Peterson, M.D.

“In my practice, I can treat several hundred patients a year,” said Dr. Peterson, chief of Endovascular Neurosurgery at the University of Miami Miller School of Medicine. “But by taking this device from bench to bedside, I can help thousands every month.”

Five years ago, Dr. Peterson recognized the advantages of using a transradial access (TRA) approach for interventional procedures on aneurysms and other problems with the blood vessels of the brain. At that time, neurointerventionalists would access the blood vessels of the brain by inserting a catheter into the large femoral artery in the thigh and thread it upwards past the heart to reach the brain.
However, cardiologists were using an alternative path to the heart through the smaller radial artery in the wrist, after trials showed the method to be safer for patients than the femoral approach. Dr. Peterson saw that the safety of the TRA approach could be leveraged for neurosurgery endovascular interventions, since although the target was different (brain vs heart), the access to the vascular system was identical.

**Patient benefits**

Dr. Peterson began using the TRA approach for neurointerventions, which had a number of benefits for patients, including lower complications, higher patient satisfaction, and better outcomes. But he saw that the femoral neurointerventional catheters, developed for the femoral approach to the brain rather than the radial approach, had limitations when used for the radial approach.

“The ideal TRA catheter needed to have the right combination of strength and flexibility to be guided past the heart and then make a nearly 90-degree turn upward to the brain,” Dr. Peterson said. It also needed to be smaller in diameter than catheters used for femoral access to accommodate the smaller radial artery.

In 2015, Dr. Peterson reached out to the U Innovation team, and applied for a grant from the Wallace H. Coulter Center for Translational Research.

“We were excited about funding this project through the Coulter Center,” said Norma Sue Kenyon, Ph.D., vice provost for innovation at the University of Miami and chief innovation officer of the Miller School. “Through the Coulter Center and
our Office of Technology Transfer, we help faculty take their ideas through the innovation ecosystem to the point where they can commercialize their technology to benefit the patient.”

Prototype development

Dr. Peterson received a $125,000 two-year Coulter grant to develop a prototype catheter designed specifically for transradial access.

“We built a novel radial model, tested femoral catheters to see where they were failing, and experimented with new materials to address those failures,” he said. “We were able to design a new catheter system with special catheter transitions that allowed it to easily navigate the difficult turn up out of the aorta from the arm and into the brain.”

After raising venture capital funding for the next phase of development, Dr. Peterson licensed the technology for two specialized TRA catheters to his startup company, RIST Neurovascular Inc., in 2018. As CEO of RIST, Peterson guided the further development of the catheters, built out regulatory and manufacturing infrastructure, and eventually submitted the catheter system to the FDA.

Last year, the company’s the Rist™ 079 Radial Access Guide Catheter and Rist™ Radial Access Selective Catheter received approval from the U.S. Food and Drug Administration (FDA). Shortly after FDA approval, Medtronic INC acquired RIST Neurovascular Inc. in August 2020. Terms of the acquisition were not disclosed.

A design first
The Rist 079 Radial Access Guide Catheter is the first catheter that has been specifically designed for neurointerventions using the radial artery pathway in the wrist, added R. Webster Crowley, M.D., chief of cerebrovascular and endovascular neurosurgery, Rush University Medical Center in Chicago, who performed the first-in-patient procedure in September 2020.

“The Rist Radial Access portfolio gives clinicians who perform neurovascular procedures the full spectrum of access and delivery devices that are optimized for the patient's condition and anatomy,” he said. “This should help improve the care we deliver to patients treated for neurovascular conditions.”

In a February press release, Medtronic said the catheters enhance its ability to serve patients who require interventional neurovascular therapy.

“We have completed more than 80 cases in our limited market release evaluation at 12 institutions and are very pleased with performance and physician feedback,” said Stacey Pugh, president of the Neurovascular Therapies business. The system has recently undergone a full market launch across the U.S., EU, and Canada.

Reflecting on the bench-to-bedside process, Dr. Peterson said, “This is a big win for UM Innovation. I hope it inspires other physicians to develop new medical devices and technology. As the actual providers of medical care, it’s the physicians who are best positioned to spot opportunities to help patients with innovative new solutions – but they don’t think they can do it. This shows that with the right environment you can
bring innovative ideas to market, and better care to patients around the world.”