

# The Medical Post

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## World's first surgical robot in B.C.

By OLGA LECHKY

VANCOUVER—Researchers at the University of British Columbia and the Vancouver General Hospital have developed and clinically tested what they believe to be the world's first orthopedic surgical robot.

Developed under the direction of Dr. James McEwen, head of the department of biomedical engineering at VGH, the prototype advanced robot system manipulates and positions the patient's limb during orthopedic surgery on voice command by the surgeon. To date, more than 60 robot-assisted surgical arthroscopies have been performed by UBC orthopedic surgeon Dr. Brian Day and colleagues.

Dr. McEwen told The Medical Post the use of a robotic assistant during orthopedic surgical procedures has the potential to make the operation safer and to improve the quality of the result. "The surgeon no longer has to do two jobs at once—that is, manipulate the joint and perform the procedure," he said. "Or, alternatively, the surgeon no longer needs a human assistant to position and hold the limb while he operates. Holding a limb in place for long periods of time can be very fatiguing. The robot doesn't get tired and it doesn't get bored. The whole idea behind the robot is to reduce the labor intensiveness of certain surgical procedures.

"Our prototype has worked amazingly well for our first series of trials. We're very pleased with the success so far."

Dr. Day described the Arthrobot as a "breakthrough in the application of robotics in medicine." In an interview, he said: "To our knowledge, this is the first use of a robot in the operating room anywhere in the world. We started using our robot about a month before the well-publicized team in California started using their neurosurgical robot."

According to Dr. McEwen, he and colleagues did not want any publicity until they were sure their prototype was proven to be capable of carrying out its task safely and efficiently. "We made a lot of technical improvements as we proceeded from our first case through our 60th case," he said. "We now have a second prototype that incorporates these improvements. In about three months, we expect to have a prototype system ready for independent evaluation by other surgeons at different medical centres."

According to Dr. Day, the Arthrobot currently recognizes only his voice. In order for another surgeon to use the robot, it would have to be trained to recognize and respond to a new voice. Speaking into a microphone in his surgical mask, Dr. Day uses a series of 20 simple commands—usually one word—which are transmitted into the robot's computer memory. Before its arm is activated, the robot verifies the command by repeating it.

After command verification, the gripper at the end of the robot's specially designed arm manipulates and positions the knee joint into the desired position and holds that position until the surgeon's next command.

"What we did was predetermine the positions one might use in doing arthroscopy and then programmed the ro-



THE ARTHROBOT, an advanced robotic assistant for orthopedic surgery, manipulates and positions the patient's leg on voice command.