Robotic surgeon's assistant could be the solution to nurse shortages

The RIKEN Bio-Mimetic Control Research Center has developed a robotic assistant for surgical specialists who use endoscopes. The robot does the tasks performed by surgical nurses and can be operated via spoken commands or by remote control using a cell-phone monitor and keypad.

A team led by Toshiharu Mukai at the Bio-Mimetic Control Center, along with researchers from Nagoya University and NTT DoCoMo Tokai, developed the robot, on the basis of a prototype made by Tokai region companies (Aska, ChunichiDenshi, and Miwa Electric Medical) with support from Tokai Monodukuri Council.

Endoscopes minimize the incisions needed, thereby reducing the patient's pain, shortening the recovery time, and greatly reducing medical costs. An endoscopist may need 10 to 20 different sets of forceps and other instruments in an operation, which must be handed over by a nurse. A serious shortage of nurses qualified to do this work prompted the development of the surgical-assistant robot.

The robot loads the instruments into a magazine, and hands them via a robotic arm to the surgeon, who gives orders using audio commands by means of a headset fitted with a microphone and earphones. The robot identifies the instruments by means of attached barcodes. Once the surgeon has finished using an instrument, the robot takes it from him and returns it to the magazine automatically. Instruments can be added or removed by pushing buttons on a cell-phone keypad. With this function, an experienced surgeon in a remote location, for example, can support an operation by a less experienced specialist by watching the operation on a video monitor and operating the robot via the cell-phone keypad. The selected tool is displayed on the cell-phone screen for verification by the remote operator.

The team demonstrated the results at the Chukeiren Techno Fair 2007 in Nagoya on October 11, operating the robot from a remote location via cell phone.
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