

Interview - Good things in small packages for Virtual Incision



[Elizabeth Cairns](#)

Several companies are trying to muscle in on the US robotic surgery space, currently solely occupied by Intuitive Surgical, with smaller, cheaper devices. But there is a possible niche for systems that are smaller still, and Virtual Incision has just completed a proof-of-concept study in colon resection with its miniaturised robot.

“The robot is about the size of your hand, and it goes through an access port commonly used in laparoscopic surgery, an incision of about an inch and a half,” says the group's chief executive, John Murphy. Compared with the larger machines, he says, “It’s like the difference between mainframe computer and laptop.”

The largest surgical robot, and the only one to make it to the US, is Intuitive Surgical’s Da Vinci system, which exists in various iterations and is used in procedures including hysterectomy and prostatectomy. Last summer another company, TransEnterix, submitted a 510(k) clearance application for its Sport robot in the area of general abdominal surgery, but clearance has not yet been forthcoming.

A new space

Mr Murphy says Virtual Incision ought to be able to obtain FDA clearance in around 18 months – speedy for a company that has not yet begun US trials. The feasibility study was conducted in Asunción, Paraguay, in keeping with a growing tendency of medtech start-ups to do their early clinical work outside the US and Europe to save money.

The group is not disclosing how many patients have been treated with the system, saying merely that the technology has performed satisfactorily.

“The patients did very well. They were up and moving around the next day and out of the hospital day three or four,” Mr Murphy says. “It showed the benefit of a minimally invasive approach to this, versus open surgery”.

And that is key. Virtual Incision is not positioning itself to compete with other robotics companies such as TransEnterix and Titan Medical, much less Intuitive Surgical. Instead it is aiming to find a customer base by proving that robotic laparoscopic colon surgery is preferable to open procedures.

“Over two thirds of colon resection is performed open today, which requires an eight to 12-inch incision, so a minimally invasive approach via a small incision through the umbilicus enables much shorter stays, less infection and leak risk, and much faster recovery,” Mr Murphy says.

Therefore, the reasoning goes, treatment ought to be cheaper despite the additional cost of the device. A similar argument has been advanced by Intuitive and all the others. Costs vary widely: the Da Vinci goes for something like \$2m, with Titan’s system coming in at roughly half that and TransEnterix’s at half again ([Vantage point - The new generation of surgical robots aims for economy, July 21, 2015](#)).

It is early days for Virtual Incision to be thinking about the price of its device, though if it is to achieve the conversion from open surgery for which it is hoping this will be a crucial issue. But if it can get the pricing right it should be able to sell to smaller hospitals, giving it more potential buyers than companies with more expensive systems.

“It’s exponentially less expensive [than other robotic technologies] so that opens up some areas in secondary and tertiary types of regional hospital, which is very important for something that’s as broadly performed as colon resection,” Mr Murphy says. Currently, most laparoscopic colon resection procedures are performed at major academic centres, he says.

US first

Then there is the question of the range of surgeries for which the tool can be used. So far Virtual Incision has been solely concerned with colon resection – “We’d rather be deep-sea divers than water-skiers,” as Mr Murphy puts it – but in future the system could be redesigned to help perform different operations.

To do this the company could keep the same console and platform software but would change the robot itself quite significantly to conduct a different procedure, perhaps in the gynaecological or bariatric arenas. “We’d like to be specific about the type of device,” Mr Murphy says.

But it is colon resection first, and unusually Virtual Incision is heading to market in the US before seeking European CE mark, which is generally easier to get. The company has good inroads with US institutions and the surgeon community, Mr Murphy says – though it intends to expand beyond US borders once established there.

“We seek to be more capital-efficient than a number of the other robot companies, so it’s a focused strategy,” he says. So far the company has raised \$13m from Bluestem Capital and PrairieGold Venture Partners, and capital-efficient or not it will need more to sustain itself before US sales kick in.

Investors will want to know just what the device has achieved, and in that sense not only the approval prospects and sales potential of Virtual Incision’s device but the future of the company itself all hinge on the full data from the Paraguayan study.

These will be released “in the near future”, Mr Murphy says. At that point a clearer picture will emerge of whether the company is on the way to reaching its ambitious goals.

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