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## Tele-urology experiments to show added value of telementored robotic surgery

**Anaheim 04 July 2001***From September 1998 to July 2000, an expert team consisting of surgeons from the "Tor Vergata" University in Rome and from the Johns Hopkins Medical Institution in Baltimore have performed seventeen robotic telesurgical procedures on patients with urological problems in Italy. Using four ISDN lines, a PC equipped with a dedicated software to manage the telecommunication, both audio and video connection, an external video camera with a panoramic view of the operating theatre and a remote control for the electro-cautery and telestrator, the team bridged a distance of 9320 km between the Policlinico Casilino in Rome and the remote Johns Hopkins consultation site in Baltimore, Maryland.*

Dr. Dan Stoianovici, the director of the URobotics Lab at Johns Hopkins, presented the results of the experimental telesurgery project at the annual meeting of the American Urological Association held from 2 to 7 June 2001 in California. The speaker explained to the audience that fourteen of the long-distance surgeries were laparoscopic. These included eight cases of spermatic veins ligation, two retro-peritoneal renal biopsies, one pieloplasty or kidney repair, and three nephrectomies for non-functioning kidneys. The three remaining procedures constituted percutaneous access to the kidney.

The Italo-American surgeon team utilised two different robotic devices for the seventeen telesurgeries. The first one was Computer Motion's AESOP robotic endoscope positioner that was applied for the orientation of the laparoscope. PAKY, the second robot, consisted of a passive mechanical arm, mounted on the operating table

and fitted out with a radiolucent needle driver to perform the percutaneous renal access. Each procedure was carried out successfully without any post-operative complications. In seven cases however, the telesurgical connection with the remote site in Rome was suspended while the interventions were continued only from the primary site.

Dr. Stoianovici also described how two of the 17 procedures were converted to open surgery. During one of the percutaneous access procedures to the patient's kidney, problems occurred with the PAKY robot manual control for needle advancement. In general, the time delay for image transmission was approximately one second. The project has demonstrated that international telementoring holds a lot of potential to soften the steep educational curve which surgeons experience to learn the ropes of minimally invasive surgery.

In addition, the use of surgical robots augments the ability of the practising surgeon by scaling down the range of motion, providing three-dimensional vision, and eliminating hand tremor. The robotic system allows a surgeon to view and control both the console and the cart with the robotic arms which is installed next to the patient. Dr. Stoianovici indicated that this technology in the future could potentially be used on battlefields or even in space. More details are available in the VMW December 2000 article [Today still experimental, robotic telesurgery may be commonplace tomorrow, even in space.](#)

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