



When size matters

Technology that precisely sizes an artery or implanted stent

Death and taxes aren't the only sure things in life. There is one other truism that can be relied upon in virtually any situation. Size matters.

Think about it. You wouldn't walk out of a clothing store wearing a pair of trousers a full six sizes too small. Nor would you maneuver your Hummer—I'm not talking about the H2 or its smaller sister, the H3—into a parking stall marked "for small cars only." And if you were a cardiologist or vascular surgeon, you sure wouldn't implant a stent into an artery if you knew the stent was too small and wouldn't be able to grab hold and do its job.

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Surprisingly, perhaps shockingly, that is what often happens. It was this reality that led Alexei Marko and Ian McDougall to create Metricath, both the name of their product and the name of their technology which allows physicians to precisely size an artery or implanted stent.

"Myself and my business partner co-developed the stent and stent-related devices. In 2000, 2001, we developed a new product and implanted it in medical models," said Alexei Marko, vice-president and COO of Medical Ventures Corporation, parent company of Metricath. "We implanted a number of them and argued with the doctor about the size of the vessels. He thought it was big; we thought it was small."

"Thirty days later," Marko continued, "we followed-up and the stent was nowhere to be seen. We excised the vessel and it was significantly larger than we all guessed. The stent had migrated downstream and didn't properly affix into the vessel wall."

"It hammered home," he said, "that

people have tremendous difficulty accurately estimating the size of arteries during these procedures."

Unfortunately, arteries don't come equipped with warnings like the side-view mirror on your car. In this case, vessels may indeed be larger than they appear.

And it isn't an isolated problem. About three million times a year, physicians put a stent—a little mesh cage usually coated in drugs—into an artery that feeds the heart or other areas of the body; about half of those happen in the United States. It's usually a required procedure when enough plaque builds up to block blood flow. The

resulting angina or risk of heart attack makes the stent a valuable tool in the surgeon's arsenal. For treating coronary heart disease, the physician will usually feed a tube through the artery, inflate a high-pressure balloon which opens the blockage, and, in 99% of the cases, implant a stent to keep the vessel open and the blood flowing.

Getting the right-sized stent is crucial. Recognizing when you do not have the right-sized stent is perhaps even more important. Physicians, until now, only had the ability to choose between an angiography and an intravascular ultrasound to gauge the size of an artery. The first, said Marko, is rotten for quantitative information. The second has additional time and costs associated with it, as well as some complexities.

Marko said size very much matters in choosing a stent. Too big and it could conceivably burst the artery. Too small and it won't accomplish the ultimate goal of the procedure in the first place—to open up blood flow. After all, he said, it's all

plumbing. You want the implanted stent and the artery to perfectly match in size.

"If you don't put the right stent in, you get a sub-optimal outcome for the patient or significantly higher complication rates."

The two Metricath products are the Libra and the Gemini. Both are basically a balloon at the end of a catheter, connected to console. The balloon is inflated and precisely measures pressure and volume, providing the physician with an accurate measurement of the artery. The Libra only measures, while the Gemini adds a treatment balloon to dilate or pre-treat a lesion.

In the past four years, Medical Ventures has raised about \$15 million including \$7.75 million in April 2007.

"We also have FDA, Canadian and European approvals for most of our products," said Marko. "Only the Gemini remains to be approved in the US for coronary use."

That approval is anticipated in 2008. It's the US market, said Marko, which counts in terms of the success of his business.

He sees Metricath eventually being used in a significant number of stent implantation cases in coronary and other arteries but, just like with carpentry, he acknowledges there are times when measurement isn't as critical and times when it's extremely critical.

"It's a tool in doctors' toolboxes to be used on a regular basis in hospitals in Europe, Canada and the United States," he said. ●

For more information on Medical Ventures Corp. and its medical devices go to medical-ventures.com or call 604-270-4344.

Corey Van't Haaff is the Just for Canadian Doctors technology columnist and is the owner of Cohiba Communications. She regularly writes about business, medicine, law and technology. She can be reached at medicalnews@cohibacommunications.com