



## Cranial base team takes lead in telementoring surgical techniques across globe



1 Camera view of surgical team in Maribor, Slovenia performing an endoscopic pituitary surgery.

by Paul Gardner, MD; Carl Snyderman, MD

The UPMC Center for Cranial Base Surgery was the first such center established in North America and has been a pioneer and leader in developing new surgical techniques for the treatment of patients with tumors and other conditions affecting the base of skull, nasal and sinus areas, and some areas of the brain. In many cases, large tumors (both benign and malignant) can be completely removed without the need for a craniotomy and associated manipulation of the brain. This surgery is dependent on endoscopic technology. Visualization is provided by thin endoscopes while a team of surgeons (otolaryngologist and neurosurgeon) work together to remove the tumor. The surgery is technically demanding and requires extensive training over many years to achieve proficiency.

Outside of a limited number of training fellowships, the cranial base surgeons at UPMC teach several anatomical dissection courses at UPMC each year that are attended by surgeons from around the globe. Since 2005, more than 500 surgeons have been trained from over 30 countries. Many of these surgeons will spend extended lengths of time (weeks to months) observing cranial base surgeries as visiting scholars to enhance their learning experience. Despite such exposure, most of these surgeons will have difficulty achieving success with these procedures when they return to their own hospitals.

In response to this need, the cranial base team at UPMC has created a surgical telementoring program to advance the training of surgeons globally at selected sites. Telementoring is the use of telemedicine technology to provide ongoing training while surgery is performed at a remote location. In November 2011, we performed the first telementored surgery at UPMC in cooperation with surgeons at the University of Maribor in Slovenia. While the surgeons in Maribor were performing an endoscopic pituitary surgery (figure 1, above), we observed from a conference room at UPMC (figure 2, right) and provided real-time feedback, giving advice about surgical anatomy, instrumentation, and surgical technique. The surgery was successful and the surgeons in Maribor felt that the telementoring contributed greatly to their confidence and ability to achieve their surgical goals. This has been followed by successful telementoring of a second skull base surgery in Slovenia.

With the demonstrated success of this initial experience, the UPMC Center for Cranial Base Surgery hopes to establish Centers of Excellence in Cranial Base Surgery globally through the use of telementoring. Selection criteria for telementoring sites are based on

geographic location, institutional resources, surgical capabilities, and clinical need. The process includes: (1) attendance of a skull base course in Pittsburgh by a surgical team with observation of surgeries; (2) on-site visit of the remote site by UPMC team to assess needs, resources, and capabilities. This may include on-site educational activities as well as mentoring of live surgeries; (3) remote telementoring of live cases with capture of data regarding impact on decisions and clinical outcome; and (4) follow-up on-site visit for further mentoring or educational activities.

Telemedicine is the use of telecommunication and information technology to provide clinical health care at a distance. UPMC is already a leader in developing applications for telemedicine, with successful programs in general surgery (consultations, postoperative care), dermatology (diagnosis), neurology (diagnosis and treatment of stroke patients), psychiatry, radiology, pathology, and others. Telemedicine technology has also been used to educate surgeons by televising surgeries worldwide while they are being performed by UPMC physicians in Pittsburgh.

The cranial base team at UPMC will be presenting their experience with surgical telementoring at the UPMC Telemedicine Symposium in Belgium this summer. This international conference will address all aspects of telemedicine and explore the future challenges of this exciting innovation. •



2 Carl Snyderman, MD, observes Slovenia procedure from Pittsburgh and provides real-time feedback.