Business

Getting the perfect fit

Biotech firm uses catheter balloon technology to improve treatment of blocked blood vessels

by Philip Raphael
Staff Reporter

Achieving a precise fit, whether it be for a custom-tailored suit, laying tiles across a kitchen floor, or wedging that last paving block into a brick patio, each require the same preparation to ensure success—an accurate measurement.

And in the medical world, when it comes to treating blocked blood vessels, the same rule applies—measure well first, hopefully treat once.

A Richmond biotechnology development firm called Medical Ventures Corp. (listed as MEV on the TSX Venture Exchange) is doing just that with its latest piece of equipment called the Metricath System.

It uses a tiny inflatable catheter fed into a patient's artery to precisely determine how large a blood vessel, which has been occluded by the build up of plaque along its walls, should be when cleared. That is vital if the newly blocked artery requires a stent—a small cylindrical structure—to provide additional support for the vessel to remain open.

"It's like putting up the wrong sized scaffolding," explained Paul Geyer, Medical Venture's president and chief executive officer. "If it's not high enough, the house can come tumbling down because there's not enough to support it. And if it's too big, it's like the proverbial python eating the pig and the vessel walls can get stretched too far."

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> *Medical Ventures Corp.*

Either condition can create damage and require additional, costly treatment.

Originally, a cardiovascular surgeon would have to rely on their own judgement, basically using their eyesight, to determine what size of stent to place inside the blood vessel.

Later, an ultrasound machine (intravascular ultrasound), similar to those used to scan for pregnancy details, was employed to provide an image of the vessel. But that required interpretation by the equipment's operator to judge the right size.

Both methods sometimes allowed for imprecise measurements and, possibly future treatments to correct the situation of an improperly sized stent.

The Metricath System measures the correct size of the blood vessel by inserting the catheter into the patient's artery and filling a tiny balloon at its tip with a saline solution until it has been inflated enough to touch the sides of the vessel walls.

By measuring how much fluid has been pumped into the balloon, and how much back-pressure the system receives once filled, the machine undertakes a series of complex calculations to determine precisely how big the blood vessel is.

The whole process is performed by a simple one-touch operation that automatically calibrates the machine, then goes on to measure the blood vessel, leaving little room for error.

And the lasting results have shown to be impressive.

Geyer said that 10 years ago, balloon angioplasty, which uses a tiny balloon to compress plaque against the artery walls, and stent placement had a reoccurrence rate of about 30 per cent where a patient would revert back to their pre-existing condition when the "eyes-only" method was employed, Geyer said.

That dropped to 15 to 20 per cent as techniques at measuring arterial wall size improved.

Now, with the new Metricath System equipment, only five per cent of patients need any remedial procedures.

The technology was acquired when Medical Ventures purchased Vancouver-based Angiometrx Inc. That arm of the company will use its own facility to produce the hardware, while the single-use only catheters will be manufactured in the clean-room environment of Medical Ventures' Richmond headquarters.

Mark Patrick photo

Paul Geyer, president of Medical Ventures Corp., with the Metricath System, a device that measures the width of blood vessels.

In addition to the procedure being more accurate, it is less invasive than other methods—the patient undergoes brief procedure and can recuperate at home—it is far less expensive to purchase and treat patients.

Cost of the equipment is about $5,000 for the hardware — a fraction of the $100,000 for the ultrasound equivalent — and $350 for each catheter.

"If eyeballing the (blood vessel) size by a doctor is like walking, and getting ultrasound images is taking a ride in a Mercedes-Benz, we are offering them the Honda," Geyer said.

The Metricath System has been in development for the past three years and is set to make a breakthrough into the market place.

A second generation version of the Metricath System equipment is slated to feature the ability to measure an artery's size, and then proceed with treatment to open up the restricted blood vessel.

In the works is a third version which will be able to then deliver a stent to the treated area making the procedure much more convenient, and far less costly than repeated visits.

Last month, Medical Ventures signed a deal with Minneapolis-based Possis Medical Inc. to exclusively distribute the device in the U.S. market which is expected to make up roughly half of annual sales. Europe comes next with 30 to 40 per cent, and then the rest of the globe for the remainder.

Projections are to sell 350 of the machines in the first year, and between 3,000 to 8,000 of the accompanying catheters.

That should require hiring another fit workers at the Richmond plant to meet anticipated demand.

Due to a slower moving regulatory approval system, Canada will not likely get the machines in use for about another year.