Ideas on the Edge

Hands-Off Surgery

ROBOT SURGERY MEANS MORE PRECISION, LESS TRAUMA—AND THE POSSIBILITY OF LONG-DISTANCE PROCEDURES.

The atmosphere in the operating theatre is taut with concentration. The heart surgeon moves one arm slightly, then the other. Then, with the third arm...

Third arm? This is the world of robotic surgery at CSTAR—Canadian Surgical Technologies and Advanced Robotics. The real surgeon in this operating room is sitting a few meters away from the patient, operating a four-armed robot from a separate console that includes a three-dimensional visual interface. The robot, named da Vinci, enables surgeons at CSTAR to perform complex procedures with an unprecedented degree of precision and control.

TELE-SURGERY MAY ONE DAY ENABLE PHYSICIANS TO PERFORM SPECIALIZED PROCEDURES ON PATIENTS THOUSANDS OF KILOMETRES AWAY.

RAJNI PATEL

RESEARCH THAT MATTERS
REAL-WORLD BENEFITS FOR ONTARIANS:

- improved surgical procedures and faster recovery times
- increased availability of advanced procedures in remote areas
- jobs and prosperity in the future by strengthening Ontario's leadership in the key global healthcare sector

And the delicate extensions of the robot's arms make it possible for the doctors to do their work through tiny incisions that are less intrusive and quicker to heal.

Scientists like Dr. Rajni Patel, Director of Engineering at CSTAR, are also experimenting with extending even further the tether that joins robot and human surgeon. "Tele-surgery" may one day enable skilled physicians to perform specialized procedures on patients thousands of kilometres away—making surgery more "hands-off" than ever.

The University of Western Ontario, London

Project: National Centre for Minimally-Invasive Robotic Surgery
Institution: Canadian Surgical Technologies & Advanced Robotics
Research Discipline: Health Sciences/Other Diseases
Principal Investigator: Richard Novick
Trust Investment: $2,818,062
CFI Investment: $3,196,857
Total research investment from all sources: $7,992,843

Attracting and keeping the best: Bob Kiaii

Dr. Bob Kiaii leads the Robotic Coronary Artery Bypass research project at CSTAR. He received his MD from The University of Western Ontario, in London, where he also received his cardiac surgery training. But his quest for experience in robotic surgery then took him to Europe, where he completed a fellowship in minimally invasive and robotic cardiac surgery at Leipzig Heart Centre in Leipzig, Germany.

Today he's back home. "The fact that the infrastructure and funding were in place at CSTAR played a very important role in my returning to Ontario," says Dr. Kiaii. Using CSTAR technology—funded in part by an Ontario Innovation Trust investment—he and his team recently achieved a North American first by completing two different robotic procedures to clear blocked arteries during a single episode of care in the operating room.

Ontario Innovation Trust

MaRS Centre, Heritage Building
101 College Street, Suite HL20
Toronto, ON M5G 1L7
416-977-9188 Fax: 416-977-9460
innovation@oit.on.ca
www.oit.on.ca

Infrastructure for Innovation
About the Ontario Innovation Trust

The Ontario Innovation Trust was created in 1999 by the Government of Ontario to invest in research equipment and facilities at Ontario's universities, colleges, hospitals and other non-profit research institutions. The Trust is governed by a volunteer Board of Directors, according to the terms of a Trust agreement established by the Ontario government. A small permanent staff looks after day-to-day operations.

Since its inception, the Trust has committed almost $843 million to strengthen Ontario's position in the global marketplace of ideas. This represents more than a third of the $2.44 billion in total funding that has been invested in Trust-supported projects.