



A first for North America, the robotic-arm neuro-angiogram at University Hospital generates 3D images to assist surgeons during surgery. Much of the original work in developing the device was done steps away at Robarts Research Institute.

Robarts-based technology first in North America

BY PAUL MAYNE

Steve Lownie was late for a press conference last week at University Hospital to announce a groundbreaking new robotic-arm neuro-angiogram - but he had a great excuse.

The neurosurgeon and associate professor in the Department of Clinical Neurological Sciences at the Schulich School of Medicine & Dentistry was in the operating room performing brain surgery - using the equipment he was to unveil at the press conference.

The first of its kind in North America, and only the third in use in the world, the Zeego, as it is called, allows surgeons to speed up treatment decisions in the operating room. Patients no longer need to be moved to another hospital area since imaging previously taken post-surgery can now be done during surgery.

The robotic-arm allows the floor-mounted Zeego to be spun around to provide numerous angles from which to take and view an x-ray, taking advantage of Robarts Research Institute technology to produce 3D images of the brain and cerebral blood vessels.

"By generating 3D images during surgery, the intra-operative neuro-angiogram machine helps patients experience a safer and more seamless surgery resulting



Steve Lownie

in less trauma and shorter recovery time," says Lownie.

The idea came to Lownie more than 10 years ago after a patient suffered a stroke following brain surgery. The patient was rushed to get an angiogram and it

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*Steve Lownie
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was determined a clamp used in surgery was too tight, restricting blood flow to the brain.

"From the moment the patient had the stroke to heading back to the operating room to fix the problem, it was about four hours," says Lownie. "I knew we needed to find a way to make things better, even before the patient wakes up. It's come a long way from the basement of Robarts into the

operating room."

A lot of the original work related to the \$2.1-million neuro-angiogram machine was completed at Robarts in the late 90s, part of a collaboration with Siemens Medical Systems and involving Lownie and fellow doctors Allan Fox and David Pelz.

"Good things are worth the wait, I'd have to say," says Lownie, adding the first time the new equipment was used earlier this year it was attention-grabbing. "The first time we used it I remember sitting in front of the monitor for like 20 minutes and being mesmerized by the images. It was a great thing to see."

Lownie says the possibility of 3D angiology was through the work of David Holdsworth, who pioneered technology now used in most angiogram machines around the world.

Along with Holdsworth, Lownie and Pelz continue to be involved in three-dimensional x-ray imaging for vascular disease therapy research at Robarts through a CIHR grant.

"Once that technology was developed, the idea was to see how to introduce it into the operating room environment," says Lownie. The latest initiative has already had an impact on patient care, with seven surgeries completed using the new machine since installation in January.