

# High-tech, remote-controlled camera for neurosurgery

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(Phys.org)—A small camera inserted into the body enables surgeons to perform many types of operations with minimal trauma. EU-funding enabled researchers to extend the use of such interventions to a variety of neurosurgical applications.

The [medical field](#) has made great advances in minimising trauma associated with various [surgical interventions](#). Use of surgical microscopes has been influential in guiding a surgeon's tools to the appropriate location and reducing tissue damaged in an effort to ensure all affected areas have been treated.

Within the last 30 years, more and more procedures have lent themselves

to endoscopic intervention also called minimally [invasive surgery](#) (MIS).

A very small, flexible tube with a camera at its tip is inserted into an incision or natural body opening (e.g. [nasal cavity](#)) and directed to the appropriate site for diagnosis and treatment. The camera offers a wide [panoramic view](#) superior to the traditional conical view of a surgical microscope.

In the case of neurosurgery where operative and post-operative trauma can lead to debilitating loss of [brain function](#) and even death, endoscopic intervention is particularly attractive. However, limitations of available endoscopic surgical systems have excluded their use in many important neurosurgical applications.

In order to extend the use of potentially life-saving endoscopic surgery, European scientists initiated the 'Paraendoscopic intuitive computer assisted operating system' (PICO) project.

With EU-funding, the consortium of small and medium-sized enterprises (SMEs) and research and technology development (RTD) partners produced important endoscopic neurosurgical technology.

The PICO positioning system consisted of a balanced holding-and-motion device with fine motor-driven adjustment. The holding-and-motion system could be attached either to the operating table or to the patient's head.

A novel interface for remote control enabled the surgeon to steer the endoscope without removing their hands from the surgical instruments.

Scientists also incorporated a three-dimensional (3D) visualisation system capable of feeding data to a monitor or head-mounted display. The system enabled voice-controlled delivery of additional information

such as pre-operative test results and ultrasound images.

Micro-mechanical surgical instruments for a number of tasks such as suctioning, cutting and sample-taking were specifically designed for endoscopic neurosurgery.

The PICO system is a particularly important contribution to the field of endoscopic neurosurgery. Its market availability should shorten many procedures while reducing associated surgical and post-operative trauma and thus morbidity and mortality.

Provided by CORDIS

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